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Name of Work: SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.

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This NIT containing pages 1 to 60 is approved for **Rs.16,12,996/-**

Assistant Engineer (P)
Faridabad Electrical Division,
CPWD, NH-IV, Faridabad

Executive Engineer (E)
Faridabad Electrical Division
CPWD, NH-IV, Faridabad

INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR E-TENDERING FORMING PART OF BID DOCUMENT AND TO BE POSTED ON WEBSITE

The Executive Engineer (E), Faridabad Elect. Division, CPWD, Faridabad on behalf of President of India Invites Online percentage rate bids from **OEM/Specialized agencies/ CPWD enlisted contractors of appropriate class in Building & Roads category** who possess the necessary eligibility criteria / experience for specialized work in the field of **“SITC of Solar Photo Voltaic Power generation system”** in Two bid system i.e eligibility bid and price bid as per eligibility criteria for following works.

S. No.	NIT No.	Name of work & Location	Estimated cost put to tender	Earnest Money	Period of Completion	Last date & time of submission of bids, EMD & other documents as specified in the NIT	Time & date of opening Eligibility bid	Date and time of opening of Price Bid
1	2	3	4	5	6	7	8	
1	83/EE(E)/FED/2026-27	SITC of Rooftop Solar Panel at RRSLS, Sec-56, Faridabad.	Rs. 16,12,996/-	Rs. 32,260/-	2 Months	28-08-2026 upto 03.00 PM	28-08-2026 at 03.30 PM	To be intimated later

- Contractors who fulfil the following requirements shall be eligible to apply. Joint ventures are not accepted. [1(b), 1(c) & 1(d) are not applicable for CPWD enlisted contractors of appropriate class. 1(a) (i), (ii) and 1(e) are applicable for CPWD enlisted contractors also].

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

Three similar completed work of value not less than 40% of estimated cost put to tender.

OR

Two similar completed work of value not less than 60% of estimated cost put to tender.

OR

One similar completed work of value not less than 80% of estimated cost put to tender.

Similar work shall means work of **“SITC of Solar Photo Voltaic Power generation system”**.

The values of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to previous day of last day of submission of tenders.

- (b) Should have Average annual financial turnover on above works should be at least 30% of the estimated cost put to tender during the last three years ending 31/03/2026 (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded). The value of annual turnover figures shall be brought to the current value by enhancing the actual turnover figures at simple rate of 7% per annum.
- (c) Should not have incurred any loss (profit after tax should be positive) in more than two years during available last five years ending 31/03/2026.
- (d) Should have a Banker's Certificate from a commercial Bank for Rs. 40% of the estimated cost put to tender (ECPT) or Net worth certificate from certified Chartered Accountants with Unique Document Identification Number (UDIN) of minimum 10% of the estimated cost put to tender. (Scanned copy of original to be uploaded).
- (e) Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula:

$$\text{Bidding Capacity} = \{[A \times N \times M] - B\}$$

Where,

A = Maximum turnover in construction works executed in any one year during the last seven years taking into account the completed as well as works in progress. The value of annual turnover shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited. The value of N shall be taken as 1 (one), where the completion period is less than one year.

M = Multiplying factor, the value for this work is 1.5.

B = Value of existing commitments of ongoing works during the period of execution of work for which bids have been invited.

2. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
3. Information and Instructions for bidders posted on website shall form part of bid document.
4. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen in the office of Executive Engineer (Elect.) Faridabad Elect. Division, CPWD, Faridabad on all working days between 11.00 AM to 4.00 PM except Sunday and public holidays and downloaded from website <https://etender.cpwd.gov.in> free of cost.
5. But the bid can only be submitted after deposition of original EMD either in the office of **Executive Engineer (Elect.), Faridabad Electrical Division, CPWD, Faridabad** inviting bid or Division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned document such as Insurance surety Bonds, Account Payee Demand Draft or Bankers Cheque or Fixed Deposit Receipt or / and Bank guarantee (A part of earnest money is acceptable in the form of bank guarantee also. In such case, 50% of earnest money or Rs. 20 lakh, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee) from any of the Commercial Banks towards EMD in favour of **Executive Engineer (Elect.), Faridabad Central Electrical Division, CPWD, Faridabad** receipt for deposition of original EMD to Division office of any Executive Engineer, CPWD including NIT Issuing EE / AE, CPWD and other document as specified.
6. Those contractors who are not registered or have updated their profile on the website mentioned above, are required to get registered / update their profile beforehand. The necessary training materials including the

videos with step to step process are available on download section of <https://etender.cpwd.gov.in>.

7. The intending bidder must have valid Class-III digital signature certificate with encryption key (combo type) to perform any operation / transactions on the e-tendering portal / website and the bidder should download and install the eMSigner on their system as per instructions available on download section of <https://etender.cpwd.gov.in>.
8. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
9. Contractor can upload documents in the form of JPG format and PDF format.
10. Certificate of Financial Turn Over: At the time submission of bid contractor may upload Affidavit/ Certificate from CA mentioning Financial Turnover of last 7 years or for the period as specified in bid document and further details if required may be asked from the contractor after opening of technical bids. There is no need to upload entire voluminous balance sheet.
11. Contractor must ensure to quote percentage rate of works component as given in template. The column meant for quoting percentage rate in figures appears in yellow colour and the moment rate is entered, it turns sky blue.

In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

However, if tenderer does not quote any percentage above or below on the total amount of the tender or any section / sub head in percentage tender, the tender shall be treated as invalid and not consider lowest tender.

12. The technical bid shall be opened first on due date and time as mentioned above. The time and date of opening of financial bid of contractors qualifying the technical bid shall be communicated to them at a later date.

The decision of rejection of technical bid alongwith reasons of rejections shall be uploaded on ERP portal by tender inviting authority. The aggrieved bidder can make appeal against the decision, on ERP portal within 48 hours of uploading of decision of rejection of technical bid. After receipt of appeal from the aggrieved bidder, the tender inviting authority shall upload the decision on the appeal preferably within 3 working days and in no case the financial bid shall be opened without disposal of appeal and uploading the same on ERP portal.

13. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.

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

1. Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee from any of the Commerical Banks against EMD in favour of **The Executive Engineer (Elect.), Faridabad Electrical Division, CPWD, Faridabad.**
2. Copy of receipt of deposition of original EMD issued from division office of any Executive Engineer, CPWD (including NIT issuing EE).

3. GST registration certificate, if already obtained by the bidder.
If the bidder has not obtained GST registration as applicable, then he shall scan and upload following undertaking along with bid documents.
"If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any Payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/or for any action taken by CPWD or GST department in this regard".
4. Enlistment Order for CPWD Contractors who are enlisted in appropriate Class of Building & Roads Category (Applicable only for **CPWD Enlisted Contractors** in appropriate Class.)
5. Certificate of Financial Turnover & Profit/Loss from CA in Proforma of Form-A (Not applicable for CPWD enlisted contractors).
6. Letter of transmittal as per Annexure I
7. Certificate of Work experience.
8. Certificate of Financial Turnover from CA (Not applicable for CPWD Enlisted contractors).
9. Banker's Certificate or Net Worth Certificate (Not applicable for CPWD Enlisted contractors).
10. Bidding Capacity as per Form C3.

Note:- The Lowest Bidder is required to produce original document on or before or at the time of submission of Performance guarantee Money which are uploaded by the bidder at the time of bid submission otherwise Performance guarantee Money shall not be accepted & EMD shall be forfeited.

Assistant Engineer (Elect.)P.

Executive Engineer (Elect.)
Faridabad Electrical Division
CPWD, Faridabad – 121001

INFORMATION REGARDING ELIGIBILITY LETTER OF TRANSMITTAL

From: (Name of agency)

To

The Executive Engineer

.....

Subject: Submission of bids for the work of

Sir,

Having examined the details given in the bid document for the above work, I/we hereby submit the relevant information.

1. I/we hereby certify that all the statement made and information supplied in the enclosed forms A to C and accompanying statement are true and correct.
2. I/we have furnished all information and details necessary for eligibility and have no further pertinent information to supply.
3. I/we submit the following certificates in support of our suitability, technical knowledge and capability for having successfully completed the following eligible similar works

Name of work	Certificate Form

Certificate : It is certified that the information given in the enclosed eligibility bid are correct. It is also certified that I / We shall be liable to be debarred, disqualified / cancellation of enlistment in case any information furnished by me / us is found to be incorrect.

Enclosures: Seal of bidder

Date of submission:

Signature(s) of Bidder(s).

FINANCIAL INFORMATION (FORM 'A')

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

Financial Years				
-----------------	--	--	--	--

- i) Gross Annual Turn Over on above work.
 - ii) Profit/Loss (standalone financial statement and consolidated financial statement both).
2. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal.

Signature of Bidder(s)

FORM "B"
BANKER'S CERTIFICATE FROM A COMMERCIAL BANK

This is to certify that to the best of our knowledge and information that M/s./ Sh
..... having marginally noted address,
as a Customer of our bank are/ is respectable and can be treated as good for any engagement upto a limit
of Rs..... (Rupees.....)
This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature) For the Bank

NOTE

1. Banker's Certificates should be on letter head of the Bank, addressed to tendering authority.
2. In case of Partnership firm, certificate should include names of all partners as recorded with the Bank.

Form “B-1”

FORM FOR CERTIFICATE OF NETWORTH FROM CHARTERED ACCOUNTANT

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

Unique Document Identification Number (UDIN)

Signature of Chartered Accountant -----

Name of Chartered Accountant-----

Membership No. of ICAI-----

Date and Seal _____

FORM 'C'

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

Sr. No.	Name of work/ Project and Locatio n	Owner or Sponsor ing Organiz ation	Cost of work in crores of rupees	Date of commenc ement as per contract	Stipulated date of completi on	Actual date of completi on	Litigation/ Arbitration cases pending/in progress with details*	Name and address /telephone number of officer to whom reference may be made	Whether the work was done on back to back basis Yes/No
1	2	3	4	5	6	7	8	9	10

* Indicate gross amount claimed and amount awarded by the Arbitration Tribunal.

Signature of Bidder(s).

FORM 'C'-1
PROJECTS UNDER EXECUTION

Sr. No.	Name of work/ Project and Location	Owner or Sponsoring Organization	Cost of work in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Upto date percentage progress of work	Slow progress if any and reasons thereof	Name and address /telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Bidder(s).

FORM 'C'-3
Calculation of bidding capacity
Details of existing commitments and ongoing works.

Sr. No.	Name of work/ Project and Location	Owner or Sponsoring Organization	Contract or value in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Upto date percentage progress of work	Remaining work in percentage (100-column 7)	Existing commitments Column 4 X Column 8/10	Name and address /telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10	11

Total (B) =

Maximum turnover in last seven years

= Rs.

Updated value of turnover (A)

= Rs.

No. of years (N)

=

Bidding Capacity= {[AxNx1.5]-B}

=

Certificate:

I certify that all the awarded and ongoing works have been included in the above list.

(Signature of Bidder(s))

Receipt of Deposition of Original EMD
(Receipt No. / Date.)

1 Name of work: - **SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.**

2 NIT No. 83/EE(E)/FED/2026-27

3 Estimated Cost :- Rs. 16,12,996/-

4 Amount of Earnest Money Deposit :- Rs. 32,260/-

5 Last date of submission of bid :- 28-08-2026 upto 03:00 PM

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

1 Name of Contractor :.....#

2 Form of EMD :.....#

3. Amount of Earnest Money Deposit :.....#

4. Date of Submission of EMD :.....#

Signature, Name and Designation of EMD
Receiving officer (EE/AE(P)/AAO)
Alongwith office stamp

#To be filled in by EMD receiving EE

PART - A

GENERAL

CPWD-6 FOR e-TENDERING

1. Online Percentage rate bids are invited on behalf of President of India from OEM/Specialized agencies/ CPWD enlisted contractors of appropriate class in Building & Roads category who possess the necessary eligibility criteria / experience for specialized work in the field of **SITC of Solar Photo Voltaic Power generation System** in Two Bid System (Eligibility bid & price bid) for the works of **SITC of Rooftop Solar Panel at RSSL, Sec-56, Faridabad.**

The enlistment of the contractors should be valid on the last date of submission of bids.

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

- 1.1 The work is estimated to cost **Rs. 16,12,996/-**. This estimate, however, is given merely as a rough guide.
- 1.1.1 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids. For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.
- 1.2 Intending bidders is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:-

Criteria of eligibility for submission of bid documents

- 1.2.1 Conditions for Non-CPWD registered contractors only, if bids are also open to non-CPWD Contractors.

For works estimated cost upto tendering limit of class -I Buildings & Roads (erstwhile Composite/ Building/ infrastructure) category Contractor (However, for Horticulture category, it may be modified as per bidding limit of CPWD class I contractors of Horticulture category).

- (i) Three similar works each of value not less than 40% of ECPT or two similar works each of value not less than 60% of ECPT or one similar work of value not less than 80% of ECPT (all figures rounded to nearest convenient figure) during the last 7 years ending last day of the month previous to the one in which tenders are invited.

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

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

- 1.2.2 When bids are invited from non-CPWD contractors as per provisions of clause 1.2.1 above, it will be mandatory for non-CPWD contractors to upload the work experience certificate(s).

2. Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website www.cpwd.gov.in Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
3. The time allowed for carrying out the work will be **2 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.
4. The site for the work is available.
The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved programme of completion submitted by the contractor after award of the work.
5. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website www.etender.cpwd.gov.in, www.cpwd.gov.in free of cost.
6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.
7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.
8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.
9. Earnest Money in the form of Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) from any of the Commerical Banks (**drawn in favour of The Executive Engineer (Elect.), Faridabad Electrical Division, CPWD, Faridabad**) shall be scanned and uploaded to the e-tendering website within the period of bid submission. The original EMD should be deposited either in the office of **Executive Engineer (Elect.), Faridabad Electrical Division, CPWD, Faridabad** inviting bids or Division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer shall issue a Receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.
A part of earnest money is acceptable in the form of bank guarantee also. In such case, 50% of earnest money or Rs 20 lakh, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee of any Commerical Bank having validity for 6 months or more from the last date of Receipt of bids which is to be scanned and uploaded by the intending bidders.
- 9A The contractors registered prior to 01.04.2015 on e-tendering portal of CPWD shall have to deposit tender processing fee at existing rates, or they have option to switch over to the new registration system without tender processing fee any time.

The bid submitted shall be opened at 03:30 PM on 28-08-2026

10. The bid submitted shall become invalid if:
 - (i) The bidders is found ineligible.

- (ii) The bidder does not deposit Earnest Money deposit declaration proforma as per **page 8** of NIT.
 - (iii) The bidder does not upload all documents (including GST registration) as stipulated in the bid documents.
 - (iv) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of tender opening authority.
11. The contractor whose bid is accepted, will be required to furnish performance guarantee as mentioned in Schedule 'E' and within the period specified in Schedule F. This guarantee shall be in the form of insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, then EMD submitted shall be forfeited automatically without any notice to the contractor. The Earnest Money deposited along with the bid shall be returned after receiving the aforesaid Performance Guarantee. The Contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC, and BOCW Welfare Board including Provident Fund Code No. if applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work and Programme Chart (Time and Progress) within the period specified in Schedule F.
 12. **The description of work is as following:**
Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidders implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
 13. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bid in which any of the prescribed condition is not summarily rejected.
 14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bid submitted by the contractors who resort to canvassing will be liable to rejection.
 15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
 16. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer to Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are

near relatives to any gazette officer in the Central Public Works Department or in the Ministry of Urban

Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

17. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.
18. The bid for the works shall remain open for acceptance for a period of **Seventy Five days (75 days) from the date of opening of Eligibility bid**. If any bidder withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidder shall not be allowed to participate in the rebidding process of the work.
19. This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 7 days from the stipulated date of start of the work, sign the contract consisting of:-
 - a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
 - b) Standard C.P.W.D. Form 7 or other Standard C.P.W.D. Form as applicable.

Assistant Engineer (Elect.)Pl.

Executive Engineer (Elect.)
Faridabad Electrical Division CPWD,
Faridabad – 121001

**Form of Earnest Money Deposit
Bank Guarantee Bond**

WHEREAS, contractor..... (Name of contractor) (hereinafter called “the contractor”) has submitted his tender dated (date) for the construction of..... (name of work) (hereinafter called “the Tender”) KNOW ALL PEOPLE by these presents that we (name of bank) having our registered office at (hereinafter called “the Bank”) are bound unto..... (Name and division of Executive Engineer) (hereinafter called “the Engineer-in-Charge”) in the sum of Rs. (Rs. In words) for which payment well and truly to be made to the said Engineer-in-Charge the Bank binds itself, his successors and assigns by these presents. SEALED with the Common Seal of the said Bank thisday of 20... . THE CONDITIONS of this obligation are:

- (1) If after tender opening the Contractor withdraws, his tender during the period of validity of tender (including extended validity of tender) specified in the Form of Tender;
- (2) If the contractor having been notified of the acceptance of his tender by the Engineer-in-Charge:
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to contractor, if required;

OR

- (b) fails or refuses to furnish the Performance Guarantee, in accordance with the provisions of tender document and Instructions to contractor,

We undertake to pay to the Engineer-in-Charge either up to the above amount or part thereof upon receipt of his first written demand, without the Engineer-in-Charge having to substantiates his demand, provided that in his demand the Engineer-in-Charge will note that the amount claimed by his is due to him owing to the occurrence of one or any of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date* after the deadline for submission of tender as such deadline is stated in the Instructions to contractor or as it may be extended by the Engineer-in- Charge, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE

SIGNATURE OF THE BANK

WITNESS
(SIGNATURE, NAME AND ADDRESS)

SEAL

*Date to be worked out on the basis of validity period of 6 months from last date of receipt of tender.

On non-judicial stamp paper of minimum Rs. 100
(Guarantee offered by Bank to CPWD in connection with the execution of contracts)
Form of Bank Guarantee for Earnest Money Deposit/Performance Guarantee/Security
Deposit/mobilization Advance

1. Whereas the Executive Engineer (E), Faridabad Electrical Division, CPWD, Faridabad on behalf of the President of India (herein after called "The Government") has invited bids under(NIT Number).....dated.....for..... (Name of work :- **SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad**). The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. (Rupees only) valid upto (date)..... as Earnest Money Deposit from.....(name and address of the contractor).....(hereinafter called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

OR**

- Whereas the Executive Engineer (E), Faridabad Electrical Division, CPWD, Faridabad, on behalf of the President of India (herein after called "The Government") has entered into an agreement bearing Number with..... (name and address of the contractor) (hereinafter called "the contractor") for execution of work(Name of work :- **SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad**).
2. We, (indicate the name of the bank)..... (herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs.,,,,.....(Rupeesonly) on demand by the Government within 10 days of the demand.
3. We,(indicate the name of the Bank)do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupeesonly)
4. We,(indicate the name of the Bank)..... further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.
5. We, (indicate the name of the Bank)..... further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

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

Date.....

Witnesses:

Authorized signatory

Name

Designation

Staff code no.

Bank seal

1. Signature.....
Name and address
2. Signature
Name and address

- * Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.
- ** In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance, as the case may be.

(CPWD, OM No.DG/SOP/14 dated 20.10.2020)
(Proforma for encashment of BG to be issued 14 days before its expiry)

To

The Manager

...(Name & Address of Bank)...

.....

.....

Subject : Request for encashment of Bank Guarantee number.....dated..... for
Rs.....valid up to..... towards earnest money deposit/performance
guarantee/security deposit/mobilization advance (As applicable)

Name of Contractor:

Dear Sir,

The above mentioned Bank Guarantee numberdated..... is valid up to.....In terms
of paragraph 2 of the said Bank Guarantee, the Govt. of India hereby demands a sum of
Rs.....(Rupees.....only) payable under this Bank Guarantee since this amount is required to meet the
recoveries due from.....(name of the contractor)..... The amount shall be paid latest
by.....(give date).....by transfer to account number.....

The aforesaid Bank Guarantee is being sent to you through.....(name and
designation)..... along with this letter.

Enclosure : Bank Guarantee

Yours faithfully,
Executive Engineer (Elect.)
Faridabad Electrical Division
CPWD, Faridabad

Copy to:.....(Name & address of the contractor).....

Proforma for extension of BG to be issued 30 days before its expiry)

To

The (Name and address of Contractor)...

.....

.....

Sub : Extension of Bank Guarantee number.....dated..... issued by(Name of Bank)..... (Name of work:- **SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.**

Agreement No.

Dear Sir,

The Bank Guarantee number.....dated..... submitted by you for the above mentioned work as security deposit/performance guarantee/mobilization advance/earnest money deposit (as applicable) is valid upto.....

The validity of the aforesaid bank guarantee needs to be extended because(give reasons).....

You are, therefore, requested to get the validity of the said Bank Guarantee extended upto and submit the same to this office within 15 days from the issue of this letter, failing which it shall be encashed without further notice.

Yours faithfully,
Executive Engineer (Elect.)
Faridabad Electrical Division
CPWD, Faridabad.

[Note for EE(E): If extended Bank Guarantee is not received by the prescribed date, action for encashment must be initiated].

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
Percentage Rate Tender & Contract for Works**

Tender for the work of **SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.**

- (i) Tender to be uploaded online by **15:00 hours** on 28-08-2026. to Executive Engineer (E), FED, CPWD, Faridabad.
- (ii) The time and date of opening of the bid online in presence of tenderers who may be present at **15:30 hrs.** 28-08-2026 in the office of The Executive Engineer (E), FED, CPWD, Faridabad.

TENDER

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

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

I/We agree to keep the tender open for ~~...30... days from the due date of its opening in case of single bid system or~~ 75 (Seventy Five) days from the date of opening of eligibility bid in case tenders are invited on two /three bid system for specialized work and not to make any modification in its terms and conditions.

A sum of **Rs. 32,260/-** is hereby forwarded in Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) issued by any of the Commercial Banks as earnest money.

A copy of earnest money in Insurance surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank guarantee (for balance amount as prescribed) issued by any of the Commercial Banks is scanned and uploaded (strike out as the case may be). If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the said President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/ We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, if I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

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

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

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

Dated:

	Signature of Contractor.....
Witness:	Postal Address.....
Address:	Telephone No.
Occupation:	Email

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of Rs. _____/-
(Rupees _____).

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

- (a) -----
- (b) -----
- (c) -----

For & on behalf of the President of India

Signature.....

Dated

Designation.....

SCHEDULE 'A' TO 'F'

SCHEDULE 'A'

Schedule of quantities

: For Electrical work

As per schedule attached

SCHEDULE 'D'

Extra schedule for specific requirements/ documents for the work, if any.

NIL

SCHEDULE 'E'

Reference to General Conditions of Contract.

Applicable GCC is **GCC Maintenance Works 2023** as modified and corrected up to previous day of the last date of submission of the tender.

Name of Work:

SITC of Rooftop Solar Panel at RRS�, Sec-56, Faridabad.

Estimated Cost of work: -

Rs. 16,12,996/-

(i) Earnest Money: -

Rs. 32,260/- (To be returned after receiving performance guarantee)

(ii) Performance Guarantee

- (a) **5% of Tendered value or Estimate Cost put to Tender (ECPT) whichever is higher.**
(b) **Where the tendered amount is less than eighty percent (80%) of the Estimated Cost Put to Tender (ECPT), the Performance Guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tendered amount.**

(iii) Security Deposit

2.5% of tendered value of the work to be deducted from each R/A Bill.

SCHEDULE 'F':-

General Rules & Directions:-

	Officer Inviting Tender	:	Executive Engineer (Elect.) Faridabad Electrical Division, C.P.W.D., Faridabad
	Definitions:-		
2 (v)	Engineer-In-Charge	:	Executive Engineer (Elect.) Faridabad Electrical Division, C.P.W.D., Faridabad
2 (viii)	Accepting Authority	:	Executive Engineer (Elect.) Faridabad Electrical Division, C.P.W.D., Faridabad
2 (x)	Percentage on cost of materials and labour to cover all overheads and profits	:	15%
2 (xi)	Standard Schedule of Rates	:	Delhi Schedule of Rates 2025 (Electrical) with up to date correction slips and Market Rate.
2 (xii)	Department	:	Central Public Works Department

9(ii)	Standard CPWD Contract Form GCC 2023, CPWD Form 7/8 as modified & corrected up to previous day of last day of submission of tender).	:	General Conditions of Contract Maintenance Work 2023 , CPWD Form 7 as modified corrected upto previous day of the last date of submission of the tender.
Clause-1:-			
(i)	Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance.	:	07 days
(ii)	Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above	:	03 days
Clause-2	Authority for fixing compensation under clause-2.	:	Superintending Engineer, Faridabad Circle, CPWD, Faridabad, or his successor
Clause 2A	Applicable Clause 2A	:	No
Clause-5	Number of days from the date of issue of letter of acceptance for reckoning date of start Mile stone(s) as per table given below.	:	15 days

MILE STONE (S) AS PER TABLE GIVEN BELOW

Table of Milestone (s)

S.No.	Description of Milestone (Physical)	Time allowed in days (from date of start)	Amount to be with held in case of non achievement of milestone (of agreement amount)
1.	Submission of drawing and TDS for obtaining the approval	7 Days	0.5%
2.	Supply of material at site	30 Days	3 %
3.	Errection Testing & Commissioning	45 Days	1 %
4.	Trial Run and Handover to the client department	60 Days	0.5%

Time allowed for execution of work :

2 Months

Authority to decide.		
1. Authority to convey the decision of shifting of milestone and extension of time.	:	Engineer-in-Charge or Engineer-in-Charge of Major Component in case of composite contracts as the case may be
2. Authority to decide rescheduling of milestone.	:	Superintending Engineer, Faridabad Circle, CPWD Faridabad
3. Shifting of date of start in case of delay in handing over of site.	:	Superintending Engineer, Faridabad Circle, CPWD Faridabad

PROFORMA OF SCHEDULES Clause 5 Schedule of handing over of site-

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

Clause 6 :-

Mode of Measurement : Electronic Measurement Book (EMB)

Clause 7 :-

Gross work to be done together with net :
 payment/adjustment of advances for
 material collected, if any, since the last such
 payment for being eligible to interim
 payment. As per mutually agree

Clause 7 A:-

Whether Clause 7A shall be applicable. : Yes

Clause 10A :-

List of testing equipment to be provided by :
 the contractor at site lab. As per requirement at site & as per
 direction of Engineer-in-Charge.

Clause 10 – B(ii) :-

Whether clause 10-B(ii) shall be applicable : No

Clause 10C –

Component of labour expressed as percent of value of work : Not Applicable

Clause 10CC :-

Schedule of component of other Materials, Labour etc.
 for price escalation Component of Electrical Material : Not Applicable
 expressed as percentage of total value of work.

Component of of Labour :
 Expressed as percentage of total value of work. Not Applicable

Clause 11 :-

Specifications to be followed for execution :
 of work As per CPWD General Specifications
 amended up to date and additional terms &
 conditions attached.

Clause 16 :-

Competent Authority for deciding reduced
 rates. Superintending Engineer, Faridabad
 Circle, CPWD, Faridabad.

Clause 18 :-

List of mandatory machinery, tools & plants to be deployed by the contractor at site.

As required for timely execution of work

Clause 19 C: Competent Authority to decide penalty for each default as per GCC 2023 provisions

Clause 19 D: Competent Authority to decide penalty for each default as per GCC 2023 provisions

Clause 19G: Competent Authority to decide penalty for each default as per GCC 2023 provisions

Clause 19K: Competent Authority to decide penalty for each default as per GCC 2023 provisions

Clause 25

i) Conciliator - Special Director General, Region Chandigarh

ii) Arbitrator Appointing Authority- Superintending Engineer, CPWD, Faridabad

iii) Place of Arbitration - New Delhi or NCR

Clause 32 :- Requirement of Technical Representative (s) and Recovery Rates

Cost of work (Rs. in Crore)	Requirement of Technical Staff		Minimum experience (Years)	Designation of technical staff	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause
	Qualification	Number (Civil + Electrical)			
-	-	-	-	-	-

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

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

Clause 38 :-

(i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of N.A printed by CPWD with upto date correction slips.

(ii) Variations permissible on theoretical quantities:

a) Cement For works with estimated cost put to bid not more than Rs. 25 lakh.		N/A
For works with estimated cost put to bid more than Rs.25 lakh		N/A
b) Bitumen for all works.		N/A
c) Steel Reinforcement and structural steel sections for each diameter, section and category.		N/A
d) All other materials.		Nil

Assistant Engineer (Elect.)Pl.

Executive Engineer (Elect.)
Faridabad Electrical Division
CPWD, Faridabad – 121001

TERMS & CONDITIONS

Name of Work:- Name of work: SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.

GENERAL, COMMERCIAL AND ADDITIONAL CONDITIONS

General

1. This specification covers manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of E & M installations.
2. Location: Work shall be carried out at RRSL, Sec-56, Faridabad.
3. The work shall be executed as per CPWD General Specifications for Electrical Works Part-I (internal) 2023, Part-II (external) 1994, and Part-IV (sub-station) 2013 as amended upto date, relevant I.E. Rules, BIS/IES and as per directions of Engineer- in-charge. These additional specifications/conditions are to be read in conjunction with above and in case of variations; specifications given in these additional conditions shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work.
4. The tenderer should in his own interest visit the site and get familiarize with the site conditions be for e-tendering.
5. No T&P shall be issued by the Department and nothing extra shall be paid on account of this.
6. The makes/models and Cat. No. etc. mentioned in NIT are indicative only. The firms shall be responsible for providing the system fulfilling the specifications, capacity and all other related requirement of system ensuring compatibility between different items of work.
7. The firm shall be required to supply all the items of same make (among the list of approved makes) wherever available to ensure compatibility, proper matching and ease of maintenance.
8. Department reserves the right to accept the upgraded version of various items, if there is technological advancement with reference to these makes/models. The decision of department in this reference shall be final and binding on the firms.
9. The contractor shall discuss with EE(E)- Faridabad or his authorized representative and visit the site before placing the supply order / delivery of materials at site as per actual requirement as the actual Quantity of materials required may deviate (+/-) from the quantity taken in the schedule of Work/inventory of the agreement.

SCOPE OF WORK

10. The scope of work involves design, supply, installation, testing and commissioning of complete Solar PV system as per BOQ and these specifications. The drawings along with detailed design and equipment datasheet shall be submitted for approval before starting the work. The work shall be carried out as per designs approved by the Department. The contractor shall submit the design of SOLAR PV system for each building immediately after the award of work.
11. The agency shall provide 6 Nos. GI plate earthing for each installations and to be connected to the Solar PV Panel, using GI strips / copper cable duly laid as per the CPWD Specifications and drawings. This shall be got approved from the department prior to execution.
12. XLPE Alu conductor cable of suitable size from PCU to main incoming of feeder pillar/ main / distribution panel.

13. Unidirectional static energy digital meter SCADA compatible including all accessories i.e CTs connection to make the system functional including SITC of metallic panel to suit the size as approved by the engineer in charge.
14. Bidirectional static energy digital meter SCADA compatible including all accessories i.e CTs connection to make the system functional including SITC of metallic panel to suit the size as approved by the engineer in charge.

Commercial conditions

15. The work to be awarded by this tender shall be treated as indivisible works contract.
16. The tenderers are advised not to deviate from the technical specification/ items, commercial terms & Conditions of NIT like terms of payment, guarantee, arbitration clause, escalation etc.
17. In the price bid, there shall be no conditions whatsoever. In case any tenderer mentions any condition i/c conditional rebates in their price part, tender shall be rejected forthwith.
18. The department reserves the right to reject any or all the price bids and call for fresh prices/ tenders as the case may be without assigning any reason.
19. First the eligibility documents will be opened and evaluated and successful bidders shall be approved and price bids of only eligible bidders qualified in eligibility bid will be opened on the specified date.
20. Scrutiny/ evaluation of the Tenders (Price Bid) shall be done by the department. In case it is found that the Tenders (Price Bid) of a tenderer is not in line with NIT specifications/requirements, the department reserves the right to reject the price bid of such firm(s)

Terms of payment

21. Payment shall be made on the basis of running account bill as per progress of execution of work. Stages of payment shall be as per following on prorata basis:-
 - a) Against supply of material received at site in good condition- 70%
 - b) On completion of pro-rata installation- 15%
 - c) On commissioning and completion of work- 10%
 - d) After handing over along with Net Metering arrangement- 5%

Security Deposit

22. The security deposit shall be collected by deductions from the running bills of the contractor at the rate mentioned below.

The tender shall guarantee among other things, the following: -

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

Rates

23. The rates quoted by the tenderer, shall be firm and inclusive of all taxes including, GST, labour cess, duties, levies, octroi etc. and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site including temporary construction of storage, risks, overhead charges, general liabilities/obligations and clearance from Local Bodies. However, the fee for the Local Body inspections / clearances shall be borne by the department and shall be reimbursed to the contractor on the production of original invoice/ receipts.

24. No payment will be made to the contractor for any damage caused by rain, snow fall, floods, dampness, fire, sun or any other natural cause whatsoever during execution of work. The damage to the work due to above reasons, if any shall be made good by the contractor at own cost and no claim on this account shall be entertained.
25. Some restrictions may be imposed by the Client on the working and/ or movement of labour, materials etc. on account of security reasons. The contractor shall be bound to follow such restrictions/ instructions and nothing extra shall be payable on this account. No claim for idle labour shall be entertained.
26. The department will not issue Octroi exemption certificate.
27. The contractor has to carry out Operation & Routine maintenance of the Solar Photovoltaic power generation system by deputing man power for cleaning of solar PV module, checking & routine maintenance the system for satisfactorily operation as per manufacturer's standards, recording the various electrical parameters in log book, watch & ward for the system for a period of 1 months from the date of handing over i/c fortnightly visit by Engineer for checking the healthiness of the system i/c repair/replacement of the defective part or to attend the major complaint whenever informed by the Department as per terms & condition attached. (Supply of spare parts shall be included in the scope of the work under guarantee period) from the date of handing over.

Completeness of Tender

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

Storage and Custody of Materials

29. For storage of sundry materials and erection of equipments, the agency has to make his own arrangements. No separate storage accommodation shall be provided by the department. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

Care of the Building

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

Completion Period

31. The completion period of Four months indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc. i/c arrangement of materials & equipments, delivery at site including transportation, installation, testing, commissioning and handing over the entire system to the satisfaction of the Engineer-in-charge.
32. The Contractor shall be responsible for handing over the Inventory of entire system in operational to the Client Department to the satisfaction of the Engineer-in-Charge before recording of completion Certificate & making the final payment.

Guarantee

33. All the equipment installed by the contractor in this work shall be guaranteed for a period of 60 months, from the date of taking over the installation by the department, against unsatisfactory performance and /or break down due to defective design, workmanship or material. The

contractor shall stand performance guarantee of solar PV system supplied and installed by them for a period of 60 months from the date of the handing over of the installation. Hence, the performance guarantee deposited at the time of award of work will be released on pro-rata basis (equal % after completion of each year from the date of handing over) after successful completion of performance guarantee period of 60 months. The equipment or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. If the performance of Solar PV system found unsatisfactory during the guarantee period or contractor repeatedly fails to replace/repair the defective solar PV system within 15 days time after written complaint by the department / end user in this regard, the amount of performance guarantee shall be forfeited absolutely. The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.

34. The tenderer shall guarantee among other things the following:
- a) Quality, strength and performance of the materials used as per manufacturers standards.
 - b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.

Power Supply

35. Arrangement of electric power supply (Three Phase/Single Phase) at a single point as required to carry out the work for successful installation, testing and commissioning of the system will be provided by the department on charges basis on applicable rates as decided by the engineer in charges. However, distribution of electric supply to carry out the work at different locations shall lie in the scope of the contractor.

Acceptable Makes of Various Equipments

36. The acceptable makes of various equipments/components/accessories have been indicated in “List of Preferred Makes”. The tenderer shall work out the cost of the offer on this basis. Alternate makes are not acceptable.
37. The firm will be required to procure material directly from the manufacturer/authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof, ie. Invoices, e-way bill, challan, test certificates etc. in this regard shall be submitted by the contractor to the department.
38. The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipments regarding installation, adjustments operation and maintenance including preventive maintenance trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

Extent of work

39. The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning, as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender documents in connection with this contract as this is a turnkey job.

40. In addition to supply, installation, testing and commissioning of complete installation, following works shall be deemed to be included within the scope of work to be executed by the tenderer as this is a turnkey job.
41. Minor building works necessary for installation of equipments, foundation, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc as required.
42. The contractor shall not damage the existing water proofing while working on the terrace floor. Any damage caused to the water proofing/terrace flooring shall be made good at no extra cost.
43. All supports for cables and MS channels for erection of panels etc as are necessary.
44. Getting Local Body inspection done & obtaining approval for energizing/ connection to the grid the installation if required. However, necessary fees for inspection shall be borne by the Department.
45. Small wiring, inter-connection etc. inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble-free operation of the equipment.
46. Closing of the cable entry points in sub-station/D.G Set room/buildings to arrest seepage of water, rodents etc.
47. Tools and tackles required for handling and installation.
48. Necessary testing equipments for commissioning.
49. Watch and Ward of materials and/or installation and equipments till their handling over to the department.
50. Provision of supports/clamps for equipments, cables etc. wherever required.
51. Arrangement of networking on requirement.

Inspection and Testing

52. All the tests certificate of the equipments are required to submit along with delivery of material.
53. Copies of all documents of routine and type test certificates of the equipment, / cable carried out at the manufacturers premises shall be furnished to the Engineer-in- charge and consignee.
54. After completion of the work in all respects the contractor shall offer the installation for testing and operation.

Compliance with Regulations and Indian Standards

55. All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:
 - a) Factories Act
 - b) Indian Electricity Rules
 - c) BIS & other standards as applicable
 - d) Workmen's compensation Act
 - e) Statutory norms prescribed by local bodies, Power supply co., etc
56. Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.
57. Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. Failure to provide such safety requirement would make the tenderer liable for penalty

of Rs. 500/- for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

Indemnity

58. The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful

tenderer shall also provide all insurance including their party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

Erection Tools

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

Cooperation with Client/Occupants

60. The successful tenderer shall coordinate with occupants and client to carry out the work with least disturbance and shut down shall be taken after consultation with client department.

Painting

61. This shall include cost of painting of the entire installation, wherever required.

Maintenance

62. Sufficient trained and experienced staff shall be deputed on request of the client when required to meet any exigencies of work during the guarantee period of 60 Month from the handing over of the installation.

Interpreting specifications

63. In interpreting the specifications, the following shall be referred in case of contradictions (Stringent specification among these shall be considered as final):
- a) Schedule of quantities
 - b) Technical specifications
 - c) General, Commercial and Additional Conditions
 - d) Drawing (if any)
 - e) MNRE Guidelines
 - f) CPWD General specifications
 - g) Relevant BIS codes or other international code in case BIS code is not available.

Warranty:

64. 25 Years performance warranty shall be provided by manufacturer on SPV modules with degradation in performance maximum 10% after 10 years and 20% after 25 years as per industrial standard warranty conditions on complete system from the date of commissioning of the system. If SPV modules do not perform satisfactorily as above then the manufacturer of the solar PV modules shall make proper check of the quality of material and should replace the unsatisfactorily solar PV modules with free of cost. Otherwise, department may take action to debar the manufacturer for CPWD works and may intimate to MNRE to take suitable action against such defaulting manufacturer.

65. The scope of work for the bidder include obtaining No Objection Certificate (NOC) from Local Distribution Company (TORRONT) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing and commissioning of the grid connected rooftop Solar PV project.
66. The support mounting structure / elevated structure & foundation of solar PV modules shall be so designed to withstand a basic wind speed 47 meter per second as per IS 875. The contractor shall arrange vetting/approval of the Structural drawing of mounting Structure/elevated structure for solar PV modules from Qualified structural Consultant/ IIT / NIT of so required by the Engineer – in – Charge, the agency shall also arrange the visit of structural Engineer to ascertain that existing R.C.C slab is strong enough to take this additional load of mounting structure along with solar PV modules. All co-ordination and necessary fees for approval of drawings shall be paid by the contractor. Nothing extra shall be paid on this account.

Assistant Engineer (Elect.)Pl.

Executive Engineer (Elect.)
Faridabad Electrical Division CPWD,
Faridabad – 121001

PART - B

E&M WORKS

SPECIAL CONDITIONS

1. The capacity of the proposed power plant may be revised (Increase / decrease) by the engineer in charge due to constraints at site or non-availability of suitable place at terrace. The capacity may be break into small parts in the multiple of 5 KWp or any other suitable capacity at different places in the same campus or other campus as decided by the engineer in charges. The final decision shall be taken by the engineer in charge and binding to the contractor. No extra claims in increase cost of power conditioning units or other equipment shall be entertained.
2. The trial run of electrical work / equipments shall be carried out by the firm in the presence of Engineer-in-charge or his representative at the site as per requirement of department.
3. The Power Purchase Agreement shall be taken up by Client department / Engineer-in- charge or his representative (As per case may be) separately with Local distribution company (DISCOM). The Contractor shall liaison with the DISCOM for the approval and finalization of the PPA. The necessary documentation shall be done by the contractor.
4. The application for Net Metering / bidirectional meters shall be furnished by the client / department and necessary fees also shall also be paid by the Department. The Contractor shall liaison with the DISCOM for the necessary documentation and obtaining the Net metering arrangement. The agency has to liaison for obtaining the Net metering.
5. All equipments and materials to be used in work shall be manufactured in factories of good reputé having excellent track record of quality manufacturing, performance and proper after sales service. The Department reserves right to inspect Solar PV Panels at factory/Manufacturers premises during the course of manufacturing at any stage and the department shall be provided with the proof of using the approved make of PV Cells in the manufacturing of solar PV Modules. The Contractor shall intimate the schedule of manufacturing of modules at factory prior to taking up in the production.

EQUIPMENT TECHNICAL SPECIFICATION

Solar PV Module (Electrical Features)

1. Solar PV module array will be made by utilizing mono Crystalline high efficiency Silicon Solar PV cells. Minimum power output guarantee offered for the SPV Module shall not be less than 25 years. Individual solar module rating will not be less than 330 Wp at Standard test conditions. Each Solar PV module offered shall meet following min. requirement.

Efficiency of cell, $E_{f,c}$	- >18%
Efficiency of module, $E_{f,m}$	- >16.5%
2. SPV module conversion efficiency should be equal to or greater than 18.0% (cell) under STC of irradiance of 1000w/sqm and cell operating temp of 25 degree C and air mass (AM) 1.5 spectrum. Modules must qualify to relevant IEC standards Part I and II for safety qualification testing.
3. Note: I-V curve of each PV module with Sl. Nos. should be submitted along with modules. Solar PV modules shall conform to IEC-61215 standards. Documentary evidence towards IEC- 61215 certification shall be submitted after award of work before approval. Minimum following parameters should be provided:
 - a) Maximum Power, P_{max}
 - b) Minimum Power, P_{min}
 - c) Open Circuit Voltage, V_{oc}
 - d) Short Circuit Current, I_{sc}
 - e) Voltage at Max Power V_{mp}
 - f) Current at Max power I_{mp}
 - g) Fill Factor, FF
 - h) Efficiency of cell, $E_{f,c}$
 - i) Efficiency of module, $E_{f,m}$
4. Necessary I-V curves at 25c, 45c, 60c and at NOCT are required to be furnished after award of work. Offers to provide PV module warranty of 25 years with not more than 10% degradation in performance/output over 10 years.
5. The rated output power of any supplied module shall not have negative tolerance.

Solar PV Module (Mechanical Features)

6. Solar PV Module design will conform to following Mechanical requirement
 - a) Toughened, anti-reflective, low iron content, high transmissivity front glass.
 - b) Anodized Aluminium Frame
 - c) Ethyl Vinyl Acetate (EVA) encapsulate
 - d) Silicon edge sealant around laminate
 - e) Tedlar / Polyester trilaminate back surface
 - f) ABS plastic terminal box for the module output termination with gasket to prevent water moisture.
 - g) Resistant to water, abrasion, hail impact, humidity & other environment factor for the worst situation at site.
 - h) By pass diode.

- i) Except where specified, the front module surface shall consist of impact resistant, low-iron and high-transmission toughened glass.
- j) The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytically compatible with the structural material used for mounting the modules.
- k) 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 by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP65 rated

Module mounting structure

- 7. Wherever required, suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design either I or L sections.
- 8. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 80-100 microns on steel as per IS-5905, if steel frame is used.
- 9. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the ground site.
- 10. The structures shall be designed to allow easy replacement of any module & can be either designed to transfer point loads on the ground as per site conditions and design to be approved by CPWD.
- 11. Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions by way of Manual operation.
- 12. Each panel frame structure be so fabricated as to be fixed on the ground. The structure should be capable of withstanding a wind load of Min. 47 meter per second as per IS - 875 after grouting & installation. The front end of the solar array must be one meter above the ground. Grouting material for SPV structure shall be as per M 15(1:2:4) concrete specification.
- 13. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the Contractor shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods.
- 14. The Contractor shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;
 - a) Determination of true south at the site;
 - b) Array tilt angle to the horizontal, with permitted tolerance;
 - c) Details with drawings for fixing the modules;
 - d) Details with drawings of fixing the junction/terminal boxes;
 - e) Interconnection details inside the junction/terminal boxes;
 - f) Structure installation details and drawings;
 - g) electrical grounding (earthing);
 - h) Inter-panel/Inter-row distances with allowed tolerances; and
 - i) Safety precautions to be taken.

15. The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the ground columns properly. All nuts and bolts shall be of very good quality stainless steel. Detailed design and Drawing shall have to be submitted to CPWD for acceptance and approval before execution of work.

NOTE: The structural design of the complete system should be compatible with the structural strength and load bearing capacity of the site/ ground, design calculations and certificate to this effect shall be provided by a qualified chartered structural engineer.

16. The array structure shall be made of hot dip galvanized MS angles of size not less than 50mm x 50mm x 6mm size. The minimum thickness of galvanization shall be at least 70 microns. All nuts & bolts shall be made of good quality steel.
17. The work should be completed with supply, fitting fixing of clamps, saddles, nut & bolts etc. While quoting the rate, the bidder may mention the design & type of structure offered. All nuts & bolts shall be made of very good quality steel.
18. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements.
19. The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.
20. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels & shall withstand heavy winds.
21. The supplier / manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.
22. The agency shall provide an elevated structure, wherever required as per site conditions, with G.I. pipe as per the drawing duly approved by the department. The agency shall also obtain the certification from the structural Engineer for withstanding a wind speed of 47 meter per second.

Junction Boxes

23. The junction boxes shall be dust, vermin and waterproof and made of FRP / Thermo Plastic. The terminals shall be connected to copper bus bar arrangement of proper size. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable marking shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. The junction boxes shall have suitable arrangement for the following:
- a) Combine groups of modules into independent charging sub- arrays that shall be wired to the controller.
 - b) Provide arrangement for disconnection for each of the groups.
 - c) Provide a test point for each sub-group for quick fault location.
 - d) To provide group array isolation.
 - e) The rating of the JB's shall be suitable with adequate safety factor to
 - f) inter connect the Solar PV array.
 - g) Metal oxide varistors shall be provided inside the Array Junction Boxes.

Power Conditioning Unit(PCU):

24. The PCU is a combination of Inverter, AC Charger and data logger all housed in a single unit. Maximum power point tracker (MPPT) shall be integrated into the PCU to maximize energy drawn from the solar PV array. MPPT shall be microprocessor/micro controller based to minimize power losses and maximize energy utilization. The efficiency of MPPT shall not be less than 93%.

25. PCU shall include self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure.
26. Power conditioning unit will comply the following requirements.
- 415V AC + 5% 50Hz, 3 Phase
 - Overload capacity – 150% for 60sec.
 - Output wave shape: sine wave with <3% total harmonic distortion (THD).
 - Adjust the Voltage and Frequency Levels to suit the MAIN LT panel/feeder pillar BUS near the individual building.

MODES OF PCU

27. STAND BY MODE:

The control system shall continuously monitor the output of the solar power plant until pre-set value is exceeded and that value to be indicated.

BASIC SYSTEM OPERATION (FULL AUTOMODE):

28. The system shall automatically 'wake up' in the morning and begin to export power provided there is sufficient solar energy and the grid voltage and frequency is in range.

SLEEP MODE:

29. Automatic 'sleep' mode shall be provided so that unnecessary losses are minimized at night. The power conditioner must also automatically re-enter standby mode when threshold of standby mode reached.

INVERTER

30. The inverter output shall always follow the grid in terms of voltage and frequency. This shall be achieved by sensing the grid voltage and phase and feeding this information to the feedback loop of the inverter. This control variable then controls the output voltage and frequency of the inverter, so that inverter is always synchronized with the grid. The grid islanding shall be ensured.

The typical specification of PCU is listed below:

Sr. No.	AC side	As per Tender design
1	Nominal AC Power	40 kWp as per item or multiple of 5 Kwp as approved by the engineer in charge
2	Output AC Voltage (as per manufacturer practice)	415 V+/- 10%
3	Frequency	50 Hz
4	Total harmonic distortion	< 3% at nominal power
5	AC over / under voltage over voltage / under frequency protection.	Yes
6	Phase Shift (COS Phi)	1
	DC Side	
7	PV Power	Min 240 WP
8	Maximum DC Voltage	800 V
9	MPPT Voltage range	350 V - 800 V

	Maximum DC Current *	
10	DC voltage ripple	<3%
11	DC over voltage protection	Yes
	Other Parameters	
12	Minimum efficiency (CE)	>97%
13	Ambient temperature	0-50° C
14	Humidity (Non Condensing)	95%
15	Degree of protection for enclosure	IP 54
16	Dimension / Weight	As per Manufacture design
17	Noise level	< 65 dBA
18	Cooling	Natural Air
19	Input Range	420-850 V DC
20	Power Factor	0.99
21	Input / Output cable Termination	Top/ as per manufacturer

Other important Features/Protections required in the INVERTER

31. Automatic morning wake-up and night shutdown
32. PCU must have the feature to work in tandem with other similar PCUs and be able to be successively switched ON and OFF automatically based on solar radiation variations during the day.

33. Mains (Grid) over-under voltage and frequency protection

Fool proof protection against ISLANDING.

34. Included authentic tracking of the solar array 's maximum power operation voltage (MPPT).
35. Array ground fault detection.
36. LCD and piezoelectric keypad operator interface Menu driven Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.
37. MOV type surge arresters on AC and DC terminals for over voltage protection from lightning-induced surges.
38. INVERTER should be rated to operate at 0–55 deg. Centigrade unless provision for air conditioning is included in INVERTER
39. All parameters should be accessible through an industry standard communication link.

Protection against lightning

40. Surge voltage induced at output due to external source Set point pre-selection for VAR control Remote control via telephone modem or mini web server Integrated protection in the DC and three phase system Insulation monitoring of the PV array Ground fault detector – which is essential for large PV generators in view of appreciable discharge current with respect to ground.
41. Over voltage protection against atmospheric lightning discharge to the PV array is required.
42. The power conditioner must be entirely self-managing and stable in operation. A self-diagnostic system check should occur on startup. Functions should include test of key parameters on startup.

DC distribution board/Array Junction Box

43. DC distribution board shall be provided in between solar array and PCU. The junction boxes shall be made of FRP / Thermo Plastic with impact resistant transparent cover, waterproof, dust free, vermin with IP65 protection. The terminals shall be connected to copper bus bar arrangement of

proper sizes. The junction boxes shall have suitable cable entry points fitted with cable Glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. Array junction box shall have suitable reverse blocking diodes of minimum DC blocking voltage of 800 V with suitable arrangement for its connecting. The array box shall also have suitable surge protection.

44. The junction boxes shall have suitable arrangement for the following: Combine groups of modules into independent charging sub-arrays that shall be wired to the controller. Provide arrangement for disconnection for each of the groups.
45. Provide a test point for each sub-group for quick fault location. To provide group array isolation. The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.

By pass Diode

46. Fuses of suitable rating for Overloading protection of array section.

Surge protection system

47. The DIN channel mountable pluggable surge protection shall be installed in a network configuration, consisting of a single block MOV (Metal Oxide Varistor) based surge arrester having nominal surge handling capacity of 15 KA 8/20 μ s & maximum surge handling capacity of 30 KA 8/20 μ s to provide protection between (L+, L-, earth). All surge arresters in these network configurations shall be of same manufacturer. The Protection unit shall be based on Single block High-Capacity Metal Oxide Varistors (MOV), capable of handling 15 KA 8/20 μ s surges and shall be able to give an indication in the event module failure and shall be pluggable to facilitate the on-site replacement without disturbing the lines. One extra set of replacement protective device shall be furnished to the job site. Protection shall be manufactured to withstand a maximum continuous operating voltage of not less than 115% of normal RMS system voltage.

AC Distribution Board (ACDB)

48. AC DB shall be provided in between PCU and loads.

APPROVAL & CLEARANCE

49. All associated activities required for necessary clearances / permissions / approvals / licenses from concerned Electrical authorities so their govt / strategy / Local bodies are in the scope of contractor.

EARTHING AND PROTECTION

50. The array structure of the PV plant at roof top shall be grounded properly using adequate number of earthing kits. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the power plant. Earthing shall be in line with IE rules. The earthing & grounding shall also meet the requirement of PV module/cell manufacturer. Detailed specifications have been provided in the Earthing section.

Cable and accessories

51. All the cables shall be supplied conforming to IS 694 & shall be of 650 V/ 1.1 kV grade as per requirement. Only FRLS PVC copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction boxes to DCDB, DCDB to PCU and PCU to main grid (DISCOM) etc. shall be so selected to keep the voltage drop and losses to the minimum and all cables are included in the scope of work. For DC connections, the cable shall be of XLPO type Solar cables.
52. Bidders are required to mention each size of cables used and should consider their resistance / impedance in the design optimization. Such calculation should be submitted along with the bid.

The contractor shall supply all cables, installation accessories, which are required to install and successfully commission the power plant.

Space for Solar Array and Control room

53. The bidder shall give the details of array layout before execution for approval.
54. Bidders are advised to visit the site and conduct a survey for deciding the most suitable layout from the installation & maintenance point of view.

Type tests

55. Type test reports of all major equipment (Solar modules & PCU) shall be submitted to the Engineer in Charge. The type test report shall be within 5 years from bid opening date, in absence of which fresh type test shall be done without any extra cost.

Installation and commissioning

56. Detailed project execution program shall be submitted along with the offer. The contractor will be responsible for arranging all tools & plants for installation and commissioning the complete system.
57. The contractor shall also submit the erection, testing & commissioning procedure for approval to the owner. These procedures will form integral part of the acceptance report for successful erection and commissioning the system. These reports will be prepared and signed by contractor's representative & representative of Client/CPWD.

Packing, shipping and marking

58. The bidder shall be responsible for assuring that all commodities shipped are properly packed and protected to prevent damage or deterioration during shipment, packaging and shipping costs shall be borne by the supplier.

Insurance

59. The bidder shall provide insurance coverage ex-factory until commissioning and acceptance for replacement of repair of any part of the consignment due to damage or loss.

Inspection

60. All major equipment like solar PV modules shall be inspected by the Engineer- In- Charge or his representative before their dispatch. For other items, the contractor shall obtain the prior approval before dispatch.
61. The contractor shall obtain approval for all equipment drawings & data sheets from the Engineer- In- Charge before commencement of the manufacturing / procuring / outsourcing.

Training & after sales service

62. Training and after sales service is an important component of supply and is included the scope of work. An explanation of preventative maintenance schedule, plan of operation, scope and implementation of the after sales service shall be imparted to the Operating personnel of the Client/ CPWD.

Documentation

63. Three sets of installation manual / user manual shall be supplied along with each power plant. The manual shall include complete system details such as array layout, schematic of the system, inverter details, working principle etc. Step by step maintenance and troubleshooting procedures shall be given in the manuals. The contractor shall supply three sets of soft copies (in CD form) of all documents including drawings and user manual and three sets in hard copy.

Standard to be followed:

- I. PV Modules IEC 61215/ IEC61730
- II. Power Conditioners IEC 61683/ IEC60068-2
- III. Charge Controller/MPPT Units: IEC 62093/ IEC 60068-2 Cables IEC 60189/ IS 694/ IS7098

**1) SPECIFICATIONS FOR PV PANEL
SUPPORT/MODULE MOUNTING STRUCTURE**

Sr. No.	Description	Specification Requirement
1	Material	Hot dip galvanized steel with min. 70 micron galvanizing Or as per manufacturer Standard Capable of with stand wind pressure as stipulated.
2	Thickness of member	Suitable wind Speed of 47 meter per second. STAAD analysis to be submitted.
3	Over all dimensions	As per manufacturer standard
4	Wind rating	47 meter per second
5	Tilt angle and adjustment	Tilt angle shall be calculated to provide the maximum annual energy output to take maximum insolation. This shall be decided based on the location of array installation.
6	Pitch of structure	Max. 7 Mtr or as per manufacturer standard
7	Hardware & fastener	SS 304
8	Foundation	The foundation of the array mounting structure / elevated structure shall be provided with 1:2:4 CC design as certified by the Structural consultant and approved by the department. The minimum clearance between roof slab and panel shall be 600 mm

2) PLANT METERING / DATA LOGGING

- 1) PV array energy production: Digital Meters to log the actual value of AC/ DC Voltage, Current One-way LT energy meter (Export metering) Class 0.2S ABT Compliant shall be incorporated in the system on the main AC Grid supply complete with electrical switchgear in the main plant.

3) DANGER NOTICE BOARDS

- 2) Danger notice boards should be provided as and where necessary as per IE Act / IE rules as amended up to date.

TECHNICAL PARTICULARS

(TO BE SUBMITTED AT THE TIME OF APPROVAL OF SOLAR PV EQUIPMENT/
MATERIAL)

Name of work: SITC of Rooftop Solar Panel at RRS�, Sec-56, Faridabad.

Name of Contractor:

Agreement Number:-

Date of put up to competent authority:

Expected delivery period after getting approval:-

(A) Solar PV Module

Sr. No.	Details of Particulars	To be filled by the executing agency
1.	Rated power range output at STC	
2.	No. of solar cells in each solar PV module	
3.	Voc/Isc	
4.	MPP Voltage (Vmpp) V	
5.	MPP current (imp) A	
6.	Normal operating cell temperature	
7.	Operating Temperature range	
8.	Module dimensions (LxWxH) Appx.	
9.	PV Module type	
10.	Min. efficiency of solar cell	
11.	Solar module frame material	
12.	Weather resistant junction	
13.	Front Glass	

14.	Glass iron content	
15.	glass transmissivity	
16.	Frame	
17.	Encapsulation	
18.	Trilaminate back surface	
19.	By-pass diode	
20.	Standard	

(Signature of the Contractor)

TECHNICAL PARTICULARS

(TO BE SUBMITTED AT THE TIME OF APPROVAL OF SOLAR PV EQUIPMENT/
MATERIAL)

Name of work: SITC of Rooftop Solar Panel at RSSL, Sec-56, Faridabad.

Name of Contractor:

Agreement Number:-

Date of put up to competent authority:

Expected delivery period after getting approval:-

(B) Solar Inverter

Sr. No.	Details of Particulars	To be filled by the executing agency
1.	Type	
2.	Max. DC Array Input Voltage	
3.	DC voltage tolerance	
4.	Type of solar charge controller	
5.	Switching Device	
6.	Continuous inverter output rating	
7.	Output wave form	
8.	total harmonic distortion	
9.	Nominal AC output voltage and frequency	
10.	Output frequency	
11.	Grid frequency tolerance	
12.	Grid frequency synchronization range	

13.	No-Load losses	
14.	Power factor	
15.	PCU efficiency	
16.	Noise level	
17.	Certifications	
18.	Idle current	
19.	Regulation	
20.	Over load features	
21.	Cooling	
22.	Operating Temperature	
23.	Relative Humidity	
24.	LED/LCD display	
25.	Data Monitor and display controls	
26.	Protections	
27.	Enclosure Protection Safety	
28.	Warranty	

(Signature of the Contractor)

TECHNICAL PARTICULARS

(TO BE SUBMITTED AT THE TIME OF APPROVAL OF SOLAR PV EQUIPMENT/
MATERIAL)

Name of work: SITC of Rooftop Solar Panel at RRSI, Sec-56, Faridabad.

Name of Contractor:

Agreement Number:-

Date of put up to competent authority:

Expected delivery period after getting approval:-

(C) Array Junction Box (DCDB)

Sr. No.	Details of Particulars	To be filled by the executing agency
1.	No. of module in series	
2.	No. of module in parallel	
3.	Switch gears	
4.	Connectors	
5.	Wiring	
6.	Enclosure Protection	
7.	Enclosure	
8.	Size	
9.	Capacity of each SPV panel and nos.	

(Signature of the Contractor)

(D) PANEL SUPPORT/MODULE MOUNTING STRUCTURE

Sr. No.	Details of Particulars	To be filled by the executing agency
1.	Material	
2.	Thickness of member	
3.	Over all dimensions	
4.	Wind rating	
5.	Tilt angle and adjustment	
6.	Peach of structure	
7.	Hard wears & fastener	
8.	Foundation	

(Signature of the Contractor)

List of Preferred Makes

Approved makes of materials to be used in the work are as given in the table below. Engineer-in-charge /NIT approving authority have right to change the make of any product for the smooth execution or timely completion of the work. Only BIS marked materials shall be generally used in the work. Non-BIS marked materials may be permitted by the Engineer-in-charge only when BIS marked materials are not manufactured. **No Chinese parts or product will be used for the execution for this work & preference to make in India product will be given.**

The Contractor shall obtain prior approval from the Engineer-in-charge before placing order for any specific material or engaging any of the specialized agencies and the brand / make of the material as specified in the particular specifications and in the list of preferred makes of materials attached in the tender. The Contractor shall make a detailed submittal with catalogues and highlighted proposed specifications, as well as full details of the works proposed to be executed by the specialized agency.

Note: The makes are subject to the compliance of Make in India norms.

S.No.	Description of Item	Makes
1.	Accessories/Connecters	MC/ Tyco/ Solarlok/ havells
2.	Indicating Lamps LED type and Push Buttons	Schneider / L&T/ Siemens/Vaishno/ AE
3.	Digital Meters	Conzerv / L&T / AE / Schneider/ Siemens
4.	LT Jointing Kit / Termination	Raychem / M – Seal / 3M
5.	Double compression Cable Glands with earthing links	COMET/ DOWELLS / JAINSONS
6.	MCB DBs/ MCB.s / MCCBs	Siemens/ Legrand / Schneider / Hager /ABB / L & T/ Havells
7.	UTP Data Cable	Systimax/ Molex/ Penduit
8.	GI pipes	SAIL / Jindal-Hissar/ TATA
9.	Phenolic laminated sheet	Hylam/ Greenlam
10.	XLPE aluminum / copper conductor cables	Finolex/ Havells/KEI /RR KABEL / Polycab/ Gloster
11.	Solar Cables (XLPO)	Finolex/ Havells/KEI /RR KABEL / Polycab/ Gloster
12.	1.1 KV Grade XLPE Power Cable	Finolex/ Havells/KEI /RR KABEL / Polycab/ Gloster
13.	GI Race Way	OBO/ Legrand / MK/ Schneider / Profab/ L&T
14.	Surge Protection Device	Schneider Electric/OBO /L&T /Legrand/ ABB/ Havells
15.	Manufactures of Solar PV Cells and Modules	Approved As per prevailing OM / List of MNRE Approved by Engineer In charge as per Tender Specifications
16.	String Inverter / PCU	Approved As per prevailing OM / List of MNRE Approved by Engineer In charge as per Tender Specifications
17.	Combiner Boxes DC Junction Board and Sub Junction Box	Hensel / Eltso / VNT / Techser / OBO/ OEM of SPV Modules

18.	Energy Meter / Net Meter / Bidirectional Meter	As Approved Makes of Local utility department
19.	Steel conduit/ PVC conduit WITH ISI marked Accessories	AKG/ VIMCON/ RMCON/ Steel Kraft
20.	Any other material	As per prior approval of engineer in charge

Note:-

1. In case of Solar PV Panels, it shall satisfy the performance and warranty conditions stipulated in the agreement. Necessary undertaking / Certificate from the OEM shall be obtained and submitted to the Engineer – in – Charge before making any payments. Willingness / conformity of specifications and performance from the OEM shall be submitted along with the proposal for product approval.

Preference to PPP-M – II Policy (Make in India):

- 1) The Government has issued public procurement policy (Preference to Make in India) vide Ministry of Commerce and Industry Development of industrial policy and promotion (PPS) vide order No. P-45021/2/2017-PP BE-II dated 28.05.2018, to “Encourage Make in India” and to promote manufacturing and production of Goods and services in India with a view to enhancing income and employment. CPWD has decided to implement this policy with up-to-date amendments.
- 2) The agency shall submit list of makes of materials proposed to be used on the work from local suppliers (as defined in the above order dated 28.05.2018) along with minimum local content as specified below for approval of the department out of the approved makes kept in the tender.
- 3) The department will be approving only makes of the materials having a minimum local content of 20% to 50% for use on this work, out of the preferred makes list.
- 4) The minimum local content of 20% to 50% is considered for the complete item including labour component.
- 5) The agency shall obtain the certificate for all items except for sundry items.

Assistant Engineer (E)-(P)
FED, CPWD, NH-IV,
Faridabad

Executive Engineer (E)
FED, CPWD, NH-IV,
Faridabad

SCHEDULE OF WORK

Name of Work :- SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.						
Sl. No.	Item Description	Qty		Rate	Unit	Amount
1	Supplying Installation, Testing and Commissioning of on-grid Solar Photovoltaic Power Plant conforming to various applicable standards BIS, IEC, MNRE guidelines, the Central Electricity Authority Regulations and CPWD Specifications as amended up to date, consisting of Mono/Poly Crystalline silicon solar cells module, net metering facility, necessary control, protections, earthing, cabling, mounting structure, junction boxes, power conditioning units, Real time online web interfaced Data Monitoring System, Distribution panels, grid connecting arrangement, conduits, pipes, cable trays and other accessories etc. as required. a) High Energy Efficiency Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730- Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 23% at STC with temperature coefficient of Pmax better than -0.30% per 0C. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Solar Modules shall be designed to operate in relative humidity upto 100% with temperature between - 10 0C and +85 0C. Further, each PV module used in any solar power project must have Radio frequency identification tag with information such as name of manufacturer, month and year of manufacturing, country of origin (separately for Solar cell and module), I-V curve, Unique Serial No and Model No of the module, Wattage, Im, Vm and FF, name of test lab issuing IEC certificate.					

	b) Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 415 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC with a variation of 10% at nominal voltage. Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 °C, Minimum IP-65 for outdoor and Minimum IP 21 for indoor, Built-in meter and data logger, MPPT, switching devices IGBT/MOSFETs and controller Microprocessor /DSP. PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown. The PCU shall be able to withstand unbalanced load conforming to IEC standard with shutdown/standby mode. It must be provided with grid islanding along with manual disconnect pole isolation switch besides automatic disconnection. Minimum protections: Mains Under / Over Voltage, Over current, Over/Under grid frequency, Over temperature, Surge voltage induced at output due to external source, Short-circuit, Lightning, Anti Islanding (for grid synch. Mode) and other protections as per applicable standards. LCD/LED display of minimum parameters: DC input voltage, DC current, AC Voltage and current (all 3 phases, in case of 3 phase), Instantaneous & cumulative AC output power, Daily DC energy produced and other parameters applicable standard. Communication interface RS 485 / RS 232.					
	c) Module mounting structure: The roof top solar plant generation units shall be installed by using supporting Aluminium/Galvanized MS structure (mass of zinc coating shall be as per IS4759) having minimum head room clearance of 2.4 meter above the terrace level / ground level. The mounting structure would be designed to sustain wind load and seismic parameter of the site of installation. All the structure shall be design as per applicable BIS code and the material shall also confirm the applicable BIS Code. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. The suitable arrangements for maintenance and cleaning shall be provided. d) Real time online web interfaced Data Monitoring System complete with accessories for various parameters such as Solar Irradiance, temperature, AC Output Voltage and current, Output Power, Power factor, DC Input Voltage and Current, Time Active, Time disabled, Time Idle, Power produced and other parameters as per standard practices.					

	e) Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other accessories etc. as required. Each junction box shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement with High quality Suitable capacity Metal Oxide Varistors(MOVs) (semiconductor diode with resistant applied voltage)/ surge arrestors and suitable Reverse Blocking Diodes, isolation switches isolate the DC input to Inverter, copper bus bar etc. f) Lightning, surge voltage protection, earthing protection and grid islanding. g) Cables: Connections & Interconnections by required size IR/UV protected XLPE insulated copper conductor 1.1 kV grade armored power and control cables(ISI Marked) along with supplying & fixing of necessary channel/conduit, GI cable trays, supports, lugs, thimble and other accessories etc. as required. h) DC Distribution Board And AC Distribution Panel Board: IP65, free standing, metal clad, having copper bus bar, having required protection and control gears, connection-interconnection, etc. as required.	28	kWp	54280.00	P/kWp	1519840.00
2	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required.	6	Set	8351.00	Set	50106.00
3	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	150	Mtr.	287.00	P/Mtr.	43050.00
		Total				1612996.00

Assistant Engineer (Elect.)Pl.

Executive Engineer (Elect.)
Faridabad Electrical Division
CPWD, Faridabad.

PART - C

FINANCIAL BID

PROFORMA FINANCIAL BID

CENTRAL PUBLIC WORKS DEPARTMENT				
NIT No.. 83/EE(E)/FED/2026-27				
Name of Work: SITC of Rooftop Solar Panel at RRSL, Sec-56, Faridabad.				
Name of Contractor:				
S. No.	Component of Work	Estimated Cost (Rs.)	Quoted Percentage (at par/above/below) the Total Estimated Cost	TOTAL TENDERED AMOUNT (Rs.)
1.	(E&M Works) (As per Schedule of Qty)	16,12,996/-		
TOTAL ESTIMATED COST		16,12,996/-		

Assistant Engineer (E)-(P)
FED, CPWD, NH-IV,
Faridabad

Executive Engineer (E)
FED, CPWD, NH-IV,
Faridabad