CEMENT CORPORATION OF INDIA LIMITED

(A Govt of India Enterprises)

Core-5,Scope Complex,7-Lodhi road,New Delhi-110003

CIN-U74899DLI965GOI004322

E-Mail: gmnou_co@cciltd.in
Website:www.cciltd.in

NIT NO.:GM(NOU)/ADO/SOLAR SYSTEM/2024-25 **Date: 02.09.2024**

NOTICE INVITING E-TENDER (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 5 KWp Solar Photo Voltaic Off Grid System with battery backup for 12 hour for Factory and Township street light application respectively at Cement Corporation of India limited, Adilabad unit (NOU), Telangana.**

The complete set of tender documents is available on websites www.cciltd.in, www.etenders.gov.in/eprocure/app.

E-TENDERNO.	**GM(NOU)/ADO/Solar system/2024-25**
MODE OF TENDER	e-Procurement System (On line Part A-Techno-Commercial Bid and Part B-Price Bid)through **www etenders.gov.in/eprocure/app**
Date of NIT available to parties to download	**From 02.09.2024 (15.00hrs.)Till 17.09.2024 (14.30hrs.)**
Earnest Money Deposit -Exempted for MSEs (Micro and small firms registered with NSIC/MSME)	Rs.12000/-(Twelve 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	**17.09.2024 (15:00hrs.)**
Date of Starting of e-Tender for submission of on line Techno-Commercial Bid and Price Bid at www.etenders.gov.in/eprocure/app	**From 02.09.2024 (15:00 hrs.)** **Till 17.09.2024 (15:00hrs.)**
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 separate	**18.09.2024 at 15.30 hrs.** To be communicated separately.
Validity of bids	120 days from the date of the techno-commercial bid opening.

SCHEDULE OF WORK:-

NIT No.	Name of the item
GM(NOU)/ADO/Solar System/2024-25	Design, Supply, Installation, Testing and Commissioning of 5 KW Solar Photo Voltaic Off Grid System with battery backup for 12 hour for Factory and Township street light application respectively at Cement Corporation of India limited Adilabad (NOU), 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.

4) Vendor must visit CCI website and go through the General Terms & conditions(GTC) of the contract, upload. The tender section of our web site. The Venders are advised to understand GTC and successively submit the various Annexures as given in the attached check list, as a token of their acceptance of the same.

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/JobsIn 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 threeYears.
Annexure-9	Declaration Letter Of Having Read and Understood the GTC
Annexure-X	**Part-I-Instruction to Bidders, Part-II-General terms & conditions ,Integrity pact which is available in CCI website Must be submitted by bidders duly filled & signed.**
Annexure-XI	Part-III-Special terms & Conditions for Off Grid SPV System.
Annexure-XII	Techno Commercial Bid Proforma
Annexure-XIII	Part-IV-Technical Specification for Off Grid SPV System.
Annexure-XIV	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 withAnnexure-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 www.etenders.gov.in/eprocure/App.

You are requested to read the tender terms & conditions (**Annexure: I to VII)** 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 Tender wizard 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. Service provider 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.etenders.gov.in/eprocure/app

Vendors are required to register themselves online with www.etenders.gov.in→ '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/service provider,(before the scheduled time of the e-tender).

Contact person (Cement Corporation of India):

<table>
<tr><th>Name</th><th>Email</th><th>Mobile</th></tr>
<tr><td>Mr M.K.Upadhayay - GM(NOU)</td><td>gmnou_co@cciltd.in</td><td>8319779700</td></tr>
<tr><td>Mr Ashish Sharma- Sr Manager</td><td>ashishsharmajk@rediffmail.com</td><td>9411141208</td></tr>
<tr><td>Ms Bibha Kumari- Manager</td><td>bibhakumari@cciltd.in</td><td>8368737506</td></tr>
</table>

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/guide line shall be taken.</td></tr>
<tr><td>3</td><td>All entries in the tender should be entered in on line Technical & Commercial Formats without any ambiguity.</td></tr>
</table>

4	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

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 down loading 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 thee-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 can not 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.etenders.gov.in/eprocure/app of NIC.
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.etenders.gov.in to familiarize themselves with the system before bidding.**

For and on behalf of CCIL td.

GM (NOU)

Annexure-I

(On the letter head of the bidder)

COVERING LETTER

To,
The
(Tendering Authority)
Cement Corporation of India
Limited,
…… (Address of Unit / Corporate Office)

Bidder's Ref No.:

Dear Sir,

With reference to your NIT/ Bid No. ……. Dated ,
I/We am/are hereby uploading the scanned copies of the following documents online for your reference:

S.No.	Item	Yes/No/NA
1	Scanned copy of covering letter (Annexure-1)	
2	Submission of EMD (NEFT/ RTGS)	
3	Copy of GST Registration Certificate	
4	Partnership Deed/ Memorandum & Article of Association	
5	Copy of PAN Card	
6	Scanned Copy of duly filled and signed Integrity Pact (Annexure-2)	
7	Udyog Aadhar Number (For MSME bidders)	
8	Declaration of relation to officer of CCI (Annexure-3)	
9	unexecuted / present contracts / jobs in hand (Annexure-4)	
10	Bidder's firm/company profile (Annexure-5)	
11	Details of plant & machinery installed (Annexure-6)	
12	Details of testing facilities installed (Annexure-7)	
13	Details of orders executed including CCI during the last three years (Annexure-8)	
14	Declaration letter of having read and understood the GTC (Annexure-9)	

Yours faithfully,

(SIGNATURE OF THE TENDERER WITH SEAL)

ANNEXURE–XI

CEMENT CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

PART-III: SPECIAL TERMS AND CONDITIONS FOR OFF GRID 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 & Annexure-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 Off Grid system. These special terms and conditions if contradictory to any of the conditions given in Part-I, II & III shall prevail upon the conditions.

Scope of work covers Design, Supply, Installation, Testing and Commissioning of 5 KWp Solar Photo Voltaic Off Grid System with battery backup for 12 hours for Factory (non-operational) and Township street light application respectively at Cement Corporation of India limited, Adilabad, Telangana. Confirming to technical specification enumerated in relevant JNNSM guidelines amended up to date.

Detailed scope of work is given here under:-

1. Work of installation of Off Grid SPV System:

Preparation of Detailed Project Report (DPR) for the proposed SPV Power Plant by the bidder. Design, supply, storage, civil work, erection, testing and commissioning of SPV Off Grid Power Plant.

2. Project Cost

The Project cost shall include all the costs related to 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. No escalation will be granted for any reason whatsoever. 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 whatsoever.

The maintenance of Solar Photo Voltaic Power Plant would include warranty against machine breakdown and replacement of defective modules, invertors / Power Conditioning Unit (PCU), spares, 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 the bidder.

3. Metering of Power:

The bidder to whom the work is awarded shall bear the entire cost of metering arrangement provided including its accessories. 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 meter commissioning, proper completion and maintenance and guarantee of the work if required. Nothing extra shall be paid on this account.

3. Plant Performance Evaluation:

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) (more than 75) at the time of commissioning and related Capacity Utilization Factor (CUF) (approx.. 17%) as per the DNI level for the location during the warranty period.

4. EARNEST MONEY DEPOSIT(EMD)

EMD for this tender is Rs. 12000/- (Rupees Twelve Thousand only) to be submitted as per clause no.1.1 to 1.5 of part-II general terms and conditions.

- **Beneficiary Name: Cement Corporation of India Limited**
- **Beneficiary Account Number : 72870200000040**
- **IFSC Code : BARB0DBSCOP**
- **Branch & Bank Name: Bank of Baroda , Core VI, SCOPE COMPLEX, NEW DELHI- 110003**

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 with in stipulated period.
c) If the successful tenderer fails to start the work as per the prescribed time frame.

5. Formats and signing of tender

The tender must be signed and sealed by the Bidder with his usual signature on all the parts. 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.

6. General Site Information:

Adilabad Cement factory is a non-operating Unit of Cement Corporation of India Limited and it is non-operational since long back. No electric supply is available there. **One DG Set is operational there which needs to be kept in the circuit for the time of need.**

It is understood that before quoting the rates, the bidder may visit 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".

7. 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 CCI.

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 within 15 days of issue of Work Order. The bidder shall submit a soft copy of the final drawing in CD/pendrive for formal approval to proceed with construction work.

8. Civil Works:

Expenses for the same will be in the scope of the contractor, if required. The bidder has to decide for the same during the site inspection. Civil work shall be considered by the bidder during submission of Price Bid.

9. 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 startup, disconnection and shut down 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 and power factor.

A Factory Test Report (FTR) shall be supplied to the unit after all tests.

10. Tools & Tackles and Spares:

After completion of installation & commissioning of the power plant, necessary tools & tackles are to be used free of cost by the bidder for maintenance purposes.

A list of requisite spares in case of PCU/inverter consisting of a set of control logic cards, IGBT driver cards etc. Junction boxes. Fuses, MOVs /arrestors, MCCBs etc along with spare sets of PV modules be indicated, which shall be supplied along with the equipment or can be maintained at supplier end.

11. 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.

12. 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.

Approved ISI and reputed makers of equipment 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

13. Documents 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. Item Wise bill of material for complete SV plant covering all the components and associated accessories.

v. Lay out of solar Power Array

vi. Shadow analysis of the location.

14. Safety measures:

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

15. Warranty:

a. Material Warranty:

i) 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.

16. Duration of the contract:

The duration of the Contract work is to be completed within 08 Weeks from the date of issue of Work Order.

17. 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 a guarantee period of 05 years (2% x 5 = 10%).

TDS on Income & 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.

18. Liquidated damages:

Liquidated damages 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.

19. S.D. Amount:

The successful tenderer shall have to furnish Security Deposit equivalent to 5% (Five percent) of the value of the contract including taxes & duties by way of Demand Draft / Bank Guarantee (in CCI format to be provided by CCI) in lieu of Clause 2.0 of PART – II of the tender towards satisfactory performance of the contract within 15 days from the date of award of the work order to our Corporate Office.

In case the tenderer fails to submit SD within 15 days without any genuine reason, the tender will be canceled and will be refloated.

This Security Deposit shall be refunded within 6 months from the date of satisfactory completion of the Installation and on production of Unconditional No Claim Certificate by unit representative.

20. 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 rule

Annexure-XII

Cement Corporation of India Limited (A Govt. of India Enterprise)			
Adilabad Cement Factory, CCI-Adilabad(NOU), Telangana State, PIN - 504001			
Techno-Commerical Bid			
NIT No.: ADO/GM(NOU)/Solar system/2024-25			
Tender For design,supply,Installation,Testing and Commissioning of 5 KWp solar photovoltaic Off Grid system			
S N	**PARTICULARS**	**Please fill all this from I to VI**	**Remarks**
I	**Name of the Firm**		
II	**Postal Address**		
III	**Contract No. With STD Code.**		
IV	**Name of Contract person**		
V	**Mobile No.**		
VI	**e-mail ID**		
	The following documents duly filled in, signed digitally and stamped are up-loaded on-line through www.cci-etender.com with in the period of submission	Please select criteria Submitted/ Not submitted and Accepted/ Not Accepted or specify	Remarks
1	The scanned copy of covering letter (Annex 1)		
2	Payment of EMD of ₹ 12000/-(Rupees twelve Thousand only) through e-payment.		
3	Submit MSME certificate In case the tenderer is MSME registered party.		
4	Details of experience to be submitted with proof.		
5	Integrity pact duly signed digitally & Stamped on each page in token of acceptance of the same in its entirety. (Available in CCI website) (Annex 2)		
6	Valid Registration Certificate duly issued by Labour Department (If deployed manpower exceeds 20 or more)		
7	Copy of FSSAI registration Certificate		
8	Copy of Partnership Deed/ Memorandum of Article of Association by partnership firms/ companies duly attested. In case of partnership deed, the same is registered/ not registered.		
9	Valid PF Registration letter issued by authority (Asst. PF Commissioner, TS) (if applicable, to those who have valid labor license)		
10	Valid ESI Registration letter issued by authority (Dy.Director for ESIC) (if applicable, to those who have valid labor license)		
11	Scanned copy of the PAN card in the name of the company. (In case of a proprietary firm it can be in the name of the proprietor).		
12	Valid GST Registration No.		
13	Confirm acceptance of Security deposit clause of the Tender/ enquiry in your techno commercial bid.		
14	Certificate whether any officer of your Corporations related to me/ us or not (Annex 3)		
15	List of unexecuted order in hand (Annex 4)		
16	Additional information to be furnished (Annex 5)		
17	Details of order executed during the last 3 years (Annex 8). The copies of orders to fulfill the eligibility criteria are enclosed.		
18	Declaration letter duly signed (annex 9)		

ANNEXURE–XIII

CEMENT CORPORATION OF INDIA LTD.

(AGovernment of India Enterprise)

PART-IV-TECHNICAL SPECIFICATION FOR OFF GRID SPV SYSTEM

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

1. Requirement:

Solar PV modules consisting of the required number of Crystalline PV cells. DG Set Interactive Power Conditioning Unit with Mounting structures Junction Boxes.

Earthing and lightning protections.

IR/UVprotected PVC Cables, pipes and accessories

APPLICATION:

1) 5 KWp solar power grid is for operation of existing township street light fittings of capacity with 20 watts of 70 nos. and 80 watts of 04 nos. with battery backup of minimum 12 hours.

2. PERFORMANCE SPECIFICATIONS AND REQUIREMENTS

5KWp to be installed for street light application. Under the "Average Daily Solar Radiation " condition of 7.15 kWh /sq.m. (approx) 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 the required number of Crystalline PV modules.
ii. Power Conditioning Unit with Remote Monitoring System.
iii. Mounting structures.
iv. Junction Boxes.
v. DC distribution board
vi. AC distribution panel board
vii. PCU/Inverter
viii. Battery Bank
ix. Earthing and lightning 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 Terrestrial PV modules poly/mono	IEC61215/IS 14286
2	Solar PV module safety qualification requirements	IEC51730(P1-P2)

3	PV modules to be used in a highly corrosive atmosphere (Coastal area etc) must qualify Salt Mist corrosion testing	IEC61701/IS 61701
4	Earthing	IS3043: 1986/1987
5	Switches/Circuit breakers/Connectors	IEC60947PartI,II,III/IS60947 Part I, II, III/EN 50521
6	Junction boxes/Enclosures for Charge controllers/ Luminaries	IP65(for out door) IP21(for indoor)Asper IEC 529
7	Cables	IEC60227/IS694IEC60502/IS1554 (Part I&II)

4. SOLAR PHOTOVOLTAIC 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 (5 KWp) and should comprise of solar crystalline modules of minimum 150 Wp. Module capacity less than minimum 150 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 the requisite number of the modules to achieve the rated power in his bid. Clients 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.

viii) Other relevant information on traceability of solar cell sand module as per ISO 9001and ISO 14001

ix) The PV module shall perform satisfactorily in humidity up to 100% with temperature between -10 ^{0}C to + 55 ^{0}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 provided.

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. Suitable fastening arrangements 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 with 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.

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 needs to take care of the load bearing capacity of the 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 a 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 Off Grid 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 change over switches, cabling work should be undertaken by the bidder as part of the project.

All the Panels shall be metalclad, 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

All in door panels will have protection of IP54 or better. All out door 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: +/-3Hz

9. PCU/ARRAY SIZE RATIO:

The combined wattage of all inverters should not be less than the 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:

The PCUs required shall be of 5 KVA with provision for battery back-up. The 5 KVA Hybrid PCU with battery back- up shall feed power to the lighting / dedicated loads.

Common Technical Specification:

Control Type	: Voltage source, microprocessor assisted, output regulation
Output voltage	: 1 phase, 230 V ac (+12.5 %, - 20 % V ac)
Frequency	: 50 Hz
(+3 Hz, -3 Hz) Continuous rating	: 5 KVA
Hybrid inverter Nominal Power	: 5 KVA
Total Harmonic Distortion	: less than 3%
Operating temperature Range	: 0 to 55 deg C

Housing cabinet : PCU to be housed in suitable switch cabinet, Within IP 20 degree of ingress protection

PCU efficiency : 94 % and above at full load,

Power Control : MPPT

Other important Features/Protections required in the PCU:

- Mains (Grid/DG Set) over-under voltage and frequency protection
- Full proof protection against Islanding.
- Included authentic tracking of the solar arrays maximum power operation voltage (MPPT).
- Array ground fault detection.
- Automatic fault conditions reset for all parameters like voltage, frequency and/or black out
- MOV type surge arresters on AC and DC terminals for over voltage protection from lightning-induced surges.
- PCU should be rated to operate at 0 -55 deg. Centigrade unless provision for air conditioning is included in PCU
- Over load capacity (for 10 sec) should be 150% of continuous rating.

I. The PCU 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 Hybrid PCU shall be self-commuted and shall utilize DSP technology to meet the specifications listed above at high conversion efficiency and with high reliability.

II. Since the PCU is to be used in solar photovoltaic energy systems, it should have high operational efficiency. The DC to AC conversion efficiency shall at least be 94 percent for output ranging from 20 percent of full load to full load. The idling current at no load must not exceed 2 percent of the full-load current.

III. The PCU output shall be 230 VAC, 50 Hz, 1 phase,

IV. The PCU shall be able to withstand an unbalanced output load to the extent of 30 %

V. The PCU shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices.

VI. The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95

lagging below 25 percent of the rated output.

VII. The high voltage and power circuits of the PCU shall be separated from the low-voltage and control circuits. The internal copper wiring of the PCU shall have flame resistant insulation. Use of PVC is not acceptable. All conductors shall be made of standard copper.

VIII. The PCU shall withstand a high voltage test of 2000 V rms, between either the input or the output terminals and the cabinet (chassis).

IX. The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which is located within the facility in which the PCU is housed.

X. The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1% of full scale or better. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

11. BATTERY BANK for 5 KWp :

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 a new one free of cost.

The battery should be of reputed Indian known brand. The batteries should conform to IS 1651.

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.
- Battery shall have a design life expectancy of > 5 years at 50% DOD at 27°C.
- Battery terminals shall be provided with covers, links and interconnecting nut bolts and cables as per required capacity.
- 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.
- Capacity to sustain partial state of charge should withstand partial state of charge up to six months.
- Service life of 8-10 years under normal operating conditions.

12. 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.

13. INTEGRATION OF PV POWER WITH DG SET:

Once the DG set goes out of service the load requirement shall be met to the extent of availability of power in solar system. 4 pole isolation of inverter output with respect to the DG power connection need to be provided, if required.

14. DATA ACQUISITION SYSTEM/ PLANT MONITORING:

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).

15. Solar Meter:

Energy Meters to log the actual value of Energy generated by the PV system be provided. Energy meters with CT/PT (if required) should be of 0.5 accuracy class.

String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 1phase sand lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.

Ambient/ Solar PVn module back surface temperature shall be also monitored on a 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.

16. METERING:

The uni-directional electronic energy meter (0.5 S class) shall be installed
The bidder must co-ordinate for taking approval/NOC from the concerned supply company before commissioning of SPV plant, if required.

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 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

18. SURGE PROTECTION:

Internal surge protection shall be provided.

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.

The sufficient GI Plate earthing shall be provided as per the following :

For AC Surge Protection/ DC Surge Protection/ Lightning Arrester

For Body Earthing

20. DG Set ISLANDING:

a). A manual disconnect isolation switch for DG Set would have to be provided at utility end to switch from DG Set to Solar system and vice versa, for 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/IS694,IEC60502/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 ground, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm^2 copper; the minimum AC cable size shall be 4.0 mm^2 copper as per requirement. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
- All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferrule or by other means so that the cable is 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.
- All the cables required for the plant will be 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.
- 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. TECHNICALDETAILS

i. Technical Details of Solar Panel

- Solar Panel of the capacity of minimum 150 Wp
- High Conversion Efficiency
- Low Mismatch Losses

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 20 watts X 70 Nos. LED Solar street lights and 80 watts X 4 Nos.
- Charge Efficiency :>90%
- Self-discharge :<3% under STC (Standard Test Conditions)
- Cyclic Time :High
- Operating :-10°C to 55°C
- 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 :Over charge, Reverse Polarity, Short Circuit, Over Current, Deep discharge
- Indications :Charging, Full Charge & Low battery
- Optional Features :In built Load Controller for DC loads,

iv. Technical Details of Inverter

- Switching devices : IGBT/MOSFET
- Controller :Micro processor based PWM(Pulse Width Modulation) / DSP
- Nominal AC output : 230V, 50 Hz(Suitable arrangement voltage and frequency for balancing the load in each phase must be made)
- 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%(Incase of 10kW or above with in-built galvanic isolation) and >97% (In case of 10kW or above without in built galvanic isolation)
- No-load losses :Less than1% of rated power
- PF : >0.9
- High Overload Capability at switching.
- Better tolerance for Battery DC Volts
- Minimum A caustic Noise
- Protections: Overload, LowBattery, Short Circuit, Surge, Reversepolarity,
- Optional Features -Digital Display, Alarms
- Islander type with DG and/ or Grid interphase
- 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)
- FrontFace :Anti-reflective structured tempered glass
- Back Face :Multi-layer laminate of Tedlar material
- Frame :Anodized aluminum
- Junction boxes :IP65 class
- Cables and connectors :2core PVC Insulated Cable
- Diodes :Includes schott: key by-pass diodes

FORMAT-A

A. **Details of after sale service centers 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 sales 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:FaxNo: e-mail :

INSTALLATION CERTIFICATE
Date of Installation:
Name of Beneficiary:.....
Address of Place of Installation:.....
Name of City:.....,Tel.No:...../Mobile No:.....
Certified that kWPV Capacity SPV Roof Top/Ground mounted Gird connected Power Plant in reference
To DOP Agreement No:.....Dated:.....issued vide letter No: Dated: . hasbeen
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. W peach			
2	Charge Controller/ Inverter			
3	Inverter/PCU			
4	Module Stand			
5	Cable			
6	Lightning 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 theTenderer:

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

SIGNATURE OF AUTHORIZED SIGNATORY WITH SEAL

ANNEXURE –'C'

CEMENT CORPORATION OF INDIA LTD.
TANDUR CEMENT FACTORY

Ref:Tender no-ADO/NOU/Solar System/2024-25 Date:

PRICE BID

Sub: - Tender for Design, Supply, Installation, Testing and Commissioning of 5 KWp Solar Photo Voltaic Off Grid System with battery backup for 12 hour for Factory (Non Operational) and Township street light application respectively at Cement Corporation of India limited, Adilabad(NOU), Telangana.

SL. NO.	Description	Qty.	Unit	Basic Rate/ Each	GST Rate in%	Total Value Including GST (₹)
2	Design, Supply, Installation, Testing, and Commissioning of 05 KWp Solar Photo Voltaic Off Grid System with 12 hours battery backup for street light in CCI premise 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 5 kWp SPV power plant including all accessories as per Technical specification. **Rate is to be quoted in Lump sum including all expenses as per technical specification , scope of work and terms & condition of the contract.** **Note-Kindly visit the site before quoting the rates.**	01	Set.			

TOTAL AMOUNT IN WORDS:₹_____

PLACE:
DATE

SIGNATURE WITH SEAL