CEMENT CORPORATION OF INDIA LIMITED
TANDUR CEMENT FACTORY
P.O. CCI TANDUR - 501 158, VIKARABAD Dt. (TELANGANA)
CIN No. U74899DLI965GOI004322

Ph: 08411-247230
Fax: 08411-247243
E-Mail: elect_tdo@ccildt.in
Website: www.ccildt.in

NIT NO.: TCF/ELECT/01(A/D)/2020-21 **Dated: 19.08.2020.**

NOTICE INVITING E-TENDER CUM REVERSE AUCTION (NIT)
(Only through e-procurement)

1.0 Online electronic bids through Electronic Tendering System (ETS) are invited from interested adequate experienced parties for : **Design, Supply, Installation, Testing and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System and 15KWp Solar Photo Voltaic Grid connected System with battery backup for 12 hour for Township and Township street light application respectively at Cement Corporation of India limited, Tandur, Vikarabad, Telangana.**

The complete set of tender documents is available on websites www.ccildt.in, www.eprocure.gov.in. and **www.cci-etender.com** of Antares Systems Ltd.

E-TENDER NO.	**TCF/ELECT/01(A/D) /2020-21**
MODE OF TENDER	e-Procurement System (Online Part A - Techno-Commercial Bid and Part B - Price Bid) through **www.cci-etender.com** of Antares Systems Ltd.
Date of NIT available to parties to download	**From 19.08.2020 (10.00 hrs.) Till 18.09.2020 (14.30 hrs.)**
PRE-BID MEETING Date **PRE-BID MEETING Venue** **Last date for submission of queries by the vendors/bidders.** **Date of Site visit (if needed) by the vendors/ bidders if needed.**	**Pre-bid meeting will be held on 28.08.2020 At 3.00 p.m.** **CEMENT CORPORATION OF INDIA LIMITED, TANDUR CEMENT FACTORY, P.O. CCI TANDUR - 501 158, (Telangana)** The vendors/Bidders need to provide the list of clarifications required, if any along with para/clause no. of the tender documents by **28.08.2020 prior to the pre- bid meeting.** **28.08.2020 from 9.00 am to 2.00 pm**
Earnest Money Deposit	**Rs.76,000/- (Rupees Seventy six Thousand) through e-payment gateway as per Clause No. 1 of Part-II terms & conditions.**
Last date of submission of valid SSI/NSIC/MSME certificate and other documents required as per tender terms & conditions under covering letter	**18.09.2020 (15:00 hrs.)**
Date of Starting of e-Tender for submission of on line Techno-Commercial Bid and Price Bid at www.cci-etender.com	**From 19.08.2020 (10:00 hrs.)** **Till 18.09.2020 (15:00 hrs.)**
Date & time of opening of Part-A (i.e. Techno-Commercial Bid) Part-B Price Bid: Date of opening of Part-B i.e. price bid shall be informed separately. Reverse auction start time Reverse auction end time	**18.09.2020 at 15.30 hrs.** To be communicated separately. 2 days after opening of e-price bid 2 hours of start of reverse auction (Details furnished in Annexure-X)
Validity of bids	120 days from the date of the techno- commercial bid opening.

SCHEDULE OF MATERIAL*:* **- For Design, Supply, Installation, Testing and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System and 15KWp Solar Photo Voltaic Grid connected System with battery backup for 12 hour for Township and Township street light application respectively at Cement Corporation of India limited, Tandur, Vikarabad, Telangana.**

NIT No.	Name of the item
TCF/ELECT/01(A/D)/2020-21	Design, Supply, Installation, Testing and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System and 15KWp Solar Photo Voltaic Grid connected System with battery backup for 12 hour for Township and Township street light application respectively at Cement Corporation of India limited, Tandur, Vikarabad, Telangana**.**

1) Only those tenders will be considered who fulfill the terms & conditions mentioned in the tender documents.

2) Only those tenders shall be considered who deposit the earnest money by due date & submit Authorized Dealership Certificate (in case of Authorized dealers).

3) The price- bid should be only as per CCI's price - bid format otherwise the tender is liable for rejection.

List of Annexure

The tender documents comprise of following:-

Annexure- 1	Covering Letter
	Submission Of EMD
	Copy Of GST Registration Certificate And PAN Card
	Partnership Deed / Memorandum & Article Of Association
	Balance Sheet for Last Three Financial Years
Annexure- 2	Scanned Copy Of Dully Filled And Signed Integrity Pact
	Udyog Aadhar Number (For MSME Bidders)
Annexure- 3	Declaration Of Relation To Officer Of CCI
Annexure- 4	Unexecuted / Present Contract / Jobs In Hands
Annexure- 5	Bidder's Firm / Company Profile
Annexure- 6	Details Of Plant & Machinery Installed
Annexure- 7	Details Of Testing Facilities Installed.
Annexure- 8	Details Of Orders Executed Including CCI During Last Three Years.
Annexure- 9	Declaration Letter Of Having Read and Understood The GTC
Annexure-10	Procedure for reverse Auction.
	Covering letter, Part-I - Instruction to tenderers, Part-II - General terms & conditions, Integrity pact which is available in CCI website must be submitted by tenderer duly filled & signed.
Annexure- A	Part-III- Special Terms & Conditions for Grid Connected SPV System.
Annexure- B	Part -IV - Technical Specification for Grid Connected SPV System.
Annexure-C	Price Bid Proforma (Price Schedule) To Be Submitted Duly Filled In On-Line As Part-B.

Please visit our website www.cciltd.in for Covering letter, Part-I - Instruction to tenderers, Part-II- General terms & conditions, Integrity pact, all formats and submit the same along with Annexure-9 duly filled & signed along with the tender.

Important instructions for E-procurement

This is an e-procurement event of CEMENT CORPORATION OF INDIA. The e-procurement service provider is Antares Systems Ltd., No.24, 1st Floor, Sudha Complex, 3rd Stage, 4th Block, Basaveshwaranagar, Bangalore-560079

You are requested to read the tender terms & conditions (**Annexure: I to VI)** of this tender before submitting your online tender. Tenderers who do not comply with the conditions with documentary proof (wherever required) will not qualify in the Tender for opening of price bid.

<table>
<tr><td>1</td><td>Process of E-Tender:
Registration:
The process involves vendor's registration with Tenderwizard e-procurement portal. Only after registration, the vendor(s) can submit his/their bids electronically. Electronic Bidding for submission of Techno-Commercial Bid as well as Price Bid over the internet will be done. The Vendor should possess Class III signing type digital certificate. Vendors are to make their own arrangement for bidding from a P.C. connected with Internet. Antares Systems Ltd is not responsible for making such arrangement. (Bids will not be recorded without Digital Signature).

SPECIAL NOTE: THE PRICE BID AND THE TECHNO-COMMERCIAL BID HAS TO BE SUBMITTED ON-LINE AT www.cci-etender.com

Vendors are required to register themselves online with www.cci-etender.com → 'Register Me' link. Filling up details and creating own user id and password→ Submit.
Vendors will receive a system generated mail confirming their registration in their email which has been provided during filling the registration form.

In case of any clarification, please contact CCI/Antares Systems Ltd, (before the scheduled time of the e- tender).

Contact person (Cement Corporation of India):
<table>
<tr><th>Name</th><th>Email</th><th>Land Line</th><th>Mobile</th></tr>
<tr><td>P. Prabhaharan, DGM(M.M.)</td><td>mm_tdo@cciltd.in</td><td>08411247221</td><td>07799938023</td></tr>
<tr><td>Ramana Murthy, HOD (E&I)</td><td>elect_tdo@cciltd.in</td><td>08411247230</td><td>07799938101</td></tr>
<tr><td>R. Balachandran, DM(MM)</td><td>mm_tdo@cciltd.in</td><td>08411247221</td><td>07799938099</td></tr>
<tr><td>R. Raghunathan, HOD (FIN)</td><td>fin_tdo@cciltd.in</td><td>08411247238</td><td>07799938018</td></tr>
</table>
Antares Systems Ltd help line Numbers: 080 49352000 & 03346046611

B) System Requirement:
Windows 8,10 Professional Operating System, Internet Browser-9,10 &11. Signing type Class 3 digital signature Java JRE 6 and above.</td></tr>
<tr><td>2</td><td>(A) Part-A Techno-Commercial bid will be opened electronically on specified date and time as given in the NIT. Bidder(s) can witness electronic opening of bid.
(B) Part-B Price bid will be opened electronically of only those bidder(s) who's Part-A Techno-Commercial Bid is found to be Techno-Commercially acceptable by CCI. Such bidder(s) will be intimated date of opening of Part-B Price bid, through valid email confirmed by them.
Note:
The tenderers are advised to offer their lowest possible rates taking into account the prevailing market conditions. There would generally be no negotiations hence please submit your most competitive prices while submitting the price bid. However, if the rate is still considered high, action as per prevailing instruction/guideline shall be taken.</td></tr>
<tr><td>3</td><td>All entries in the tender should be entered in online Technical & Commercial Formats without any ambiguity.</td></tr>
<tr><td>4</td><td>In case of failure to access the payment towards non-refundable fees for any reason, the vender, in term, will not have the access to on line e-tender and no correspondence in this respect will be entertained and CCI will not be responsible for any such lapses on this account. Bidder(s) are advised to make remittance of non-refundable fees through separate DD well in advance and verify completion of transaction in respect of non-refundable fees.
Vendors are instructed to use Upload Documents link in My menu to upload documents in document library. Multiple documents can be uploaded. Maximum size of single document for upload is 5 MB.

Once documents are uploaded in the library, vendors can attach documents through Attach Document link against the particular tender. For further assistance please follow instructions of vendor guide</td></tr>
</table>

5	All notices/corrigendum and correspondence to the bidder(s) shall be sent by email only during the process till finalization of tender by CCI. Hence the bidders are required to ensure that their corporate email I.D. provided is valid and updated at the stage of registration of vendor with Tenderwizard (i.e. Service Provider). Bidders are also requested to ensure validity of their DSC (Digital Signature Certificate).
6	The responsibility of downloading the related corrigenda, if any, will be that of the downloading parties.
7	E-tender cannot be accessed after the due date and time mentioned in NIT.
8	**Bidding in e-tender:** a.) It is mandatory that all the bids are submitted with digital signature certificate otherwise the same will not be accepted by the system. b.) Buyer reserves the right to cancel or reject or accept or withdraw or extend the tender in full or part as the case may be without assigning any reason thereof. c.) No deviation of the terms and conditions of the tender document is acceptable. Submission of bid in the e-tender floor by any bidder confirms his acceptance of terms & conditions for the tender. d.) Unit of Measure (UOM) is indicated in the e-tender Floor. Rate to be quoted should be in Indian Rupee as per UOM indicated in the e-tender floor/tender document.
9	Any order resulting from this open e-tender shall be governed by the terms and conditions mentioned therein.
10	No deviation to the technical and commercial terms & conditions are allowed.
11	After submitting online bid, the bidder cannot access the tender, once it has been submitted with digital signature
12	CCI has the right to cancel this e-tender or extend the due date of receipt of bid(s) without assigning any reason thereof.
13	The online tender should be submitted strictly as per the terms and conditions and procedures laid down in the website www.cci-etender.com of Antares Systems Ltd.
14	The bidders must upload all the documents required as per terms of NIT. Any other document uploaded which is not required as per the terms of the NIT shall not be considered.
15	The bid will be evaluated based on the filled-in technical & commercial formats.
16	The documents uploaded by bidder(s) will be scrutinized. In case any of the information furnished by the bidder is found to be false during scrutiny, punitive action including suspension and banning of business can also be taken against defaulting bidders.
17	**Bidders are requested to read the vendor guide in the page www.cci-etender.com to familiarize themselves with the system before bidding.**

For and on behalf of CCI Ltd.

HOD (ELECT.)

ANNEXURE – A

CEMENT CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

PART-III: SPECIAL TERMS AND CONDITIONS FOR GRID CONNECTED SPV SYSTEM

This tender contains Part-I and Part-II general terms, Part-III special terms and conditions and price bid. Please visit our website www.cciltd.in for Covering letter, Part-I - Instruction to tenderers, Part-II- General Terms & conditions, Integrity pact, all formats and submit the same & Annexere-9 duly filled and signed along with the tender.

In addition to the General Terms and conditions of the tender Part-I & II the following Special terms and conditions also apply to the contract for Design, Supply, Installation, Testing, and Commissioning of Solar Photo Voltaic Grid connected system. These special terms and conditions if contradictory to any of the conditions given in Part-I, II & III shall prevail upon the conditions given therein:-

Scope of work covers Design, Supply, Installation, Testing and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System and 15KWp Solar Photo Voltaic Grid connected System with battery backup for 12 hour for Township and Township street light application respectively at Cement Corporation of India limited, Tandur, Vikarabad, Telangana. confirming to technical specification enumerated in relevant JNNSM guidelines amended upto date.

Detailed scope of work is given here under:-

1. **Work of installation of Grid connected SPV System shall involve:**
   Preparation of Detailed Project Report (DPR) for the proposed SPV Power Plant, obtaining No Objection Certificate (NOC) from concerned supply company for grid connectivity. Design, supply, storage, civil work, erection, testing and commissioning of SPV grid connected Power Plant as per schedule given at the time of allotting targets.

2. **Project Cost**
   The Project cost shall include all the costs related to above Scope of work. Bidder shall quote for the entire facilities on a "single responsibility" basis such that the total Bid Price shall cover the obligations mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty for a period of 5 years of the whole system including solar panel mounting frame. The Bidder has to take all permits, approvals and licenses, insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.

   The project cost shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work irrespective of his actual cost of execution of the project. No escalation will be granted on any reason what so ever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons what so ever.

   The maintenance of Solar Photo voltaic Power Plant would include warranty against machine breakdown, insurance, and replacement of defective modules, invertors/ Power Conditioning Unit (PCU), spares, consumables, mounting frame/structure & other parts for a period of 5 years.

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

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

3. Net metering of Power:

Net metering is the concept which records difference between export of generated energy and import of energy from supply company grid.

The bidder to whom the work is awarded shall bear the entire cost of metering arrangement provided including its accessories. The statutory fee and other charges such as security deposit payable to office of supply company & Electrical inspector will be borne by client separately. The installation of meters including CTs & PTs, wherever applicable, shall be carried out by the bidder as per the procedures in use of the supply company with their permission. The bidder shall do all the co-ordination among CLIENT/EB/Statutory Inspection Authorities necessary for net meter commissioning, proper completion and maintenance and guarantee of the work if required. Nothing extra shall be paid on this account.

4. Plant Performance Evaluation:

Engineer-in-charge shall monitor the performance of the Grid connected SPV Power Plants subject to availability of proper measuring equipment being in use in supply company as under:
The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the DNI level for the location during the warranty period.

5. Language of tender and measure

The tender prepared by the tenderer along with all the related documents shall be in English. Unit measurements shall be metric in accordance with International System. All correspondence between the tenderer and Engineer-in-charge shall also be in English.

6. Earnest Money

i. The tenderer shall furnish 2% earnest money of Estimated Cost as mentioned in the Bid document.
ii. The earnest money may be forfeited:-
   a) If a tenderer withdraws his tender during the specified period of validity of offer.
   b) If the successful tenderer fails to sign the contract agreement within stipulated period.
   c) If the successful tenderer fails to start the work as per the prescribed timeframe.
iii. **EARNEST MONEY DEPOSIT(EMD)**

EMD for this tender is Rs. 76,000/- (Rupees Seventy Six Thousand only) to be submitted as per clause no.1.1 to 1.5 of part-II general terms and conditions.

7. Formats and signing of tender

The tender must contain the name and places of business of the firm/person/persons participating in the tender and must be signed and sealed by the tenderer with his usual signature. The name and designation of all persons signing the tender document should be written below every signature. Tender by a partnership firm must be furnished with full name of all partners with a copy of partnership deed.

Certified copy of all the scanned and uploaded documents must be signed with the legal name of the corporation/ company by the President/ Managing Director/ Secretary of the firm or a person duly authorized to bid. In case of authorized person the letter of authorization by written power-of-attorney should be enclosed with the technical bid of the tender. The person or persons signing the tender shall initial all pages of the tender document.

8. General:

CEMENT CORPORATION OF INDIA LIMITED one million Tonne Cement Plant installed at Karankote Village, Tandur, Vikarabad District of Telangana.

9. Site Information:

It is understood that before quoting the rates, the bidder has visited the worksites at his own cost and has acquainted himself fully with the nature and quantum of job to be carried out by him in case of Award. Ignorance of this will not be considered after the award of Contract. The contractor will be responsible to complete the entire job in all respects, including any other work necessary to complete the job satisfactorily, though specifically not covered in the "Scope of Work & Technical Specifications".

10. Planning and Designing:

The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to Dept for approval.

Department reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/ requirements.

The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder shall submit three sets of soft copy of final drawing in CD for formal approval to proceed with construction work

11. Civil Works:

Contractor should consider the soil bearing capacity and carrying out leveling of soil (if required), make proper foundations for mounting structure. A preliminary foundation design has to be submitted to client for approval before starting civil works

12. Factory Testing:

Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct tests, if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

Operation of start up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU containing inverter and charge controller and response to control signals shall also be tested and demonstrated.

Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.

A Factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted. Other routine tests on modules including HV test on all modules, PCU and other items will be carried out by the suppliers and test reports shall be submitted to representative of CCI.

13. 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 bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder for approval of specifications and make will be collected from Engineer in Charge.

A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction boxes. Fuses, MOVs /arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment or can be maintained at supplier end. A minimum set of spares shall be maintained in the plant itself or can be maintained at supplier end for the entire period of warranty and maintenance which upon its use shall be replenished

14. Danger Boards and Signages:

Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signages shall be provided one each at battery –cum-control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with Dept.

15. Drawings and Manuals:

Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical datasheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.

Approved ISI and reputed makes of equipments shall be used.

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

16. Drawings to be furnished by the bidder after award of contract

The Contractor shall furnish the following drawings and obtain approval

i. General arrangement and dimensioned layout.

ii. Schematic drawing showing the requirement of SPV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.

iii. Structural drawing along with foundation details for the structure/frame duly signed by structural engineer.

iv. Itemized bill of material for complete SV plant covering all the components and associated accessories.

v. Layout of solar Power Array

vi. Shadow analysis of the roof

17. Solar PV system for meeting the part/full annual energy requirement

If require the Solar PV system on the rooftop of the selected buildings/on the ground level will be installed for meeting the annual energy requirements of PV capacity permissible by Supply Company as per regulation issued by Regulatory authority if require.

18. Safety measures:

The bidder shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

19. Display board:

- The bidder has to display a board at the project site (40KWp & 15KWp) mentioning the following:
- Plant Name, Capacity, Location, Type of Renewable Energy plant (Like solar wind etc.), Date of commissioning, details of tie-up with transmission and distribution companies, Power generation and Export FY wise.
- The size and type of board and display shall be appropriate.

20. Warranty:

a. Material Warranty:

i) Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of installation.

ii) Defects and/or failures due to manufacturing

iii) Defects and/or failures due to quality of materials

iv) Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s).

b. Performance Warranty:

The predicted electrical degradation of power generated not exceeding 20%of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

21. Duration of the contract :

The duration of the Contract work shall be 08 Weeks from the date of issue of Work Order.

22. Payment :

90% payment will be released after successful completion of work against the submission of the bill within 30 days. Balance 10% payment will be released in equal installment after successful completion of guarantee period of 05 years (2% x 5 = 10%).

TDS on Income Tax & TDS on GST will be deducted as per relevant act.

GST amount will be reimbursed duly after the Invoices are uploaded by the party in their portal and payment if the same by the party to the Govt.

23. Liquidated damages :

Liquidated damaged in delay shall be levied @ ½ % per fortnight or part thereof for the late completion of work against time mentioned, subject to a maximum of 5% of the value of the Order. The Corporation will, however, not be bound to prove that it has suffered to the extent of the liquidated damages claimed.

24. S.D. Amount : As per the part –II General Terms & Condition.

25. Rules & Regulations:

Contractor shall observe in addition to the specified and respective specifications all the local laws, ordinances, rules and regulations and legislations pertaining to the work and shall be responsible for extra costs arising from violations of the same.

Copies of PAN & GST Registration must be submitted along with the quotation.

GST and other taxes payable will be paid as applicable.

Income Tax (TDS) and GST applicable as per rules.

Instructions for Pre- Bid Meeting:

1. The prospective vendors shall go through the terms and conditions of the tender documents after down loading from the web sites, prepare the list of clarifications/suggested modification, if any. They may also visit the site as per the scheduled date prior to pre-bid meeting, with intimation to the concerned officials.

2. The vendors may attend the pre bid meeting as per the scheduled date along with their queries/suggestions for modification, if any against the terms & conditions of the tender. Vendors can also upload/seek clarification through e-mail or letter from tendering authority before the last date fixed for raising queries.

3. The prospective Vendors shall have to visit the site & attend the pre- bid meeting at their own risk and cost. However, the lodging at CCI Guest House can be arranged on payment basis subject to availability of room.

4. No queries, clarification or observation shall be entertained, in case they fail to forward the same well in advance so as to reach us prior to the scheduled date or they fail to attend the Pre-bid meeting.

5. Modifications, if any carried/considered in the tender terms shall be shared with all the vendors who have attended the pre-bid meeting and also shall be uploaded as a corrigendum against the tender, on CCI website and other website where original NIT has been uploaded.

6. The pre-bid meeting shall be open meeting and one time only. It will be held as scheduled in the NIT above. However, in extreme urgency cases, in case there is any change in date of meeting, the same shall be posted on CCI website giving one week time.

7. In case the tenders fail to attend the meeting on the scheduled date, the request for rescheduling the date and reorganizing the meeting shall not be entertained.

8. After pre-bid meeting, any query/clarification and other commercial deviations shall not be entertained.

9. The vendors who fail to attend the pre-bid meeting can also participate in the tender. The tender terms shall be applicable to all parties in uniform irrespective of attending the pre-bid meeting.

Instructions for Reverse Auction

1. CCI reserves the right to go for e-auction as additional condition. In case of any eventuality, the cases will be decided as per the rates submitted in the e-tender. Hence, the bidders are advised to submit their offers accordingly.

2. Only the Bidders who have qualified the techno commercial bid of the tender and whose price bid has been opened are eligible for participating in the reverse auction.

3. The lowest landed cost (net price) of e-tender, evaluated after opening of price bids hall be considered as base price (floor price) for reverse auction and accordingly the reverse auction shall be started. All bidders will be given opportunity to look at to L-1 price and submit their net price in the reverse auction process.

4. The procedures and other terms & conditions of reverse auction shall be uploaded on our website one week before the opening of price bids and starting of reverse auction. The bidders are requested to go through our website regularly to keep them updated about the procedures and terms & conditions.

The bidders participating in reverse auction shall be required to complete all formalities & submit the required documents as desired under the above stated procedures and terms & conditions.

Annexure- X

Cement Corporation of India Limited Tandur Cement Factory

Parameter of E-Reverse Auction:

Estimated Cost / Entry Start Price / Reverse Price for e-Reverse Auction	L1 price of the financial bids of the Tchno-commercially Qualified Bidders.
Minimum decremental value	To be notified by CCI on case to case basis in NIT.
Eligible Bidders to participate in e-Reverse Auction	Techno-commercially qualified bidders to give declaration to participate in Reverse Auction within an hour of opening of Price bids and all such bidders be issued user id and pass word for Reverse Auction.
Start Date & Time of e-Reverse Auction	_____ at 15.00 Hrs. (after 2 working days of opening of price bids)
Initial Duration of e-Reverse Auction	02 Hrs (from 15.00 Hrs to 17.00 Hrs.)
Automatic Extension of "Reverse Auction closing time" if the last bid received within a pre-defined time duration before the "Reverse Auction closing time:"	Yes
Pre-defined time duration (as mentioned above)	05 minutes
Time of each Automatic Extension	15 minutes
Display of Lowest Bid (L1)	Yes (To all Bidders) (Without the bidder identity)

Reverse Auction Procedure:

VII. Procedure for e-Reverse Auction:-

1. The reverse auction is to be carried two days after the opening of e-price bids.
2. If L1 party decides to be out of reverse auction, the party will be allowed to do so. However, if the Reverse Auction yields a lower price, the L-1 party would have no claim / right to be awarded.
3. Other parties if opts out they will be assumed to be to be not participating in tender. No chance shall be afforded later.
4. Bidder has to quote price inclusive of P&F, inspection charges, taxes & freight etc.
5. The L-1 bidder after reverse auction shall be considered, as final L-1 & the case for awarding shall be processed as per policy & NIT.
6. In case bidder, not eligible for participation in reverse auction as per CIause VIII below mentioned guidelines, is an MSE, but their price quoted is within the band of L-1 + 15%, their bid shall be considered for participation in Reverse Auction in line with "Public Procurement Policy for Micro & Small Enterprises(MSEs) order-2012".
7. The break-up of final price viz. basic rate, freight charge, inspection charge etc. will be taken for processing the case after reverse auction has concluded.
8. After conduction of reverse auction, distribution of work amongst bidders shall be done as per NIT, after evaluating L-1, L-2 etc.

VIII. Guidelines for Reverse Auction:-

1. Any tender can be cancelled/withdrawn at any time before award of contract, which is invariably mentioned in NIT.
2. Number of participants allowed in reverse auction:

a. In case of single eligible (techno- commercial qualified) party, no reverse auction shall be conducted & tender shall be finalized subject to reasonability of the rate.
b. Reverse Auction shall be conducted for two (2) or more techno-commercially qualified parties.
c. For 2-4 techno- commercially qualified parties, reverse auction shall be conducted with all parties.
d. For 5-6 techno- commercially qualified parties, one highest bidder (H-1) shall not be allowed to participate in reverse auction.
e. For 7-10 techno commercially qualified parties, two highest bidders (H-1 & H-2) shall not be allowed to participate in reverse auction.
f. For more than 10 techno- commercially qualified parties, only lowest 8 (eight) bidders shall be allowed to participate. However, in case of tie in the eighth (last) position, all such parties shall be allowed to participate in the reverse auction i.e., in case there is tie of 2 parties in 8^{th} lowest position (L-8), then both of them shall be allowed to participate in reverse auction.

3. Lowest bid implies the bid whose landed cost is lowest considering freight, inspection charge & less input credits for GST. (Reverse auction shall be conducted on landed cost excluding GST).
4. The base price, minimum detrimental value, pre-defined time duration of quoting the revised rate (in minutes) shall be available with the service provider portal as per the format to be uploaded with NIT.
5. Closing price (CP) of reverse auction shall be treated as new L-1 and tender shall be processed accordingly.

Complaints may be given, if any regarding denial of service or any related issue, in writing through e-mail/fax to the service provider, with copy of mm_tdo@cciltd.in within 15 min prior to initial closing time of reverse auction.

Bidder shall be assigned user id & password by the service provider, which is presently M/s. Antares Systems Pvt. Ltd.

ANNEXURE – B

CEMENT CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

PART-IV- TECHNICAL SPECIFICATION FOR GRID CONNECTED SPV SYSTEM

The proposed project shall be commissioned as per the technical specifications given below.

1. DEFINITION :

A Grid Tied Solar Photovoltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables, Junction boxes, Distribution boxes and switches etc. PV Array is mounted on a suitable structure. Grid tied SPV system should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. Solar PV system shall consist of following equipments/components.

Solar PV modules consisting of required number of Crystalline PV cells. Grid interactive Power Conditioning Unit with Remote Monitoring System Mounting structures Junction Boxes.

Earthing and lightening protections.

IR/UV protected PVC Cables, pipes and accessories

APPLICATION:

1) 40 KWp solar power grid is for Township lighting.
2) 15 KWp solar power grid is for operation of existing township street light fittings of capacity with 40 watts of 300 nos. with battery backup of minimum 12 hours.

2. PERFORMANCE SPECIFICATIONS AND REQUIREMENTS

Solar PV with PV module capacity of 40KWp to be installed for Township Lighting and 15KWp to be installed for street light application. Under the "Average Daily Solar Radiation" condition of 7.15 KWh / sq.m. on the surface of PV array.

Solar PV system shall consist of following equipments/components and confirms to mentioned standards

i. Solar PV modules consisting of required number of Crystalline PV modules.
ii. Grid interactive Power Conditioning Unit with Remote Monitoring System.
iii. Mounting structures.
iv. Junction Boxes.
v. DC distribution board
vi. AC distribution pane board
vii. PCU / Inverter
viii. Battery Bank
ix. Earthing and lightening protections.
x. IR/UV protected PVC Cables, pipes and accessories.

3. STANDARDS

Applicable BIS/Equivalent IEC standards/MNRE Specifications

Sl. No.	Equipment	Standard Number
1	Crystalline silicon Terrestial PV modules poly/mono	IEC 61215/IS 14286
2	Solar PV module safety qualification requirements	IEC 51730(P1-P2)
3	PV modules to be used in a highly corrosive atmosphere(Coastal area etc) must qualify Salt Mist corrosion testing	IEC 61701/IS 61701
4	Earthing	IS 3043: 1986/1987
5	Switches/Circuit breakers/Connectors	IEC 60947 Part I, II, III/IS 60947 Part I, II, III/EN 50521
6	Junction boxes/Enclosures for Charge controllers/ Luminaries	IP 65(for outdoor) IP 21 (for indoor) As per IEC 529
7	Cables	IEC 60227/IS 694 IEC 60502/IS 1554 (Part I & II)

4. SOLAR PHOTO VOLTAIC MODULES

The PV modules used should be made in India.

The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC61730 Part-2 requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.

i). For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701

ii). The total solar PV array capacity should not be less than allocated capacity (40KWp, 15KWp) and should comprise of solar crystalline modules of minimum 250 Wp.. Module capacity less than minimum 250 watts shall not be accepted.

iii). Adequate protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.

iv). PV modules must be tested and approved by one of the IEC authorized test centers.

v). The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.

vi). The bidder shall carefully design & accommodate requisite number of the modules to achieve the rated power in his bid. Client shall allow only minor changes at the time of execution.

vii). Other general requirement for the PV modules and sub systems shall be as per the following:

a). The rated output power of any supplied module shall have tolerance of +/-3%.

b). The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

c). The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of bypass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.

d). I-V curves at Standard Testing Condition should be provided by bidder.

Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).

i) Name of the manufacturer of the PV module
ii) Name of the manufacturer of Solar Cells.
iii) Month & year of the manufacture (separate for solar cells and modules)
iv) Country of origin - India(separately for solar cells and module)
v) I-V curve for the module Wattage, Im, Vm and Film Factor for the module
vi) Unique Serial No and Model No of the module
vii) Date and year of obtaining IEC PV module qualification certificate.
viii) Name of the test lab issuing IEC certificate.
ix) Name of the test lab issuing IEC certificate.
viii) Other relevant information on traceability of solar cells and module as per ISO 9001and ISO 14001

5. MOUNTING STRUCTURE

Hot dip galvanized MS mounting structures may be used for mounting the modules/panels/arrays. Minimum thickness of galvanization should be at least 120 microns.

Each structure should have angle of inclination as per the site conditions to take maximum insulation. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.

The mounting structure shall be so designed to withstand wind velocity as per the local meteorological conditions or 185 Km/hr whichever is more. The structural design for mounting of solar panels shall be approved by qualified structural engineer and a certificate duly signed by the qualified structural engineer in this regard shall be submitted by the contractor to the Engineer-in-charge before start of installation. Suitable fastening arrangement such as grouting and clamping should be provided to strengthen the firmity of the installation against the specific wind speed.

The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS:4759.

Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, and nuts and bolts. Aluminum structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.

The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

Regarding civil structures the bidder need to take care of the load bearing capacity of the soil and need arrange suitable structures based on the quality of soil.

The total load of the structure (when installed with PV modules) on the land should be less than 75 kg/m^2.

The minimum clearance of the structure from the ground level should be 300 mm for ground and 100 mm for shade.

6. JUNCTION BOXES (JBs)

The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands. Provision of earthings. It should be placed at 5 feet height or above for ease of accessibility.

Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

All fuses shall have DIN rail mountable use holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

7. DC DISTRIBUTION BOARD:

DC Distribution panel to receive the DC output from the array field.
DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

8. AC DISTRIBUTION PANEL BOARD:

AC Distribution Panel Board (DPB) shall control the AC power from PCU/inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid connected mode.

All switches and the circuit breakers, connectors should confirm to IEC:60947, part I, II and III/ IS60947 part I, II and III.

The changeover switches, cabling work should be undertaken by the bidder as part of the project.

All the Panels shall be metal clad, totally enclosed, rigid, free standing, floor mounted, air-insulated, cubical type suitable for operation on three phase / single phase,415 or 230 volts, 50 Hz

The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.

Should conform to Indian Electricity Rules/ Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulation 2010.

All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

Variation in supply voltage: +/- 10 % Variation in supply frequency: +/- 3 Hz

9. PCU/ARRAY SIZE RATIO:

The combined wattage of all inverters should not be less than rated capacity of power plant under Standard Testing Condition.

Preferably maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

10. PCU / INVERTER:

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)". Preferably, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be DG set interactive, if necessary. Inverter output should be compatible with the grid frequency.

Three phase PCU/ inverter shall be used with each power plant system (10kW and/or above) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

The output power factor of PCU inverter should be suitable for all voltage ranges or sink of reactive power. Inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightening on feeder.

Built-in meter and data logger to monitor plant performance through external computer need to be provided.

Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.

The PCU/ inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.

The power conditioning units / inverters should comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2(1,2,14,30)/Equivalent BIS Std.

The MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

The PCU/ inverters should be tested from the MNRE approved test centers /NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

11. BATTERY BANK for 15 KWp solar grid connections:

The battery Bank of the solar system shall be flooded electrolyte VRLA type tubular Gel low maintenance batteries. The Performance Warranty of the Battery Bank should not be less than 5 (Five) Years. In case any battery gets defective, during the warranty period of five years the firm will have to replace the same with new one free of cost.

The battery of reputed Indian tested by Central Electro-chemical research laboratory, CECRI, Tamilnadu or authorized test centre of MNRE) shall only be used. The batteries should conform to IS 1651. A copy of the relevant test certificate for the battery should be furnished. The firm will submit an undertaking along with IEC certificate from the manufacturer of the battery that the batteries supplied are warranted for a period of five years.

Main features of the battery (as applicable)

- The batteries shall comprise 2V or 12 V or any other volt Cells which suits the system with suitable capacity at C10 rate.
- Battery shall have a design life expectancy of >5 years at 50% DOD at 27°C.
- Battery terminal shall be provided with covers, links and inter connecting nut bolts and cables as per required capacity.

- Suitable carrying handle shall be provided.
- Batteries shall be provided with micro porous vent plugs & acid level indicator.
- Terminals: Of lead alloy, suitable for bolted connection.
- Recharge ability: at very low rates charging rates as low as 0.05% of the normal charging current.
- High charging efficiencies: Ah efficiency; In excess of 90%.
- Low rate of self discharge: less than 3% per month at 27°C.
- Capacity to sustain partial state of charge should with stand partial state of charge up to six months.
- Very Low maintenance.
- Service life of 8 -10 years under normal operating conditions.

Battery Rack:

A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank. Battery interconnecting links shall be provided for interconnecting in series and in parallel as per requirement. Connectors for inter cell connection (series/parallel) shall be maintenance free screws. Insulated terminal covers shall be provided.

12. INTEGRATION OF PV POWER WITH GRID:

The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service, PV system shall again be synchronized with DG supply and load requirement shall be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG power connection need to be provided.

13. DATA ACQUISITION SYSTEM / PLANT MONITORING:

Data Acquisition System shall be provided for the solar PV plant.

Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC, Metering and Instrumentation for display of systems parameters and status indication to be provided.

Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with read out integrated with the data logging system.

The following parameters are to be made accessible via the operating interface display in real time separately for solar power plant:

- AC Voltage.
- AC Output current.
- Output Power
- Power factor.
- DC Input Voltage.
- DC Input Current.
- Time Active.
- Time disabled.
- Time Idle.
- Power produced/ Units Generated
- Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency, ground fault, PV starting voltage, PV stopping voltage).

All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.

Solar Meter: Energy Meters to log the actual value of Energy generated by the PV system be provided. Energy meter with CT/PT should be of 0.5 accuracy class.

Computerized DC string monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.

String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.

Computerized AC energy monitoring shall be in addition to the solar meter.

The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.

All instantaneous data shall be shown on the computer screen.

Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.

Provision for instantaneous Internet monitoring and download of historical data shall also be incorporated.

Remote Server and Software for centralized Internet monitoring system shall also be provided for download and analysis of cumulative data of all the plants and the data of the solar irradiation and temperature monitoring system.

Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.

Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.

Remote Monitoring and data acquisition through Remote Monitoring System software at the owner with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier. Provision for interfacing these data on client's server and portal in future shall be kept.

Client shall arrange SIM for remote monitoring. The usage bill/recharging of the SIM shall also be paid by Client.

The bidder shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably.

14. METERING:

The bi-directional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy.

The bidder must co-ordinate for taking approval/NOC from the concerned supply company for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to client before commissioning of SPV plant. However any expenditure carried out for seeking approval viz. deposition of fee, form cost etc. shall be borne by the client.

Reverse power relay shall be provided by bidder (if necessary), as per the local supply company requirement.

15. POWER CONSUMPTION:

Regarding the generated power consumption, priority needs to be given to internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of client. Decisions of appropriate authority like supply company/Regulatory authority of the site may be followed.

16. PROTECTION:

The system should be provided with all necessary protections like earthing, Lightening, and grid islanding as follows:

17. LIGHTENING PROTECTION:

The SPV power plants shall be provided with lightening & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightening, atmosphere disturbances etc The entire space occupying the SPV array shall be suitably protected against Lightening by deploying required number of Lightening Arrestors. Lightening protection should be provided as per IEC62305 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

18. SURGE PROTECTION:

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement)

19. EARTHING PROTECTION:

Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lightning arrester/masts should also be earthed inside the array field. PCU, ACDB and DCDB should also be earthed properly. Earthing work which includes construction of new earth pits and earthing connections shall be provided by the bidder.

NO. OF EARTHING:

GI Plate earthing shall be provided as per the following quantity:

For AC Surge Protection/ DC Surge Protection/ Lightning Arrester - 3 Nos for 40KWp and 3Nos for 15KWp

For Body Earthing - 2Nos for 40KWp and 2Nos for 15KWp.

20. GRID ISLANDING:

a). In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-connected equipment. The PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

b). A manual disconnect 4pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

21. CABLES:

Cables of appropriate size to be used in the system shall have the following characteristics:

- Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- Temp. Range: –10°C to +80°C.
- Voltage rating 660/1000V
- Excellent resistance to heat, cold, water, oil, abrasion, UV radiation

- Flexible
- Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- For the DC cabling, XLPE or XLPO insulated and sheathed, UV- stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.
- For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core multi-stranded flexible copper cables shall be used; Outdoor AC cables shall have a UV-stabilized outer sheath.
- The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. Outer sheath of cables shall be electron beam cross-linked XLPO type and black in colour.
- Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm2 copper; the minimum AC cable size shall be 4.0 mm2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
- Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.
- The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/ layout drawings should be incorporated in O & M Manual.
- Multi Strand, Annealed high conductivity copper conductor PVC type ‘A’ pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/equivalent BIS Standards as specified below:
  BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 150 V,UV resistant for outdoor installation IS /IEC 69947.
- The size of each type of DC/AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

22. CONNECTIVITY

- The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified by the Supply Company/regulatory authority for Grid connectivity and norms of Supply Company and amended from time to time.
- The maximum permissible capacity for PV system shall be 1 MW for a single net metering point.
- Utilities may have voltage levels other than above, supply company may be consulted before finalization of the voltage level and specification be made accordingly

- For large PV system (Above 50 kW) for commercial installation having large load, the solar power can be generated at low voltage levels and stepped up to 11 kV level through the step up transformer. The transformers and associated switchgear would require to be provided by the SPV bidders.

23. TECHNICAL DETAILS

i.Technical Details of Solar Panel

- Solar Panel of the capacity of minimum 250Wp
- High Conversion Efficiency
- Low Mismatch Losses
- Excellent performance over the span of 25 years life.

ii.Technical Details of Battery Bank

- Tubular VRLA : 12V or 2V cells or any other volt rating which suits the system
- Nominal Capacity : suitable for 12 hour power backup for existing 40 watts X 300 Nos. LED Solar street lights
- Charge Efficiency : > 90%
- Self-discharge : < 4% under STC (Standard Test Conditions)
- Cyclic Time : High
- Operating : 0°C to 60°C
- No Thermal Runaway
- Lead plated copper terminals for high conductivity

iii.Technical Details of Charge Controller Unit

- Controller :PWM (Pulse Width Modulator) type Microprocessor Based controls
- Charging : 3 stage – Boost, Float & Equalization
- Efficiency : > 95%
- Ideal current less : < 10mA
- DC : 42-52 V
- Charging Current Capacity : 5A to 60A
- Protections : Overcharge, Reverse Polarity, Short Circuit, Over Current, Deep discharge
- Indications : Charging, Full Charge & Low battery
- Optional Features :Inbuilt Load Controller for DC loads, RS 232 Compatibility

iv.Technical Details of Inverter

- Switching devices : IGBT/MOSFET
- Controller : Microprocessor based PWM (Pulse Width Modulation) / DSP
- Nominal AC output : 415V, 3 Phase, 50 Hz(Suitable arrangement voltage and frequency for balancing the load in each phase must be made)
- Grid Voltage tolerance : - 20% & + 15 %
- Grid Frequency Synchronization range : + 3 Hz or more
- Grid Frequency Tolerance range : + 3 Hz or more

- Ambient temperature considered : -20° C to 50° C
- Humidity : 95 % Non-condensing
- Protection of Enclosure : IP-20(Minimum) for indoor and IP-65(Minimum) for outdoor.
- Output Voltage Regulation : ± 2%
- Inverter efficiency : >93% (In case of 10kW or above with in-built galvanic isolation) and >97% (In case of 10kW or above without in built galvanic isolation)
- Total Harmonic Distortion(THD) : < 3%
- No-load losses : Less than 1% of rated power
- PF : > 0.9
- High Overload Capability at switching.
- Better tolerance for Battery DC Volts
- Minimum Acoustic Noise
- Protections: Overload, Low Battery, Short circuit, Surge, Reverse polarity,
- Optional Features - Digital Display, Alarms
- Islander type with DG and / or Grid inter phase
- Pure Sine Wave output

v.Technical Details of Panel Mounting Structure & Accessories

- Fabricated with Angles, Channels, Round & Rectangle Pipes
- MS with Hot Dip Galvanized coating
- Designed suitable for Easy transportation & installations at site
- Sturdy designs suitable to any worst climatic conditions
- Cables, Distribution box, Junction Box, Switches, MCB, ELCB, Glands, Hardware As per ISI standards.

vi.Constructive Characteristics of Solar Panel

- Cells : Poly-crystalline silicon cells
- Contacts : Full length solder dipped & Electroplated
- Laminate : EVA (Ethyl Vinyl Acetate)
- Front Face : Anti-reflective structured tempered glass
- Back Face : Multi-layer laminate of Tedlar material
- Frame : Anodized aluminum
- Junction boxes : IP 65 class
- Cables and connectors : 2 core PVC Insulated Cable
- Diodes: Includes schott: key by-pass diodes

Testing of samples may be done / test certificate may be produce

FORMAT-A

A. Details of after sale service centres existing in the state

Sl No	Name of Dealer/Centre	Village	Tehsil	District	Name of contact person & phone No:

SIGNATURE & SEAL OF TENDERER

B. Details of after sale service centers proposed in the state

Sl No	Name of Dealer/Centre	Village	Tehsil	District

Note: 1. Final details can be given later on.
2. This is for information purpose only.

SIGNATURE & SEAL OF TENDERER

FORMAT-B

FORMAT OF INSTALLATION CERTIFICATE

RST No: CST No: TIN No:	M/s..... . Address:	Phone No: Fax No: e-mail :

INSTALLATION CERTIFICATE
Date of Installation:
Name of Beneficiary: .....
Address of Place of Installation:.....
Name of City:....., Tel.No: ...../Mobile No: .....
Certified that .....kW PV Capacity SPV Roof Top/ Ground mounted Gird connected Power Plant in reference
to DOP Agreement No:.....Dated:..... issued vide letter No: ..... Dated: .....has been installed and commissioned at the place mentioned and taken over the system by beneficiary in good working condition: The details of material supplied and installed are as under :

Sl No	Item	Make & Capacity of	Quantity	Serial No.
1	SPV Module of . Wp each			
2	Charge Controller/Invertor			
3	Invertor/PCU			
4	Module Stand			
5	Cable			
6	Lightening Arrestor			
7	Surge Protection device			
8	Other items.....			

Signature of Beneficiary: Signature of representative of Firm/dealer who installed the system
(Name:.....)

Signature of Firm’s authorized Person with seal.

DOP verification

Note: RST/CST/TIN no. Should be printed or stamped properly.

FORMAT-C

Declaration of material proposed for supply under this programme By the Tenderer:

Sl No	Details of Products/material proposed for supply of different models:	Make	Tested from { Enclose the test certificate}

SIGNATURE OF AUTHORISED SIGNATORY WITH SEAL

ANNEXURE –'C'

CEMENT CORPORATION OF INDIA LTD.
TANDUR CEMENT FACTORY

Ref: Date:

PRICE BID

Sub: - Tender for Design, Supply, Installation, Testing and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System and 15KWp Solar Photo Voltaic Grid connected System with battery backup for 12 hour for Township and Township street light application respectively at Cement Corporation of India limited, Tandur, Vikarabad, Telangana.

Ref: - Tender No. TCF/ELECT/01(A/D)/2020-21 Dated: 19.08.2020.

SL. NO.	Description	Qty.	Unit	Basic Rate / Each	Total Amount	GST Rate in %	Total Value Including GST (₹)
	a	b	c	d	e	f	g (d+e)x(1+f)
1	Design, Supply, Installation, Testing, and Commissioning of 40 KWp Solar Photo Voltaic Grid connected System for Township comprising of SPV modules, mounting structure, PCU, cabling, earthing etc all complete as per technical specification including packing, forwarding, transport, delivery at site, Installation, testing and commissioning of the 40KWp SPV power plant including all accessories as per technical specification.	01	Set.				
2	Design, Supply, Installation, Testing, and Commissioning of 15 KWp Solar Photo Voltaic Grid connected System with 12 hours battery backup for Township street light application comprising of SPV modules, mounting structure, battery bank with rack, PCU, cabling, earthing etc all complete as per technical specification including packing, forwarding, transport, delivery at site, Installation, testing and commissioning of the 15 kWp SPV power plant including all accessories as per technical specification.	01	Set.				
	GRAND TOTAL AMOUNT						

TOTAL AMOUNT IN WORDS: ₹ _____

SIGNATURE OF TENDERER
WITH SEAL

PLACE:

DATE: