



**Government of India
Central Public Works Department
O/o Executive Engineer (E)
CPWD, Jaipur**

NOTICE INVITING TENDERS

N.I.T. No. : 52/EE(E)/CPWD/Jaipur/2026-27/AE(E)-Bikaner

Name of Work : Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).

Estimated Cost : Rs. 10,85,600 /-

Earnest Money : Rs. 21,712/-

SECURITY DEPOSIT : 2.5% of Tenderer Amount

TIME ALLOWED : 03 Months

Executive Engineer (E)
CPWD, Jaipur

TENDER NOTICE

CENTRAL PUBLIC WORKS DEPARTMENT NOTICE INVITING E-TENDER

The **Executive Engineer (E), CPWD, Jaipur** on behalf of the President of India invites online percentage rate bids in two bid system from eligible CPWD contractors of Buildings & Roads category of appropriate class /eligible Specialized firms in the field **“Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System”** for the following work :-

N.I.T. No. : **52/EE(E)/CPWD/Jaipur/2026-27/AE(E)-Bikaner**

Name of Work : **Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).**

Estimated Cost : **Rs. 10,85,600/-**

Earnest Money : **Rs. 21,712/-**

Time Allowed : **03 (Three) Months**

Last date & time of submission of tender : **Up to 03.00 PM on 23/10/2026***

The tender forms and other details can be obtained from the website www.etender.cpwd.gov.in and www.eprocure.gov.in.

**Executive Engineer (E)
CPWD, Jaipur**

CHECK LIST FOR BIDDERS FOR SUBMISSION OF BIDS

1. The bidder should read all the instructions, items & conditions, contract clauses, nomenclature of items, specifications etc., contained in the bids document very carefully, before quoting the rates.
2. The bidder should also read the General Conditions of Contract for CPWD works 2023 Maintenance work, published by DG, CPWD, Nirman Bhawan, New Delhi which will be a part of the Agreement with up to date amendments upto previous date of receipt of tenders.
3. The bidder shall quote his rates keeping in mind the specifications, terms & conditions, additional and special conditions, taxes, royalties, labour cess, stamp duty etc. and nothing extra shall be payable unless otherwise specified.
4. The bidder shall have to make his own arrangement for housing facilities for staff and labour at site or to transport the labour to and for between work site and labour camp at his own cost.
5. The bidder should read the specification and special condition and additional conditions etc.
6. The bidder shall make environment friendly arrangement for disposal of dismantle/waste materials from upper floors.

INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING

The Executive Engineer (E), CPWD, Jaipur (Email ID : jced-cpwd-rj@gov.in) invites on behalf of the President of India, online percentage rate tender in two bid system from eligible CPWD contractors of Buildings & Roads category of appropriate class / eligible Specialized firms in the field “ **Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System** ” for the following work :-

S. No.	NIT No.	Name of work & Location	Estimated cost put to Bid	Earnest Money	Period of Completion	Last date and time of Online submission of Bid	Date and time for Online opening of Eligibility Bid	Time & date of Online opening of Financial Bids
1	2	3	4	5	6	7	8	9
1	52/EE(E)/CPWD/Jaipur/2026-27/AE(E)-Bikaner	Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).	Rs. 10,85,600/-	Rs. 21,712/-	03 (Three) Months	Up to 03.00 PM on 23/10/2026*	At 03.30 PM on 23/10/2026*	Shall be informed to the bidders by EE(E), CPWD, Jaipur after scrutiny of eligibility documents of the bidders

Eligibility Criteria for CPWD enlisted and specialized non-CPWD contractors :

1. Tenderers who fulfill the following requirements shall be eligible to apply.
[1(b), 1(c) & 1(d) are not applicable for CPWD enlisted contractors of appropriate class. 1(a)(i) & 1(a)(ii) are applicable for CPWD enlisted contractors also]
- (a)
- (i) Should have satisfactorily completed 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 works each costing not less than **Rs. 4.34 Lakh.**

OR

Two similar completed works each costing not less than **Rs. 6.51 Lakh.**

OR

One similar completed work costing not less than **Rs. 8.68 Lakh.**

“Similar work shall mean work of “Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System”.

The value of executed works 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 the previous day of last date of submission of tenders.

- (ii) In case of works executed in Private Sector, Completion Certificate should be accompanied with TDS certificates.

- (b) Should have had an average annual financial turnover of **Rs. 3.26 Lakh (30%)** on Construction works at least during the last three years ending **30 September 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 last five consecutive years ending **September,2026.**
- (d) Should have a Banker's Certificate from a Commercial Bank for **Rs. 4.34 Lakh** OR Net worth certificate **(as on 30.09.2026)** from CA with Unique Document Identification Number (UDIN) of **Rs. 1.09 Lakh** (Scanned copy of original to be uploaded).
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. The 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 and downloaded from website **www.etender.cpwd.gov.in** or **www.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 inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission and uploading the mandatory scanned documents such as Insurance Surety Bonds, Account Payee Demand draft or Bankers Cheque or Fixed Deposit Receipt or/and Bank Guarantee (for balance amount as prescribed from any of the Commercial Bank towards EMD in favour of Executive Engineer as mentioned in NIT, receipt for deposition of original EMD to division office of any Executive Engineer (including NIT issuing EE/AE), CPWD and other documents as specified.
 6. Those contractors who are not registered or have not updated their profile on the website mentioned above, are required to get registered 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 instruction 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 of submission of bid contractor may upload

Affidavit/Certificate from CA mentioning Financial Turn Over of last 7 years or for the period as specified in the bid document and further details if required may be asked from the contractor after opening of technical bid. There is no need to upload entire voluminous balance sheet.

11. Contractor must ensure to quote rate of each item. The column meant for quoting 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 a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

12. 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 subsoil (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 bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra cost 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 bidder 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. GST applicable as per Government norms up to date and future circulars. Contractor should quote the rate including GST as per Govt. norms, nothing to be reimbursed against GST directly.
14. Contractor should quote considering Stamp Duty as per Raj. Govt. norms, nothing to be reimbursed against Stamp Duty.
15. The Eligibility / 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.
- ~~16. 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.~~
17. The department reserves the right to reject any prospective application without assigning any reason thereof and to restrict the list of qualified bidders to any number deemed suitable by it, if

too many bids are received satisfying the minimum laid down criteria.

18. Bidder shall have Electrical contractor licence OR associate contractor having valid electrical licence of appropriate class at the time of execution of electrical work.

List of documents to be scanned and uploaded by bidder within the period of bid submission:

- I. Insurance Surety Bonds/ Account Payee Demand Draft / Fixed Deposit Receipt / Banker's Cheque and Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks against EMD in favour of **Executive Engineer (Electrical), Jaipur Central Electrical Division, CPWD, Jaipur.**
- II. **Copy of Receipt for deposition of original EMD** issued from any Division office of CPWD where bidder deposited EMD. Format of deposition receipt should be as per Form 'F' of NIT **page No. 35**
- III. **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".
- IV. Letter of Transmittal at **page No. 29.**
- V. Certificate of Financial Turnover and Profit and loss from Chartered Accountant (Form 'A' at **page No. 30**)
- VI. Banker's Certificate from a Commercial Bank or Net worth Certificate. **(Form 'B' or 'B1' at page No. 31)**
- VII. Details of Eligible Similar nature of works completed during the last 7 years ending previous date of last date of submission of tenders as mentioned at **Page No. 3 (Form 'C' at page No. 32)**
- VIII. Performance report of completed works (works mentioned in Form-C) **(Form 'D' at page No. 33)**

- IX. Structure & Organization (**Form ‘E’ at page No. 34**)
- X. Affidavits (**Form ‘G’ & ‘H at page No. 36 & 37**). Affidavit (Form H) should be duly notarized.
- XI. Copy of Completion Certificates / Performance reports of eligible similar nature of works issued by the Client not below the rank of Executive Engineer/ Project Manager or equivalent.
- XII. Copy of Enlistment order in case of Registered CPWD Contractors.
- XIII. Any other document as specified in the NIT.
(Documents mentioned at S.No. V, VI & IX are not required to be uploaded by CPWD enlisted contractor.).

Executive Engineer (E)
CPWD, Jaipur

(xxx) – to be filled by EE

PART – A

NOTICE INVITING e-TENDER (CPWD-6), TENDER FORM (CPWD-7), SCHEDULES - A TO F FOR WORK AND STANDARD GCC FOR CPWD-2023 FOR **CONSTRUCTION WORK WITH AMENDED/MODIFIED UP TO LAST DATE OF TENDER SUBMISSION**

CPWD-6 FOR E- TENDERING

1. The Executive Engineer (E), CPWD, Jaipur (Email ID : jced-cpwd-rj@gov.in) invites on behalf of the President of India, online percentage rate tender in two bid system from eligible CPWD contractors of Buildings & Roads category of appropriate class / eligible Specialized firms in the field “ **Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System**” for the work of “**Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.)**”.

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

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

- 1.1 The work is estimated to cost **Rs 10,85,600 /- only**. 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 Eligibility Criteria for CPWD enlisted and specialized non-CPWD contractors :

- (1) Tenderers who fulfill the following requirements shall be eligible to apply.
[1(b), 1(c) & 1(d) are not applicable for CPWD enlisted contractors of appropriate class. 1(a)(i) & 1(a)(ii) are applicable for CPWD enlisted contractors also]
- (a)
 - (i) Should have satisfactorily completed 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 works each costing not less than **Rs. 4.34 Lakh.**

OR

Two similar completed works each costing not less than **Rs. 6.51 Lakh.**

OR

One similar completed work costing not less than **Rs. 8.68 Lakh.**

“Similar work shall mean work of “Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System”.

The value of executed works 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 the previous day of last date of submission of tenders.

- (ii) In case of works executed in Private Sector, Completion Certificate should be accompanied with TDS certificates.
 - b) Should have had an average annual financial turnover of **Rs. 3.26 Lakh (30%)** on Construction works at least during the last three years ending **30 September 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.
 - (b) Should not have incurred any loss (profit after tax should be positive) in more than two years during last five consecutive years ending **September,2026.**
 - (c) Should have a Banker's Certificate from a Commercial Bank for **Rs. 4.34 Lakh** OR Net worth certificate (**as on 30.09.2026**) from CA with Unique Document Identification Number (UDIN) of **Rs. 1.09 Lakh** (Scanned copy of original to be uploaded).
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 06 (Six) 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 shall be made available in parts.
 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 <https://etender.cpwd.gov.in> or 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 including (for balance amount as

prescribed) from any of the Commercial Banks(drawn in favour of **(Executive Engineer (E), Jaipur Central Electrical Division, CPWD, Jaipur)** shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) 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, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier. However, in case of two/ three bid system, earnest money deposit of bidders unsuccessful during technical bid evaluation etc. should be returned within 30 days of declaration of result of technical bid evaluation.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the notice inviting e- tender shall be scanned and uploaded on the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in e- tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with any division of CPWD and other documents scanned and uploaded are found in order.

The eligibility bid submitted shall be opened at 03:30 PM on 23/10/2026*

10. The bid submitted shall become invalid and e-Tender processing fee (if applicable) shall not be refunded if:
 - (i) The bidder is found ineligible.
 - (ii) The bidder does not upload scanned copies of all the documents stipulated in the bid document.
 - (iii) If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
11. The contractor whose bid is accepted will be required to furnish performance guarantee at specified percentage of the tendered amount 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, the Earnest Money deposited by the contractor shall be forfeited

automatically without any notice to the contractor. The earnest money deposited along with 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 subcontractors, if any engaged by the contractor for the said work within the period specified in Schedule F.

12. The description of the work is as follows:

Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).

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 bidder 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 bidder 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 bidder 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 bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.
14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for 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 and 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 gazetted officer in the Central Public Works Department or in the Ministry of Housing and Urban Affairs. 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 prior 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 bids for the work shall remain open for acceptance for 75 (seventy five) days from the date of opening of technical bids in case bids are invited in 2 or 3 bid system.
- Further
- (i) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department within 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
 - (ii) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department after expiry of 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.
 - (iii) In case of forfeiture of earnest money as prescribed in para (i) and (ii) above, the bidders shall not be allowed to participate in the rebidding process of the same work.
19. This notice inviting Bid shall form a part of the contract document. The successful bidder/contractor, on acceptance of his bid by the Accepting Authority shall within 15 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 the 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 7/8 or other Standard C.P.W.D. Form as applicable.
20. The intending bidders are required to update their profile in CPWD e- tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/uploading tender can be resolved through the concerned **(Executive Engineer (E), CPWD, Jaipur)** Executive Engineer/ Assistant Engineer (Phone no **0141-2232095**, E-mail ID : **jced-cpwd-rj@gov.in**) or ERP helpline no. 18001803286 or e-mail Id **cpwd.support@techmahindra.com**. The e- tendering bidders are also advised not to wait to raise any issues till the last date of submission of bid in their own interest.

Executive Engineer (E)
CPWD, Jaipur

(xxx) – to be filled by EE.

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

Tender for the work of **Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.)**.

- (i) To be uploaded by 3:00 PM on **23/10/2026*** at www.etender.cpwd.gov.in.
- (ii) Eligibility bid (Technical Bid) to be opened in presence of tenderers who may be present at 3:30 PM on **23/10/2026*** in the office of **Executive Engineer (E), CPWD, Jaipur**.

T E N D E R

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 respect with the specifications, designs, drawing 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 respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for **Seventy Five (75) days** from the date of opening of eligibility / technical bid in case tenders are invited on 2 /3 bid/ system for specialized work and not to make any modification in its terms and conditions.

A sum of **Rs. 21,712/-** is hereby forwarded in cash/receipt treasury challan/deposit at call receipt of a scheduled bank/fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank as earnest money.

A copy of earnest money in receipt treasury challan/deposit at call receipt of a scheduled bank/fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank 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, 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 forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

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
Witness:

Signature of Contractor
Postal Address

Address:
Occupation:

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.
Dated:

Signatures.....
Designation.....

(xxx) – to be filled by EE.

SCHEDULE 'A' to 'F'

SCHEDULE 'A'

Schedule of quantities: **As per BOQ attached on page no. 78**

SCHEDULE 'D'

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

1. Additional Conditions
2. Additional Specifications
3. Special Conditions

SCHEDULE 'E'

Reference to General Conditions of Contract:

General Conditions of Contract 2023 for Construction Works in CPWD as amended / modified upto the previous date of submission of Bid.

Name of Work: **Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).**

Estimated Cost of work: **Rs. 10,85,600 /-**

Earnest Money: **Rs. 21,712/-**
(to be returned after receiving performance guarantee)

Performance Guarantee: (a) **5% (Five percent)** of tendered value **OR** **Estimated cost Put to Tender (ECPT) (whichever is higher)** as per **OM NO. DG/CON/Construction 2023/20 dated 27.02.2026.**

- (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.

Security Deposit: **2.5% of the accepted tendered value of work**

SCHEDULE 'F':**General Rules & Directions:-**

	Officer Inviting Tender	: Executive Engineer (E) CPWD, Jaipur
	Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3	: Refer Clause-12
	Definitions:-	
2 (v)	Engineer-In-Charge	: Executive Engineer (E) CPWD, Jaipur or successor thereof
2 (viii)	Accepting Authority	: Executive Engineer (E) CPWD, Jaipur
2 (x)	Percentage on cost of materials and labour to cover all overheads and profits	: 15%
2 (xi)	Standard Schedule of Rates (Electrical)	: DSR(E&M) 2025 for electrical works with up-to-date correction slips & Market rates
2 (xii)	Department	: Central Public Works Department
9(ii)	Standard CPWD Contract (civil & electrical)	General Conditions of Contract 2023 for Construction works, CPWD Form-7 as amended / modified upto the previous date of submission of Bid
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 including provident fund Code No. or proof of applying thereof from the date of letter of acceptance.	07 days
(ii)	Maximum allowable extension with late fee @ 0.1 % per day of performance guarantee amount beyond the period as provided in (i) above	03 days
Clause-2	Authority for fixing compensation under clause-2.	Executive Engineer (E), CPWD, Jaipur or his successor thereof.
Clause-5	Number of days from the date of issue of letter of acceptance for reckoning date of start.	10 days

TABLE OF MILE STONES

S. No.	Description of Milestone (Physical & Financial)	Time allowed in days (from date of start)	Amount to be withheld in case of non-achievement of milestone

Time allowed for execution of work	: 03(Three) Months
------------------------------------	--------------------

	Authority to decide		
(i)	Extension of time for completion of work.	:	Executive Engineer (E) CPWD, Jaipur
(ii)	Re-scheduling of Mile stone	:	Executive Engineer(E), CPWD, Jaipur or his successor thereof
(iii)	Shifting of date of start in case of delay in handing over of site.	:	Executive Engineer(E), CPWD, Jaipur or his successor thereof

Proforma of Schedule:

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	Full site	07 Days
Part B	Portions with encumbrances	NIL	Not Applicable
Part C	Portions dependent on work of other agencies	NIL	Not Applicable

Schedule of issue of Designs:

Part	Portion of Design	Description	Time Period for issue of design reckoned from date of receipt of tenders
Part A	Portion already in NIT	As per the scope of work mentioned in the bid document.	
Part B	E&M Designs to be issued	All required designs & drawings of services of E&M works covered in the scope of the work.	To be submitted by the contractor for approval of the Department as per NIT conditions and as per the milestones mentioned.

Clause-5.2	Nature of Hindrance Register (either Physical or Electronic)	Online system
CLAUSE 5.4	Schedule of rate of recovery for delay in submission of the modified programme in terms of delay days. Recovery to be made on per day of delay at the rate specified as under :-	As per table below

Sl. No.	Contract Value	Recovery (Rs)
I	Less than or equal to Rs 1 Crore	500
II	More than Rs 1 crore but equal to Rs 5 Crore	1000
III	More than Rs 5 crore but equal to Rs 20 Crore	2500
IV	More than 20 Crore	5000
Clause-6	Computerised Measurement Book (CMB) / Electronic Measurement Book (EMB) Mode of Measurement :	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.	Rs. 5.00 Lakh
Clause-7A	Whether Clause-7A shall be applicable.	Yes
Clause-7B	Payment to Third Party	Applicable
CLAUSE 8A		
	Authority to decide compensation on account if contractor fails to submit completion plans.	Executive Engineer (E) CPWD, Jaipur or his successor thereof
Clause-10A	List of testing equipment to be provided by the contractor at site lab	As per requirement of work and instructions of Engineer-in-charge.
Clause-10B(ii)	Whether clause 10-B(ii) shall be applicable.	No
Clause-10C		Not Applicable
Clause-10CA		Not Applicable
Clause :10CC		Not Applicable
Clause-11	Specifications to be followed for Execution of work	(A) C.P.W.D. Specifications 2019 with correction slips upto the previous date of submission of Bid and as per manufacturer's specification i/c special conditions & particular specifications (for Civil items)

		(B) CPWD General Specifications for Electrical Works Part-I (Internal) 2023, Part-II (External) 2023 as amended up-to date, correction slip relevant IE Rules, BIS / IEC (for E&M items)
Clause-12	Type of work	Original Work
	Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2C	See Below
12.2C	Deviation Limit beyond which clauses 12.2C shall apply	100%
Clause-16	Competent Authority for deciding reduced rates	Chief Engineer, CPWD, Jaipur
Clause-18	List of mandatory machinery, tools & plants to be deployed by the contractor at site:	As per requirement of work and instructions of Engineer-in-charge.
Clause-19	Competent Authority to decide penalty for each default	
Clause 19C	Competent Authority to decide penalty for each default	Executive Engineer (E) CPWD, Jaipur or his successor thereof
Clause 19D	Competent Authority to decide penalty for each default	Executive Engineer (E) CPWD, Jaipur or his successor thereof
Clause 19G	Competent Authority to decide penalty for each default	Executive Engineer (E) CPWD, Jaipur or his successor thereof
Clause 19K	Competent Authority to decide penalty for each default	Executive Engineer (E) CPWD, Jaipur or his successor thereof
Clause-25		
(i)	Conciliator	SDG-Chandigarh
(ii)	Arbitrator Appointing Authority	CE-Jaipur
(iii)	Place of Arbitration	Member

	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 Cl. 32
S. No	Qualification	Number			Figures
1.	Graduate or Diploma Engineer	1	2 or 5 Years respectively	Project/Planning/ Quality/Site/ Billing Engineer	Rs. 15,000/- Per month per person

Assistant Engineers retired from Government Services that are holding Diploma will be treated atpar with Graduate Engineers.

Diploma holder with minimum 10 years 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.

(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 (name of division) CPWD on behalf of the President of India (hereinafter called "The Government") has invited bids under..... (NIT number) dated for..... (name of work) The Government has further agreed to accept irrevocable Bank Guarantee for Rs. (Rupeesonly) valid upto (date)* as Earnest Money Deposit from (name and address of 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 (name of division), CPWD on behalf of the President of India (hereinafter 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) The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. (Rupees..... only) valid upto..... (date) as Performance Guarantee/Security Deposit/Mobilization Advance from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We, (indicate the name of the bank) (hereinafter referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs. (Rupees only) on demand by the Government within 10 days of the demand.
3. We, (indicate the name of the Bank), do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. 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 in any suit or proceeding pending before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.
5. We, (indicate the name of the Bank), further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor 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 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 or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor 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.
8. We, (indicate the name of the Bank), undertake not to revoke this guarantee except with the consent of the Government in writing.
9. This Bank Guarantee shall be valid up to..... unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupees only) 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:

- | | | |
|----|------------------------------------|--|
| 1. | Signature.....
Name and address | Authorized signatory
Name
Designation
Staff Code No.
Bank Seal |
| 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.

PART - B

(E&M WORKS)

SECTION-I
BRIEF PARTICULARS OF THE WORK

1. Salient details of the work for which bids are invited are as under:

Sl. No.	Name of work	Estimated Cost	Period of completion
1.	Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).	Rs. 10,85,600 /-	03 (Three) Months

2. The work is situated at **Locust, Churu(Raj.)**.
3. Scope of work SITC of Solar Photo Voltaic Power Generation System
4. Work shall be executed according to General Conditions of Contract for Central P.W.D. Works available separately at printer's outlets. The bidder may obtain the address of the outlets from the, **Executive Engineer (E), CPWD, Jaipur**. The General Conditions of Contract for Central Public Works Department are also available on web site www.cpwd.gov.in.

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SECTION-II

1.0 General :

INFORMATION & INSTRUCTIONS FOR BIDDERS

- 1.1 Letter of transmittal and forms for deciding eligibility are given in Section III.
- 1.2 All information called for in the enclosed forms should be furnished against the relevant columns in the forms. If for any reason, information is furnished on a separate sheet, this fact should be mentioned against the relevant column. Even if no information is to be provided in a column, a "nil" or "no such case" entry should be made in that column. If any particulars/query is not applicable in case of the bidder, it should be stated as "not applicable". The bidders are cautioned that not giving complete information called for in the application forms or not giving it in clear terms or making any change in the prescribed forms or deliberately suppressing the information may result in the bid being summarily disqualified. Bids made by telegram or e-mailed or telex and those received late will not be entertained.
- 1.3 References, information and certificates from the respective clients certifying suitability, technical knowledge or capability of the bidder should be signed by an officer not below the rank of Executive Engineer or equivalent.
- 1.4 The bidder may furnish any additional information which he thinks is necessary to establish his capabilities to successfully complete the envisaged work. He is, however, advised not to furnish superfluous information. No information shall be entertained after submission of eligibility criteria document unless it is called for by the Employer.

2.0 Definitions:

- 2.1 In this document the following words and expressions have the meaning hereby assigned to them.
- 2.2 Employer: Means the President of India, acting through the Executive Engineer(E), CPWD, Jaipur.
- 2.3 Bidder: Means the individual, proprietary firm, firm in partnership, limited company private or public or corporation.
- 2.4 "Year" means "Financial Year" unless stated otherwise.

3.0 Method of application:

- 3.1 If the bidder is an individual, the application shall be signed by him above his full type written name and current address.
- 3.2 If the bidder is a proprietary firm, the application shall be signed by the proprietor above his full typewritten name and the full name of his firm with its current address.
- 3.3 If the bidder is a firm in partnership, the application shall be signed by all the partners of the firm above their full typewritten names and current addresses, or, alternatively, by a partner holding power of attorney for the firm. In the latter case a certified copy of the power of attorney should accompany the application. In both cases a certified copy of the partnership deed and current address of all the partners of the firm should accompany the application.

- 3.4 If the bidder is a limited company or a corporation, the application shall be signed by a duly authorized person holding power of attorney for signing the application accompanied by a copy of the power of attorney. The bidder should also furnish a copy of the Memorandum of Articles of Association duly attested by a Public Notary.

4.0 Final decision making authority.

The employer reserves the right to accept or reject any bid and to annul the process and reject all bids at any time, without assigning any reason or incurring any liability to the bidders.

5.0 Particulars provisional

The particulars of the work given in Section I are provisional. They are liable to change and must be considered only as advance information to assist the bidder.

6.0 Site visit

The bidder is advised to visit the site of work, at his own cost, and examine it and its surroundings to himself collect all information that he considers necessary for proper assessment of the prospective assignment.

7.0 Initial Criteria for eligibility

- 7.1 The Bidder should have satisfactorily completed similar works during the last Seven years ending last date of the month previous to the one in which tenders are invited. For this purpose cost of work shall mean gross value the completed work including cost of material supplied by the Government/Client but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer/Project Manager or equivalent.

- a. Should have satisfactorily completed 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 works each costing not less than **Rs. 4.34 Lakh.**

OR

Two similar completed works each costing not less than **Rs. 6.51 Lakh.**

OR

One similar completed work costing not less than **Rs. 8.68 Lakh.**

“Similar work shall mean work of “Supply, Installation, Testing and Commissioning of Solar Photo Voltaic Power Generation System”.

The value of executed works 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 the previous day of last date of submission of tenders.

- b. In case of works executed in Private Sector, Completion Certificate should be accompanied with TDS certificates.

Should have had an average annual financial turnover of **Rs. 3.26 Lakh (30%)** on Construction works at least during the last three years ending **30 September 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.

Should not have incurred any loss (profit after tax should be positive) in more than two years during last five consecutive years ending **September,2026**.

Should have a Banker's Certificate from a Commercial Bank for **Rs. 4.34 Lakh** OR Net worth certificate (**as on 30.09.2026**) from CA with Unique Document Identification Number (UDIN) of **Rs. 1.09 Lakh** (Scanned copy of original to be uploaded).

7.5 The bidder should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The bidder shall have to submit a list of these employees stating clearly how these would be involved in this work within 15 days of award of work.

8 The initial criteria prescribed in para 7.0 above in respect of experience of eligible similar works completed, profit/loss, Banker's certificate, financial turnover and bidding capacity etc. will first be scrutinized and the bidder's eligibility for the work will be determined.

9.0 Financial information

Bidder should furnish the Annual financial statement for the last five years in (Form "A"). Banker's Certificate in (Form "B") or Networth Certificate in (Form "B-1").

10.0 Experience of similar works

10.1 Bidder should furnish the List of eligible similar nature of works successfully completed during the last seven years in (Form "C") .

11.0 Organization information

Bidder is required to submit the information in respect of his organization in Forms "E"

12.0 Letter of transmittal

The bidder should submit the Letter of Transmittal attached with the document.

13.0 Opening of Price bid

After evaluation of applications, a list of short listed agencies will be prepared. Thereafter the financial bids of only the qualified and technically acceptable bidders shall be opened at the notified time, date and place in the presence of the qualified bidders or their representatives.

14.0 Award Criteria

14.1 The employer reserves the right, without being liable for any damages or obligation to inform the bidder, to:

- (a) amend the scope of work and value of contract.
- (b) Reject any or all the applications without assigning any reason.

14.2 Any effort on the part of the bidder or his agent to exercise influence or to pressurize the employer would result in rejection of his bid. Canvassing of any kind is prohibited.

SECTION-III
LETTER OF TRANSMITTAL

From:

To,

The Executive Engineer (E),
CPWD, Jaipur.

Subject: Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).

Sir,

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

1. I/we hereby certify that all the statements made and information supplied in the enclosed **Forms – A to H** and accompanying statements 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 requisite certified Bank Solvency Certificate and authorize the **Executive Engineer (E), CPWD, Jaipur** to approach the Chartered Accountant issuing the Bank Solvency Certificate to confirm the correctness thereof. I/we also authorize **Executive Engineer (E), CPWD, Jaipur** to approach individuals, Engineer-in-charges, firms and corporation to verify our competence and general reputation.
4. 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 From

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 of any information furnished by me/us found to be incorrect.

Enclosures:

Date of submission:

Signature(s) of Bidder(s)
with Seal of Bidder

FORM 'A'
FINANCIAL INFORMATION

- I. 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).

Amount in Crores

S. No.	Description	Financial Year				
		2021-22	2022-23	2023-24	2024-25	2025-26
(i)	Gross Annual Turn Over on construction works					
(ii)	Profit/Loss (standalone financial statement and consolidated financial statement both)					

* The figure of loss should be prefixed by (-)sign.

- II. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal
UDIN No.

Signature of Bidder(s)

**FORM “B”
BANKERS’S CERTIFICATE FROM A COMMERCIAL BANK**

This is to certify that to the best of our knowledge and information that M/s./Shri..... having marginally noted address, 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) **Bankers certificate should be on the letter head of 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 NET WORTH
FROM CHARTERED ACCOUNTANT**

“It is to certify that as per the audited balance sheet and profit & loss account during the financial year , the Net Worth 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 DATE OF SUBMISSION OF
TENDERS

S.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	Actual Date of Completion	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 Arbitrator.

Signature of Bidder(s)

FORM "D"

PERFORMANCE REPORT OF WORKS REFERRED TO IN FORMS "C"

1. Name of Work/Project & Location :
2. WO/Agreement No. :
3. Estimated Cost :
4. Tendered Cost :
5. Date of Start :
6. Stipulated Date of Completion :
7. Actual Date of Completion :
8. Amount of compensation levied for delayed completion, if any
 - (a) Whether case of levy of compensation for delay has been decided or not: Yes/No
 - (b) If decided, amount of compensation levied for delayed completion, if any:
9. Quality of work: Outstanding / Very Good / Good / Poor

Dated :

Executive Engineer or Equivalent

FORM 'E'
STRUCTURE & ORGANISATION

1.	Name & address of the bidder :	
2.	Telephone No. / Telex No. / Fax No. / Email id :	
3.	Legal status of the bidder (Scan & upload copies of original document defining the legal status)	
	a) An Individual	
	b) A proprietary firm	
	c) A firm in partnership	
	d) A limited company or Corporation	
4.	Particulars of registration with various Government bodies (Scan & upload attested photocopy)	
	Organization / Place of registration	Registration No.
	1.	
	2.	
	3.	
5.	Names and titles of Directors & Officers with designation to be concerned with this work.	
6.	Designation of individuals authorized to act for the organization.	
7.	Has the bidder, or any constituent partner in case of partnership firm, limited company / Joint Venture, ever been convicted by a court of Law? If so, give details	
8.	In which field of Civil Engineering construction the bidder has specialization and interest?	
9.	Any other information considered necessary but not included above.	

Signature of Bidder(s)

FORM 'F'
Receipt of Deposition of Original EMD

Receipt No.:

Date :

- | | |
|------------------------------------|--|
| 1. Name of Work | Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.). |
| 2. NIT No. | 52/EE(E)/CPWD/Jaipur/2026-27/AE(E)-Bikaner |
| 3. Estimated Cost | Rs. 10,85,600 /- |
| 4. Amount of Earnest Money Deposit | Rs. 21,712/- |
| 5. Last date of submission of bid | 23/10/2026* at 3:00 PM |

- | | |
|------------------------------------|-------|
| 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/DDH)
Along with office stamp

(#To be filled by EMD receiving EE/DDH)

Note : The receipt can also be issued by any subordinate Gazetted authority as authorized by the Engineer-in-Charge/DDH.

**FORM ‘G’
AFFIDAVIT**

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 the 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 of this affidavit to be uploaded at the time of submission of bid).**

NOTE : “A work is said to have been executed on “back to back “ basis when the entire work or substantial part of the work forming the basis for evaluation of the eligibility of the bidder is got executed by the bidder through another contractor either by direct nomination or by call of tender”.

.....
Signed by an Authorised Officer of the firm with stamp

FORM 'H'

AFFIDAVIT

(NOTE: Affidavit to be furnished on a 'Non-Judicial' stamp paper worth Rs.100/-)

I/We undertake and confirm that I/ We have not abandoned any work of Union Government/ State Governments/ PSU's etc. during the last 5 years. I/ We have not been blacklisted, debarred, declared non performer or expelled by Union Government/ State Governments/ PSU's etc during the last 5 years upto the last date of receipt of bid. Further it is stated that, if any 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 or after the 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 of this affidavit to be uploaded at the time of submission of bid).**

.....
Signed by an Authorised Officer of the firm with stamp

केन्द्रीय लोक निर्माण विभाग

कार्यालय ज्ञापन

No. DG/Manual-2024/20

ISSUED BY THE AUTHORITY OF DIRECTOR GENERAL, CPWD

Vidyut Bhawan, New Delhi

Dated: 27.02.2026

Sub: Modification in Para 5.2 for CPWD Works Manual 2024.

Following modification is made in Para no. 5.2 for CPWD Works Manual 2024:

Existing Provision	Modified Provision
5.2 Performance Guarantee	5.2 Performance Guarantee
Sl. No. 1	No Change
2. PG shall be 5% of the contract amount or as prescribed from time to time to be submitted in the form as prescribed in GCC. Performance Guarantee shall remain valid for a minimum period of sixty days beyond the date of completion of all contractual obligations as per GCC. In case of contracts where supplementary agreement is drawn, the fresh PG shall be obtained from the contractor @ 5% of the amount of the supplementary agreement or as prescribed from time to time. The PG received against the original work shall be released as per contract conditions.	2. PG shall be 5% of the Estimated cost put to tender (ECPT) or contract amount whichever is higher , or as prescribed from time to time, to be submitted in the form as prescribed in GCC. Performance Guarantee shall remain valid for a minimum period of six months beyond the date of completion of all contractual obligations as per GCC. In case of contracts where supplementary agreement is drawn, the fresh PG shall be obtained from the contractor @ 5% of the amount of the supplementary agreement or as prescribed from time to time. The PG received against the original work shall be released as per contract conditions.
Sl. No. 3	No Change
4. No provision	4. A bid will be treated as abnormally low if the quoted bid amount is lesser than 80% of the estimated cost put to tender.
5. No provision	5. Requirement of Additional Performance Guarantee (APG) : In case of abnormally low bids as defined above, the bidder shall be required to submit Additional Performance Guarantee (APG) in addition to the Standard Performance Guarantee (PG). The amount of Additional Performance Guarantee (APG) shall be equivalent to the difference between the 80% amount of ECPT and quoted amount. (e.g. if ECPT is A and quoted amount is 0.7A then the amount of APG shall be

12/2/26 Jindal
EE(Elect)
Contract)

	0.8A – 0.7A). The Additional Performance Guarantee (APG) shall be in the prescribed format of Performance Guarantee and has to be submitted within the time frame prescribed for submission of Performance Guarantee. The other terms and conditions of release etc. of APG shall be same as that of PG.
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This is issues with the approval of DG CPWD.


 27-02-2026
 ((चन्द्र पाल))
 अधीक्षण अभियंता (सी.एंड.एम.)
 Chandar Pal, SE (C&M)

Issued from file No. CSQ/CM/16(1)/2026 e-file 9212995 (DFA/ 9365789)

केलोनिवि तथा लोनिवि दिल्ली के सभी अधिकारियों को आवश्यक सूचना एवं कार्यवाही हेतु। (केलोनिवि वेबसाईट के माध्यम से)


 27/2/26

D.P. Jindal
EE (Contract)

GENERAL, COMMERCIAL AND ADDITIONAL CONDITIONS

1.0 General

1.1 This specification covers manufacture, testing and inspection, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of E & M installations.

1.2 **Location:** Work shall be carried out at **Locust, Churu(Raj.).**

1.3 The work shall be generally carried out in accordance with tender specifications and the following specification rules, unless otherwise specified the latest amended edition of all such codes/specification/manuals on the last date of submission of the tender would be applicable.

- CPWD General Specifications for Electrical Works Part I Internal – 2023 & part II External 2023 as amended up to date.
- CPWD general specification for electrical work part IV Sub-Station 2013 as amended up to date.
- MNRE Guidelines
- Indian Electricity Act 2003 amended up to date.
- National Electrical Code 2008 and NFPA (National Fire Protection Association) 70.
- Indian Electricity Rule 1956 amended up to date.
- National Building Code 2016
- BIS codes as applicable.
- Civil works Specifications 2019 Volume I and Volume II 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.

1.4 The tenderer should in his own interest visit the site and get familiarized with the site conditions before tendering.

1.5 No T&P shall be issued by the Department and nothing extra shall be paid on account of this.

1.6 The firms shall be responsible for providing the system fulfilling the specifications, capacity and all other related requirements of system ensuring compatibility between different items of work.

1.7 The firm shall be required to supply all the quantity of each items of same make **(among the list of preferred makes)** wherever available to ensure compatibility, proper matching and ease of maintenance.

1.8 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. Nothing extra shall be paid on this account.

- 1.9 The contractor shall discuss with EE(E) or his authorized representative & 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.**

2.0 Rates

- 2.1 The rates quoted by the tenderer, shall be firm and inclusive of all taxes including, GST, labour cess, duties, levies, octroi, stamp duty etc and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site including temporary construction of storage, risks, over head charges, general liabilities/obligations and clearance from Local bodies. However, the fee for the Local Body inspections shall be borne by the department.
- 2.2 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.
- 2.3 Some restrictions may be imposed by the Client on the working hours and/or movement of labour, materials etc. 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.
- 2.4 The department will not issue Octroi exemption certificate.
- 2.5 The contractor has to carry out Operation & Comprehensive Maintenance of the complete Solar Photovoltaic power generation system by deputing man power for cleaning of solar PV module, checking & maintenance of the system for satisfactory operation as per manufacturer's standards, recording the various electrical parameters etc. for the system for a period of 60 months from the date of handing over i/c quarterly visit by Engineer for checking the healthiness of the system i/c repair/replacement of the defective part or to attend the complaint whenever informed by the Department as per terms & conditions attached. Supply & installation of spare parts shall be included in the **scope of the work under guarantee period (60 months)** from the date of handing over. **The rates quoted shall be inclusive of these activities during the Defect Liability Period (DLP) of 60 months and nothing shall be payable separately on this account.**

3.0 Completeness of Tender

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.

4.0 Storage and Custody of Materials

For storage of sundry materials and erection of equipments, the agency has to make its 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.

5.0 Care of the Building

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.

6.0 Completion Period

6.1 The completion period of **03 months** 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.

6.2 The Contractor shall be responsible for handing over the inventory of entire system in operational manner to the Client/Department to the satisfaction of the Engineer-in-Charge before recording of Completion certificate & making the final payment.

7.0 Guarantee

7.1 All equipment 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 give 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.** 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 is 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 in this regard, the amount for performance guarantee shall be forfeited absolutely.** The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.

7.2 The contractor shall also 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.

8.0 Power Supply

Arrangement of electric power supply (Three Phase/Single Phase) at a single point as required to carry out the work for final testing and commissioning of the system will be lie in the scope of the contractor. Department will not pay anything extra on this account. This shall be in the scope of successful firm.

9.0 Water Supply

The contractor has to make their own arrangement for water supply required for execution of the work.

10.0 Acceptable Makes of Various Equipments

- 10.1 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.
- 10.2 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 in this regard shall be submitted by the contractor.
- 11.0 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.

12.0 Extent of work

- 12.1 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.
- 12.2 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.
- a) Civil works necessary for installation of equipments, foundation including anchoring e.g. dowel bars or any other arrangement, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc as required.
 - b) 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.
 - c) All supports for cables and GI/Al channels for erection of panels etc as are necessary.
 - d) Getting inspection done & obtaining approval for energizing the installation from authority, if required. However, necessary fees for inspection shall be borne by the Department.
 - e) 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.
 - f) Closing of the cable entry points in rooms/buildings to arrest seepage of water, rodents etc.
 - g) Tools and tackles required for handling and installation.
 - h) Necessary testing equipments for commissioning.
 - i) Watch and Ward of materials and/or installation and equipments.
 - j) Provision of supports/clamps for equipments, cables etc wherever required.
 - k) Arrangement of networking on requirement.

13.0 Inspection, Testing and factory inspection

- 13.1 The factory inspection for SPV and PCU Materials to be installed at site may be carried out by department to ascertain the quality. The same is to be arranged by the agency.
- 13.2 All the test certificates of equipments are required to be submitted along with delivery of material.
- 13.3 Copies of all documents of routine and type test certificates of equipments, cables carried out at the manufacturer's premises shall be furnished to the Engineer-in-charge.
- 13.4 After completion of the work in all respects the contractor shall offer the installation for testing and operation.

14.0 Compliance with Regulations and Indian Standards

- 14.1 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 shall comply with the following:
 - i) Factories Act
 - ii) Indian Electricity Rules
 - iii) BIS & other standards as applicable
 - iv) Workmen's compensation Act
 - v) Statutory norms prescribed by local bodies, Power supply co., etc
- 14.2 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.
- 14.3 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.

15.0 Indemnity

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.

16.0 Erection Tools

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.

17.0 Co-operation with Client/Occupants

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.

18.0 Painting

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

19.0 Maintenance

Please refer to terms and conditions of scope of operation and comprehensive maintenance during defect liability period and further also note stating that the contractor shall include all mentioned in quoted rate.

20.0 Warranty:

Performance guarantee/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.

21.0 The scope of work for the bidder includes obtaining **No Objection Certificate (NOC) and Net Meter** from Distribution Company (DISCOM)/JVVNL for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing and commissioning of the grid connected Solar PV project.

22.0 The support mounting structure / elevated structure & foundation of solar PV modules shall be **designed without anchoring and damaging the slab** to withstand a wind speed 150kmph or as per actual site conditions, whichever is higher. **The UDL of the complete system i/c mountings, structure, PV modules, foundation etc. shall be less than 70 kg/sqm. No puncturing is allowed in brick coba / roof treatment.** The contractor shall arrange vetting/approval of the Structural drawing of mounting Structure/elevated structure for solar PV modules from IIT / NIT / Govt. Engineering College . All co-ordination and necessary fees for approval of drawings shall be paid by the Firm. Nothing extra shall be paid on this account. If any modification in design/drawings is needed as per site conditions or subsequent to issue of Good for construction drawings, the contractor shall carry out necessary modifications in design and including proof checking from any Govt. Engineering college/ IIT / NIT without any extra cost. The decision of the Engineer-in-charge in this regard shall be final and binding.

23.0 On field training of CPWD/Client Department personal on operation, supervision, management function shall be provided as per requirement. Four set of Solar Photo voltaic power generation system documentation i/c system architecture, contents, component list, GA diagram, controller wiring diagram, part diagram etc complete as required shall be supplied.

UNDERTAKING ON STRUCTURAL DESIGN

The following certificate is to be submitted along with the technical details / drawings to the Engineer-in-charge :

1. It is to certify that the structural design and drawings including safety from natural hazards like seismic, wind, fire etc., shall be prepared by duly qualified Structural Engineer as per norms prescribed in NBC/ B.I.S /I.R.C. /APPLICABLE RECOGNISED CODES/ STANDARDS.
2. Further to certify that the structural Consultant hired by us for carrying out the structural design shall have following experience.
 - a) Faculty at any reputed Government Engineering College/ IIT/NIT etc.

Or
 - b) Under the panel list of CDO/CPWD (mention as the case may be)

Or
 - c) The structural consultant will have at least a degree of M. Tech (Structure) or equivalent and has got an experience of 10 years or more in the field of structural design of similar nature of works. Documents in support of the above will be submitted at appropriate time for approval of the department.

Signature of the contractor with date

Name in Block letters -----

Address -----

PAYMENT– SCHEDULE

All running / intermediate & final payments shall be made to the agency in accordance with the following schedule:

1. Unless explicitly stated otherwise in the Tender Documents, the payment shall be as per provisions of schedule F and payment shall be as per actual measurements on submission of bill by the agency.
2. Nothing extra shall be paid for services of various consultants such as architectural, structural services, proof checking etc; and related expenses for consultancy services. The agency shall quote the rates taking this aspect also into consideration.
3. Nothing extra shall be paid for testing of various materials, cost of materials used for testing, handling & transportation and related expenditure. The agency shall quote the rates taking this aspect also into consideration.
4. All duties, GST, fees, octroi and other levies, stamp duty payable by the Contractor for which nothing extra shall be paid. The agency shall quote the rates taking this aspect also into consideration.
5. Payment shall be made as per the schedule of payment as detailed below: -
6. **Schedule of Payment for Item No. 1 of Schedule of Quantity: -**

Sl.No.	Schedule of Payment	% of tendered value to be released
1	On supply of Module Mounting Structure (MMS) and associated accessories	5%
2	On installation of MMS in condition ready for mounting PV modules	5%
3	On supply of first 25% quantity of approved quantity of PV modules	15%
4	On supply of 25%-50% quantity of approved quantity of PV modules	15%
5	On supply of 50%-75% quantity of approved quantity of PV modules	15%
6	On supply of 75%-100% quantity of approved quantity of PV modules	15%
7	On supply of PCUs, cables, wires, and other accessories	10%
8	Installation of complete SPV System	10%
9	On completion of Testing, Commissioning and Handing over	10%
	Total	100%

Refund of Performance Guarantee and security deposit:

1. The amount of Performance Guarantee and security deposit shall be refunded after each completed DLP year. The amount shall be released in equal parts for each year till 5 years of DLP period. Release of PG and Security Deposit will be made only after producing minimum guaranteed energy calculated annually as per international /national norm.
2. Year wise Maximum power degradation allowable is as follows:
 - i) 1st year not more than 3%.
 - ii) 2nd Year not more than 3.75%.
 - iii) 3rd Year not more than 4.5%.
 - iv) 4th Year not more than 5.25%.
 - v) 5th Year not more than 6%.

SPECIAL CONDITIONS

1. **The contractor shall guarantee minimum generation of 1250 KWH per annum per KW of commissioned generation capacity of Solar Power System.** This shall be subject to the annual de- generation acceptable as per norms on previous page / Schedule of work failing which the recovery at Rs.12/- per KWH of less generation shall be affected from the bills payable / Performance Guarantee / Security Deposit of the agency. A separate Energy Meter (**Accuracy class 0.5**) shall be provided at each output of PCU to record the energy generation from the Solar System. (This energy meter should not be integrated with PCU). Solar energy meter means a unidirectional meter to be installed at the delivery point of the solar energy system to measure the solar electricity generated. The solar energy meters shall be provided with necessary ports like RS485 for communications.
2. The trial run of electrical work / equipment's shall be carried out by the firm in presence of Engineer-in-charge or his representative at the site as per requirement of department.
3. The Contractor shall liaison with the DISCOM for documentation and obtaining the Net metering arrangement. The agency has to liaison for obtaining the **Net-metering** for **Locust, Churu(Raj.)**. Necessary fees shall be paid by the Department.
4. All equipment's and materials to be used in work shall be manufactured in factories of good repute having excellent track record of quality manufacturing, performance and proper after sales service. The Department reserves right to inspect Solar PV Panels, Inverters and other equipment's at factory/ Manufacturers premises during the course of manufacturing at any stage. The Contractor shall intimate the schedule of manufacturing of modules at factory prior to taking up in the production.
5. 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 in this regard shall be submitted by the contractor if required by the department.

SCOPE OF WORK

1. The scope of work involves design, supply, installation, testing, and commissioning of complete Solar PV system as per technical specifications mentioned in next section. The drawings along with detailed design and equipment data sheet shall be submitted for approval before starting the work.
2. The work shall be executed on Turnkey (Design & Build) basis and work includes planning, designing & preparation of Drawings, obtaining approvals from the Department, supplying, assembling, installation, testing, commissioning and putting into **operation of 20 KWp** Grid connected Solar PV Power System, consisting of PCU (power conditioning unit), outdoor switchgear panels, all measuring devices, indication devices, protection Devices, switching devices with all necessary wiring, auxiliary supply system including auxiliary transformers, distribution panels, cabling, earthing, mounting structures, and any other item needed for proper functioning and protection of system from external/internal causes & from all kind of surges etc. for integration of Solar Photovoltaic Power System **for optimal usage of 09 KWp** at the interconnecting substation as per **JVVNL/DISCOM** specifications & requirements . The area available at the terrace level of building is to be utilized optimally for the provision of the Solar Photovoltaic plants. The master layout plan of site and schematic existing architectural drawing shall be provided by the department. The Detailed Architectural drawings which include particular views (floor/Terrace plan, section etc.) of Solar PV System shall be prepared by the agency. The work is to be executed according to those drawings. Scope of work contained in the paras mentioned below is only indicative and not exhaustive.
3. **The power generated is intended to be used in the same building or nearby buildings.** The LT Power Cabling shall be laid accordingly.

NOTE: The Capacity of each building may vary and shall be on actual basis. The inverter capacity and other accessories shall be decided upon final approval of the layout and capacities by the Engineer in charge.

4. The Works shall include all Civil, Electrical, Mechanical, all Safety aspects and any other Works required for the Construction and Completion of the Works in all respects and to the satisfaction of the Engineer-in-Charge and in conformity to bye-laws.
5. The Solar PV module shall be installed on the existing roof / and elevated structure as per the site conditions and as per the drawing approved by the Engineer-in-charge.
6. The agency shall connect the output of the SPV module with approved size XLPO copper cable to the inverter through the junction boxes. From the inverter, cable of approved size shall be connected to the AC DB / Main LT Panel as approved by the Engineer-in-charge. From the AC DB / Main Panel, suitable size LT cabling shall be provided up to the sub-station building.
7. The agency shall liaison and obtain Net-metering at **Locust, Churu(Raj.)** campus from the Electricity department. Required statutory charge will be paid by the department.

8. The agency shall provide Suitable number of Chemical earthing and interconnecting the earth electrodes to achieve the earth resistance not exceeding 5 Ohm duly laid as per the CPWD Specifications and drawings shall be got approved from the department. The earth electrode shall be connected to Solar PV system provided on **Buildings** with GI /Cu strip as per CPWD specifications.
9. The agency shall provide protection against lightning by connecting to the existing G.I plate /chemicalearthing with the G.I strip as per CPWD specifications.
10. **Local Body Approval:**
 - Agency if required shall get the scheme approved from the local authorities wherever required before start of the work and if required after completion of the work also the same shall also be carried out by the contractor at his own cost.
 - The contractor shall obtain all mandatory approval and No Objection Certificate/ Consent for Establishment from local body authorities like local electricity supply authority/ Central Electricity Authority etc at his own cost. He has to get NOC from Distribution Company (DISCOM) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing and commissioning of the grid connected Solar PV project.
 - The contractor shall at his own cost collect field data and carry out all necessary tests required for submission of necessary applications.
 - The contractor has to comply and, if necessary, resubmit applications as required by the local bodies.
 - If required the contractor has to appoint at his own cost consultants for obtaining local body approval
 - The statutory payments or fees made to local bodies shall be reimbursed by the department on production of proof of such payments.
 - Three final copies of the documents prepared shall be submitted to Engineer-in-Charge for record.
 - All the documents created out of the assignment will become the sole property of the Department.
 - The contractor shall obtain clearance certificate after completion of the project by getting inspected by Chief Electrical Inspector of the state / from statutory local bodies before handing over the same to the Department.
11. **Architectural Design:**
 - Prepare working architectural drawings incorporating the structural design details.
 - Design and prepare elevations along with 3D perspective views as per contract specifications.
 - Prepare flooring layout as per contract specifications
 - Prepare as built drawings
 - Prepare integrated Building and landscape plan incorporating all external services like outdoor substation, Solar PV Green Park and roof top Solar PV Generation plant, etc. all complete.

- **Documentation:**
 - Any drawings or details as mentioned above shall be prepared and submitted in duplicate in suitable size of sheet so that all dimensions, features, notes etc are completely legible for approval.
 - Final approved details are to be submitted in 6 copies and 1 set in soft copy in pen drive.
 - Any changes necessitated during the course of construction has to be redone any number of times in the similar way as mentioned in (a) and (b) above.

12. **Structural Design:**

- Prepare complete structural design, drawings for foundation as per provision contained in IS/relevant codes.
- The contractor shall take all precautions and propose measures and to get approved by Engineer-in-charge so that vibrations from Rolling Stock/heavy vehicle movements are not transferred to the structure. Nothing extra shall be paid on this account.
- The structural drawings shall be got proof checked from the IIT/NIT/Govt. Engineering College. If any modification in design/drawing is needed as per site conditions, or subsequent to proof checking, the contractor shall do/redo the design without any extra cost. The decision of the Engineer-in-charge in this regard shall be final and binding. No claim whatsoever on this account will be entertained. The cost of proof-checking shall be borne by the contractor.
- Design drawings including SPV module layout, wiring, cabling, PCU layout etc. shall be got proof checked by agency agreed by the department if desired (i.e., CPWD). Proof checking agency must have prior experience of designing SPV **system of minimum 20 KWp capacity**. If any modification in design/drawing is needed as per site conditions, or subsequent to proof checking, the contractor shall do/redo the design without any extra cost. The decision of the Engineer-in-charge in this regard shall be final and binding. No claim whatsoever on this account will be entertained. The cost of proof-checking shall be borne by the Contractor.
- Planning, preparing drawing for internal and external installations of electrical and mechanical services etc. complete for setup of Solar PV System complete as approved by the department.
- Connection charges/fees, if any to be paid to the local bodies or any other agency shall be borne by the Department. The cost of restoration of any services damaged by the contractor during execution shall be borne by him.
- Complete leveling and dressing of available site for setup of solar System including filling of earth, its supply, disposal of surplus earth as the case maybe, is to be completed as directed by the Engineer-in-charge.
- Taking all precautionary measures to safeguard against any accident for the contractors' employees, general public, supervisory staff of CPWD by providing necessary safety equipments personnel's protection equipments e.g. helmets, safety shoes etc.at worksite.
- The Electrical and Mechanical work as per specifications and scope of work given in the bid document & direction of Executive Engineer(E), CPWD which includes internal electrical installations, etc. shall be implemented.
- All labour employed by the firm/contractor shall be got registered with State Construction Labour Welfare Board, ESIC and EPF etc.
- Defect liability period would be 60 months from the date of handing over the Solar PV System and its equipments for functioning like outdoor switchgears, protection devices,

measuring devices etc. During this period, the defects noticed in the work shall be rectified by the contractor at his own cost. In case he fails to do so after intimation to him in writing by the Engineer-in-charge, the same shall be carried out by the Department at his risk and cost.

- Planning, designing and providing required electrical installations for the proposed building shall be as per NBC norms and shall include obtaining approval of local authorities.
- The above scope of work includes cost of all materials, manpower, equipments, T&P, fixtures, accessories, stamp duty, taxes etc and all other essential elements for completion and maintenance of works as aforesaid. The approval accorded by CPWD before acceptance of tender is only for tender evaluation. Any changes, modifications, revisions etc. required to be done by CPWD, client, local bodies, proof consultants etc. in accordance with applicable standards will have to be done at contractor's cost and nothing extra shall be payable.

13. **Documentation, Instrumentation, etc.**

- All Drawings shall be made in Latest Version of Auto CAD and the Soft Copies on Pen drive and Six Hard Copies of Prints of all Approved Drawings and "As Built" Drawings shall be supplied by the Contractor to the Engineer-in-Charge at Free of Cost as per the Approved Program.
 - Pen drive and Six Hard Copies of all Approved Design Calculations shall be submitted by the Contractor to the Engineer-in-Charge at Free of Cost as per Approved Program.
 - Three Copies of "Operation and Maintenance Manual" shall be supplied by the Contractor to the Engineer-in-Charge at Free of Cost.
 - Solar PV System master layout plan shall be approved by the Department and executed by the Contractor.
14. The work is to be executed on EPC mode in Design, Build, Operate and Transfer basis. However, if any small portion of work not specifically mentioned in the bid document but otherwise included in the scope of work, then it shall be treated as included in the scope of bidder. The rate quoted shall be inclusive of all the above.
15. The responsibility of investigations, procurement, construction, safety, quality and risk of engineering rests completely with the agency and the completed SPV System is to be handed over within the time frame in fit & ready for operation condition.
16. The safety and security of the completed SPV System and all associated accessories is the responsibility of the contractor till they are handed over to the client department. After completion of the work, the taking over process may take time and the responsibility of the SPV System and all associated accessories is the complete responsibility of the contractor and nothing extra shall be payable on this account.
17. The contractor has to make his own arrangements for site for labour at his own cost.
18. GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the contractor and CPWD will not entertain any claim whatsoever in respect of the same.
19. The bidder should have sufficient number of Technical and Administrative employees for the proper execution of the contract. The bidder shall have to submit a list of these

employees stating clearly how these would be involved in this work within 15 days of award of work.

20. The bidder shall give the details of array layout before execution for approval. Bidders are advised to visit the site and conduct a survey for deciding the most suitable layout from the installation & maintenance point of view.
21. Detailed project execution program shall be submitted. The contractor will be responsible for arranging all tools & plants for installation and commissioning the complete system. The contractor shall also submit the erection, testing & commissioning procedure for approval to the department. 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 CPWD.
22. 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.
23. All major equipment like solar PV modules may be inspected by the Engineer- In- Charge or his representative at factory inspection before their dispatch. For other items, the contractor shall obtain the prior approval before dispatch. The contractor shall obtain approval for all equipment drawings & data sheets from the Engineer- In- Charge before commencement of the manufacturing / procuring / outsourcing.

Terms and Conditions of Operation & Comprehensive Maintenance during the Defect Liability Period

1. The contractor has to carry out Operation & Comprehensive Maintenance of the Solar Photovoltaic power generation system for a period of 60 months from the date of successful completion of the work and handing over.
2. In addition to the above, the installation shall be inspected by the Engineer of the Contractor on quarterly basis for checking the healthiness of the system i/c repair/replacement of the defective parts as may be required from time to time. This is apart from any site visits that may be warranted to attend any major/minor complaints as and when informed by the Department/Client/Site Staff.
3. Rooftop panels should be cleaned on quarterly basis as required to maintain guaranteed electrical energy output.

The above frequency of cleaning is the minimum prescribed. However, the contractor shall clean panels at shorter intervals than prescribed above due to prevailing weather conditions and the contractor shall carry out these works accordingly by engaging extra maintenance staff as may be required. Nothing extra shall be paid on this account.

4. Water for cleaning of Solar panels shall be provided by the Client at a Single point location from existing building OHT. All the required T & P shall be arranged by the Contractor at his own cost.
5. During the defect liability period, the agency shall be responsible for all the defects in the work due to bad workmanship or due to use of substandard / poor quality materials in the work. The repair and replacement work shall be carried out without undue delay and within a reasonable time period without affecting the power generation.
6. Data recorded shall be provided to client/employer in electronic form, compatible in CSV format in a monthly basis. The right to use the data shall remain with the client/employer.
7. Procurement of spare parts, overhaul parts, tools & tackles, equipment, consumables, etc. required for smooth operation and maintenance of the plant as per prudent/standard utility practices, OEM recommendations and warranty clauses shall be done well in advance during the O&M period. Required quantity of spares shall be stacked at site for speedy replacement as per the frequency of anticipated replacement.
8. To carry out periodic overhauls or maintenance required as per the recommendations of the original equipment manufacturer (OEM) and to furnish all such periodic maintenance schedule at the time of plant commissioning/start of O&M contract.
9. The contractor shall be responsible for all the required activities for the successful running, committed energy generation & maintenance of the Solar Photovoltaic Power System covering the following aspects:
 - Deputation of qualified and experienced engineers and technicians at the facility.
 - Successful running of Solar Power System for committed energy generation.

- Co-ordination with other statutory organizations as per the requirement on behalf of employer for Joint Metering Report (JMR), furnishing generations schedules as per requirement, revisingschedules as necessary and complying with grid requirements.
 - Monitoring, controlling, troubleshooting maintaining of logs & records, registers.
 - Furnishing generation data monthly to employer/owner of every month.
10. Continuous monitoring the performance of the Solar Power System and regular maintenance of the whole system including Modules, PCU's, transformers, outdoor/ indoor panels/kiosks etc. are necessary for extracting and maintaining the maximum energy output from the Solar Power System.
 11. The DLP will be deemed to commence from the date of completion of performance demonstration/Operational acceptance and successively the complete Solar Photovoltaic Power System to be handed over to the contractor for operation and maintenance of the same.
 12. All the equipment required for Testing, Commissioning and DLP for the healthy operation of the Plant must be calibrated, time to time, from the NABL accredited labs and the certificate of calibration must be provided prior to its deployment.
 13. The Contractor shall ensure that all safety measures are taken at the site to avoid accidents to his or his sub-contractor or Employer's Workmen. This will include procurement of all safety gadgets during Construction and DLP period including but not limited to, rubber mats of appropriate grade, PPE, rubber gloves and suitable shoes etc.
 14. The Contractor will attend to any breakdown jobs immediately for repair/replacement/adjustments and complete at the earliest working round the clock. During breakdowns (not attributable to normal wear and tear) in DLP period, the Contractor shall immediately report the accidents, if any, to the Employer showing the circumstances under which it happened and the extent of damage and/or injury caused.
 15. The contractor shall at his own expense provide all amenities to his workmen as per applicable laws and rules.
 16. If negligence/mal operation of the contractor's operator results in failure of equipment, such equipment should be repaired/replaced by the contractor free of cost.

Note: The contractor shall include above mentioned from 1 to 16 in the quoted rate for the original work and nothing extra shall be paid for this.

TECHNICAL SPECIFICATIONS

1. SOLAR/ PV SYSTEM

1.1 Solar Photovoltaic Module

Standard

Solar Photovoltaic Modules shall conform to IEC/IS specifications. Necessary certification from the reputed laboratory shall be provided by bidder.

Electrical Features

Solar Photovoltaic module array shall consist of high efficiency Solar modules utilizing **mono crystalline** silicon solar photovoltaic cells with (PERC) Passivated Emitter and Rear Cell technology. Solar photovoltaic module shall be min. 535Wp rated and have an efficiency of minimum 23%.

Module shall be made of high transmissivity glass front surface with anti-reflection coating of EVA (Ethyl vinyl Acetate) giving high encapsulation gain.

All materials used must have a stable operation in external outdoor applications. Solar modules are designed to operate and perform in relative humidity up to 95% with temperatures between – 10 Deg C and +85 Deg C and it shall perform satisfactorily in wind speed up to 150KM/hr from behind panel.

Sample modules and production process employed in the manufacture of the offered module are in accordance with the requirements of IEC 61215/IEC61730.

Degradation of power generated should not exceed 20% of the min. rated power over the 25 years period. Efficiency of solar PV system shall be guaranteed to 90% for above 10 years & 80% for above 25 years. LID for first year of operation allowed up to 3%.

The solar modules shall have suitable EVA encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation is compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement / material. The encapsulation arrangement should ensure complete moisture proofing during life of the solar modules.

The peak power point voltage and the peak power point current of any supplied module and / or any module string (series connected module) shall be not more than 3% from the respective arithmetic mean for all modules and / or for all modules string as the case may be. The rated output power of any supplied module shall have tolerance of $\pm 3\%$.

1.2 Solar PV Module (Mechanical Features)

Solar PV Module design shall conform to following Mechanical requirement

- Toughened, antireflective, impact resistant, low iron content, high transmissivity front glass
- Anodized Aluminum Frame
- Ethyl Vinyl Acetate (EVA) encapsulate

- Butyl rubber edge sealant around laminate
- Tedlar / Polyester trilaminate back surface
- ABS plastic terminal box for the module output termination with gasket to prevent water moisture
- Resistant to water, abrasion, hail impact, humidity & other environment factors for the worst situation at site
- Low voltage drop bypass diodes and reverse flow diodes shall be provided

The module should have name plate displaying all above information and should have clear view. 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.

Each module must have a 6 sq.mm Copper cable of 0.6m single length minimum.

The junction boxes shall be made of FRP / Thermoplastic 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 up to 1000 V with suitable arrangement for its connection. The array box shall also have suitable surge protection.

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.

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.

Fuses of suitable rating for Overloading protection of array section. Over voltage protection against atmospheric lightning discharge to the PV array is required.

1.3 BIS Registration

As per the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for compulsory registration) order, 2017 by Government of India, PV modules used in the Grid connected solar power projects in India shall be registered with BIS and bear the standard mark as notified by Bureau of Indian Standards.

1.4 Insurance

The PV module power output warranty as per the technical specification shall be insured and backed up through an insurance policy by a reputed insurance company which will cover against the PV module power output warranty for 25 years by the PV module manufacturer. The bidder shall submit a suitable insurance from third party. The insurance shall be in the name of the end customer (details will be provided to the successful bidder). The performance warranty shall be specifically a warranty and indemnity insurance against loss of output of PV module below 90% up to 10th year and below 80% within end of 10th year up to 25th

year. The contractor shall include the cost of insurance within the quoted rates and nothing extra shall be paid on this account.

Data sheet for the Solar PV Module shall be furnished by Vendor/Contractor before start of work.

I	PV Module Manufacturer name	
ii	No. of PV cells per Module	
iii	Max peak watt of each module (Wp)	
iv	ROHS compliance (Yes/No) Enclose	
v	Module dimensions	
vi	Cable gland type at module Junction Box	
vii	Is it suitable for ambient Temperature of 50deg?	
viii	Nominal voltage at STC	
ix	Operating voltage of solar module	
x	Peak power voltage (Vmp) at 50 Deg C	
xi	Peak power current (Imp) of each module.	
xii	Open circuit Voltage (Voc)	
xiii	Short circuit current (Isc)	
xiv	Weight of each module in Kg	
xv	Standards / Approvals from International Agencies	
xvi	PID free certificate enclosed (yes/No)	
xviii	Module efficiency (min 23%)	
xix	Negative temp coefficient of power (not > minus 0.3%)	

1.5 Inspection

All major equipment like solar PV modules shall be factory inspected by the Engineer-In-Charge or his representative before their dispatch. For other items, the contractor shall obtain the prior approval before dispatch.

The contractor shall obtain approval for all equipment drawings & data sheets from the Engineer- In- Charge before commencement of the manufacturing / procuring / outsourcing.

1.6 Training & after sales service

Training and after sales service is an important component of supply and is included in 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.

1.7 Module Mounting.

Structure shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the roof properly. There shall be no requirement of welding at site. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels & shall withstand heavy winds. The supplier/manufacture shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Accordingly, the executing agency shall propose the design and get it finalized by Engineer-in-charge.

Structural material shall be corrosion resistant and electrolytically compatible with 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 IS5905, if steel frame is used. No drilling and welding is allowed after galvanizing. Aluminum frame structures with adequate strength and in accordance with relevant BIS/international standards can also be used.

Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site.

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. Design to be submitted as per OEM standards and to be approved by CPWD.

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.

The structure should be capable of withstanding a wind load of min. 150 km/hr after grouting & installation. Grouting material for SPV structure shall be as per CPWD approved concrete specification.

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.

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.

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 SS 304. Detailed design and drawings shall 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. Design calculations and certificate to this effect shall be provided by a qualified chartered structural engineer.

The agency shall provide an elevated structure, wherever required as per site conditions, with G.I. pipe/Angle iron/ Channels 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 150 KMPH or as per the wind zone where site falls, whichever is higher.

1.8 DC Combiner Box

A DC Combiner Box shall be used to combine the DC cables of the solar module arrays with DC fuse protection for the outgoing DC cables to the DC Distribution Box.

2.0 Power Conditioning Unit (PCU):

Maximum power point tracker (MPPT) shall be integrated into the PCU to maximize energy drawn from the solar PV array. MPPT shall be microprocessor/microcontroller based to minimize power losses and maximize energy utilization.

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.

The string inverter shall have a higher DC Rating compared to the AC output rating, which shall ensure that, for the installed 65 Kwp solar PV system, The AC output shall not be less than 65 Kwp.

Integrated data logger shall be placed inside the PCU enclosure. Power conditioning unit will comply with following requirements.

- 415V AC $\pm$ 5%, 50Hz, 3 phase
- IGBT based inverter
- 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.
- Minimum efficiency of PCU - 97%.
- Sound level < 75dBA
- MPPT – 4 points
- Operating temperature – 0-55° C
- Self-consumption at night < 5 W
- Anti islanding protection with necessary UPS of 600VA with 15 mins backup.
- RS 485 provision
- Transformer less isolation
- Surge protection device (Type-II)

Additionally, it will provide protection features such as over current, short circuit, over temperature as minimum. PCU shall be of very high quality having high efficiency and shall be capable of running load in isolated mode. The PCU should be completely compatible with the SPV array voltage and grid supply voltage. The PCU shall be string type inverters to reduce the DC power losses & can have the flexibility to increase the capacity of the plant. The PCU shall be designed for continuous reliable power supply as per specifications. The PCU shall have internal protection arrangement against any sustained fault. The dimension, weight, foundation details etc. of the PCU shall be clearly indicated in the detailed technical

specification. It should have user friendly LCD display for programming and viewing on line parameters. Unit shall be IP-65 rated.

Ground fault detector – which is essential for large PV generators in view of appreciable discharge current with respect to ground.

3.0 Modes of PCU

3.1.1 Standby Mode:

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

3.1.2 Basic System Operation (Full Auto mode):

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.

3.1.3 Sleep Mode:

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.

4.0 AC Distribution Box

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

- Incoming 3-core / 5-core (single-phase/three-phase) cable from the solar grid inverter
- AC circuit breaker, 2-pole / 4-pole
- AC surge protection device (SPD), class 2 as per IEC 60364-5-53
- Out going cable to the building electrical distribution board.

5.0 Cables:

5.1 The scope of work includes supplying and laying of UG LT cables of suitable size and capacity in suitable size DWC pipes. The cables shall be laid in the DWC pipes at a depth of 75cms below ground as per CPWD specifications.

5.2 For the DC cabling, XLPO insulated and sheathed, UV stabilized tinned copper class 5 cables conforming to EN 50618 shall be used.

5.3 For the AC cabling, XLPE insulated and PVC sheathed single or multi-core armored copper/aluminum cables shall be used. Copper cables are to be used up to 16 sq.mm size and Aluminum to be used above 16 sq.mm.

5.4 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%. Cable size to be selected accordingly.

5.5 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%. Cable size to be selected accordingly.

5.6 The DC cables from the SPV module array shall run through a UV-established PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.

- 5.7 Underground cables, both AC and DC, should be protected by laying through DWC pipes of suitable size. Outside diameter of Cable should not be more than two-third ($2/3^{\text{rd}}$) of internal diameter of DWC pipe.
- 5.8 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- 5.9 All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50cm. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:
- DC positive: red (the outer PVC sheath can be black with a red line marking)
 - DC negative: black
 - AC single phase: Phase: red; neutral: black
 - AC three phase: Phases: red, yellow, blue; neutral: black
 - Earth wires: green
- 5.10 Cables and conduits that have to pass through walls or ceilings shall be taken through a PVC pipe sleeve. Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.
- 5.11 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 design/drawings. The contractor shall supply all cables, installation accessories, which are required to install and successfully commission the power System.

6.0 Earthing:

- 6.1 The array structure of the PV System shall be grounded properly using adequate number of earthing system. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the powerplant. Earthing shall be in line with IE rules. The earthing & grounding shall also meet the requirement of PV module/cell manufacturer.
- 6.2 The PV module structure components shall be electrically interconnected and shall be grounded.
- 6.3 Earthing shall be done in accordance with CPWD IEI specification
- 6.4 The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.

7.0 Surge Protection

- 7.1 Surge protection shall be provided on the DC side and the AC side of the solar system.
- 7.2 The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar inverter.
- 7.3 The AC SPDs shall be installed in the AC distribution box adjacent to the solar inverter.
- 7.4 The SPDs earthing terminal shall be connected to earth through the above-mentioned dedicated earthing system. The SPDs shall be of type 2 as per IEC 60364-5-53.
- 7.5 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.

8.0 Junction Boxes

- 8.1 Junction boxes and solar panel terminal boxes shall be of the thermoplastic type with IP65 protection for outdoor use and IP54 protection for indoor use.
- 8.2 Cable terminations shall be taken through thermo-plastic cable glands. Cable ferrules shall be fitted at the cable termination points for identification.

9.0 Type Test

- 9.1 Type test certification should be produced along with submission of technical data sheets for approval. Type test certification should be dated not earlier than 2 years.

10.0 Support/Training.

The contractor must agree to provide complete support as per site requirement (single point of contact regarding entire issues). The O&M staff provided at the site should be able to take care of fault finding and repair system to maintain the desired level of solar solutions at site.

11.0 Standards to be followed:

PV Modules: IEC 61215/ IEC 61730

PCUs: IEC 61683, IEC 62109-1, IEC 62109-2, IEC 61000-6-2, IEC 61000-6-4, IEC 62116 IEC 60068-2,

Charge Controller/MPPT Units: IEC 62093/ IEC 60068-2 Cables: EN 50618 & IEC 60228 (DC), IS 7098 (AC)

SCHEDULE - A TECHNICAL PARTICULARS

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

**Name of Work: Supplying, Installation, Testing & Commissioning of rooftop solar plant at
Locust, Churu(Raj.).**

I

Name of Contractor:

S.No.	Details of Particulars	To be filled by contractor
(A) Solar PV Module		
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	
21.	Performance warranty	
(B) Solar Inverter		
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	
(C) Array Junction Box (DCDB)		
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.	
(D) PANEL SUPPORT/MODULE MOUNTING STRUCTURE		
1.	Material	
2.	Thickness of member	
3.	Over all dimensions	
4.	Wind rating	
5.	Tilt angle and adjustment	
6.	Peach of structure	
7.	Hardware & fastener	
8.	Foundation	

(Signature of the Contractor)

SPECIAL CONDITIONS (CIVIL)

1.0 General

- 1.1 Except for the items, for which Particular Specifications are given or where it is specifically mentioned otherwise in the description of the items in the schedule of quantities, the work shall generally be carried out in accordance with the “**CPWD specifications 2019 Vol. I & II**” with upto date correction slips, additional / Particular Specifications, Architectural / structural drawings and as per instructions of Engineer-in-Charge.

The several documents forming the tender are to be taken as mutually complementary to one another. Detailed drawings shall be followed in preference to small scale drawings and figured dimensions in preference to scaled dimensions.

Should there be any difference or discrepancy between the description of items as given in the schedule of quantities, particular specifications for individual items of work (including special conditions) and I.S. Codes etc., the following order of preference shall be observed:

- (i) Description of Schedule of Quantities
- (ii) Particular Specifications and Special Conditions, if any.
- (iii) Drawings
- (iv) CPWD Specifications.
- (v) Indian Standard Specifications of B.I.S.
- (vi) Manufacturers’ specifications & as decided by Engineer-in-charge.

“In the event of any variation/ discrepancy in the drawings, specifications and tender documents etc. the decision of the Engineer-in-charge shall be final binding and conclusive on the contractor and in the case the contractor have any doubt and the same should be got clarified immediately from the Engineer-in-charge and no claim of the contractor shall be entertained thereafter. Moreover, the agency is not allowed to take benefit out of any clerical/ grammatical mistake in the standard clauses/Schedule of Quantities/Specifications etc. being used in the agreement”.

The works to be governed by this contract shall cover delivery and transportation upto destination, safe custody at site, insurance, erection, testing and commissioning of the entire works.

The works to be undertaken by the contractor shall interalia include the following:

- i. Preparation of detailed SHOP drawings and AS BUILT drawings wherever applicable.
- ii. Obtaining of Statutory permissions where-ever applicable and required.
- iii. Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required.
- iv. Warranty obligation for the equipments and/or fittings/fixtures supplied by the contractor.

Contractor shall provide all the shop drawings or layout drawings for all the coordinated services before starting any work or placing any order for any of the services etc. These shop drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor. The contractor shall submit material submittals along with material sample for approval of Engineer-in-charge prior to delivery of material at site.

- 1.2 Any reference made to any Indian Standard Specifications, shall imply to the latest version of that standard, including such revisions / amendments as issued by the Bureau of Indian Standards upto last date of receipt of tenders. The Contractor shall keep at his own cost all such publications including relevant Indian Standard Codes applicable to the work at site.
- 1.3 The work shall be executed and measured as per metric dimensions given in the Schedule of Quantities, drawings etc. (FPS units wherever indicated are for guidelines only).
- 1.4 In the item of providing and fixing precast reinforced cement concrete in shelves the cost of cutting chases and making good the same shall be inclusive in the item and nothing extra shall be paid on this account.
- 1.5 In the item of finishing walls with water proofing cement/ exterior paint, only the plain/flat area shall be measured for payment and nothing extra shall be paid on account of pointed wall surface.
- 1.6 All the hidden items such as water supply lines, drainage pipes, conduits, sewers etc. are to be properly tested before covering.
- 1.7 Samples including brand / quality of materials and fittings to be used in the work shall be got approved from the Engineer-in-Charge, well in advance of actual execution and shall be preserved till the completion of the work.
- 1.8 Equipments like concrete pumps excavators/Transit mixers etc. shall be allowed to be moved away from the site when, in written opinion of Engineer-in-Charge, the same are no longer required at site of work.
- 1.9 The contractor, his authorized representative, workmen etc. shall strictly observe orders pertaining to fire precautions prevailing in the area.
- 1.10 Contractor(s) shall study the soil investigation report for the site, available in the office of the Engineer-in-Charge and satisfy himself about complete characteristics of soil and other parameters at site. However, no claim on the alleged inadequacy or incorrectness of the soil data supplied by the department shall be entertained.
- 1.11 The tenderer shall see the approaches to the site. In case any approach from main road is required at site or existing approach is to be improved and maintained for cartage of materials by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost.
- 1.12 Contractor shall take all precautionary measures to avoid any damage to adjoining property. All necessary arrangement shall be made at his own cost.
- 1.13 The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to work due to negligence on his part. No hindrances shall be caused to traffic, during the execution of the work.
- 1.14 The contractor shall take instructions from the Engineer-in-Charge regarding collection and

stacking of materials at any place. No excavated earth or building rubbish shall be stacked on areas where other buildings, roads, compound wall, services etc. are to be constructed.

- 1.15 The contractor shall provide at his own cost suitable weighing, surveying and leveling and measuring arrangements as may be necessary at site for checking. All such equipments shall be got calibrated in advance from laboratory, approved by the Engineer-in-Charge. Nothing extra shall be payable on this account.
- 1.16 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.
- 1.17 Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to approved manufacturers specifications where CPWD Specifications are not applicable. The contractor should get the materials (fixtures/fittings) tested from approved labs wherever required at his own cost.
- 1.18 The work shall be carried out in accordance with the Architectural drawings and Structural drawings, to be issued from time to time, by the Engineer-in-Charge. Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings issued for the work, nomenclature of items, specifications etc. and satisfy himself that the information available there from is complete and unambiguous. The figures & the written dimensions of the drawing shall supersede the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-Charge for immediate decision before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim, whatsoever shall be entertained on this account.
- 1.19 The contractor should submit the shop drawing of staging and shuttering for approval of Engineer-in-Charge before actually commencing the execution of work under the item. Nothing extra shall be payable on this account.
- 1.20 Other agencies may also simultaneously execute and install the works and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, openings, trenches etc. as may be required for such related works (for which inserts, sleeves, brackets, conduits, base plates, clamps etc. shall be available as specified elsewhere in the contract) and the contractor shall fix the same at the time of casting of concrete, stone work and brick work, if required, and nothing extra shall be payable on this account.
- 1.21 All material shall only be brought at site as per program finalized with the Engineer-in-Charge. Any pre-delivery of the material not required for immediate consumption shall not be accepted and thus not paid for.
- 1.22 The contractor shall procure the required materials in advance so that there is sufficient time for testing of the materials and approval of the same before use in the work.
- 1.23 Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services

encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services. In case temporary supporting of such services is required to facilitate the work, the same shall be done by the contractor at no extra cost.

In case the existing services are to be shifted permanently, then before dismantling the existing services, alternate/diversion of service lines has to be laid by the contractor so that there is no interruption in use of existing services. The contractor has to plan the alternate suitable route for diversion/shifting of service lines and get the same approved from the Engineer-in-Charge before starting shifting of services. Nothing extra shall be paid except the payment of dismantling and laying of new service lines as per conditions of contract.

- 1.24 The contractor shall be responsible for the watch and ward / guard of the buildings, safety of all fittings and fixtures including sanitary and water supply fittings and fixtures provided by him against pilferage and breakage during the period of installations and thereafter till the building is physically handed over to the client department. No extra payment shall be made on this account.
- 1.25 The contractor shall be fully responsible for the safe custody of materials brought by him/ issued to him even though the materials may be under double lock key system.
- 1.26 For construction works which are likely to generate malba / rubbish, contractor shall dispose of malba, rubbish & other unserviceable materials and wastes at his own cost to the notified specified dumping ground and under no circumstances these shall be stacked / dumped even temporarily, outside the construction premises.
- 1.27 The rates quoted by the Contractor are deemed to be inclusive of site clearance, setting out work, profile, establishment of reference bench mark(s), taking spot levels, construction of all safety and protection devices, barriers, preparatory works, working during monsoon, working at all depths, height, lead, lift and location etc until / unless specified otherwise and any other incidental works required to complete this work. Nothing extra shall be payable on this account.
- 1.28 For works below ground level the contractor shall keep that area free from water. If dewatering or bailing out of water is required, the contractor shall do it and nothing extra shall be paid except otherwise provided in the items of schedule of quantities.
- 1.29 Results of sub-surface investigations conducted at site are indicated in extracts of the report attached. This information about the soil and sub-soil water conditions is being made available to the Contractor, in good faith, for guidance only and the Contractor is advised to obtain details directly as may be considered necessary by him before quoting rates in the tender. No claim whatsoever on account of any discrepancy between the sub-surface strata conditions that may be actually encountered at the time of execution of the work and those given in these tender documents, in-accuracy or interpretation thereof shall be entertained from the Contractor under any circumstances. The ground water table is a variable condition and the information given in the report is only indicative and it may vary from time to time.

- 1.30 Any legal or financial implications resulting out of disposal of earth shall be sole responsibility of the contractor. Nothing extra over the schedule shall be paid on this account.
- 1.31 The Contractor shall keep himself fully informed of all acts and laws of the Central & State Governments, all orders, decrees of statutory bodies, tribunals having any jurisdiction or authority, which in any manner may affect those engaged or employed and anything related to carrying out the work. All the rules & regulations and bye-laws laid down by Collector / MC etc. and any other statutory bodies shall be adhered to, by the contractor, during the execution of work. The Contractor shall also adhere to all traffic restrictions notified by the local authorities. It is clarified that the extra sewerage charges (one time charges for commencement of work) required to be paid to the Municipal Corporation / other statutory bodies shall be paid by the department and need not be considered by the contractor. The water charges (for municipal water connection as well as tanker water) shall be borne by the contractor. Also, if the contractor obtains water connection for the drinking purposes from the municipal authorities or any other statutory body, the consequent sewerage charges shall be borne by the contractor. All statutory taxes, levies, charges (including water and sewerage charges, charges for temporary service connections and / or any other charges) payable to such authorities for carrying out the work, shall be borne by the Contractor. The Contractor shall arrange to give all notices as required by any statutory / regulatory authority and shall pay to such authority all the fees that is required to be paid for the execution of work. He shall protect and indemnify the Department and its officials & employees against any claim and /or liability arising out of violations of any such laws, ordinances, orders, decrees, by himself or by his employees or his authorized representatives. Nothing extra shall be payable on these accounts. The fee payable to statutory authorities for obtaining the various permanent service connections and Occupancy Certificate for the building shall be borne by the Department.
- 1.32 **Royalty** at the prevalent rates shall be paid by the Contractor as per the terms of supply between them on all materials such as boulders, metals, sand and bajri etc. collected by him for the execution of the work, directly to the revenue authority of the state government concerned. Nothing extra shall be payable on this account.
- 1.33 No foreign exchange shall be made available by the Department for importing (purchase) of equipment, plants, machinery, materials of any kind or any other items required to be carried out during execution of the work. No delay and no claim of any kind shall be entertained from the Contractor, on account of variation in the foreign exchange rate.
- 1.34 The Contractor shall conduct his work so as not to interfere with or hinder the progress of the work being performed by other Contractors or by the Engineer-in-Charge. As far as possible, he shall arrange his work and place, so as not to interfere with the operations of other Contractors or shall arrange his work with that of the others, in an acceptable and coordinated manner and shall perform it in proper sequence.
- 1.35 The Contractor shall assume all liability, financial or otherwise in connection with this contract and shall protect and indemnify the Department from any and all damages and claims that may arise on any account. The Contractor shall indemnify the Department against all claims in respect of patent rights, royalties, design, trademarks of name or other protected rights, damages to adjacent buildings, roads or members of public, in course of

execution of work or any other reasons whatsoever, and shall himself defend all actions arising from such claims and shall indemnify the Department in all respect from such actions, costs and expenses. Nothing extra shall be payable on this account.

- 1.36 The Contractor shall make all necessary arrangements for protecting from rains, the work already executed and for carrying out the further work, during monsoon including providing and fixing temporary shelters, protections etc. Nothing extra shall be payable on this account. Also, no claims for hindrance shall be entertained on this account.
- 1.37 In case of flooding of site on account of rain or any other cause and any consequent damage, whatsoever, no claim financially or otherwise shall be entertained notwithstanding any other provisions elsewhere in the contract agreement. Also, the Contractor shall make good, at his own cost, the damages caused, if any.
- 1.38 The Contractor shall take all necessary precautions to prevent any nuisance or inconvenience to the owners, tenants or occupants of the adjacent properties and to the public in general. The Contractor shall take all care, as not to damage any other adjacent property or other services running adjacent to the plot. If any damage is done, the same shall be made good by the Contractor at his own cost and to the entire satisfaction of the Engineer-in-Charge. The Contractor shall use such methodology and equipment's for execution of the work, so as to cause minimum environmental pollution of any kind during construction, to have minimum construction time and minimum inconvenience to road users and to the occupants of the buildings on the adjacent plot and public in general, etc. He shall make good at his own cost and to the entire satisfaction of the Engineer in Charge any damage to roads, paths, cross drainage works or public or private property whatsoever caused, due to the execution of the work or by traffic brought thereon, by the Contractor. Further, the Contractor shall take all precautions to prevent any pollution of streams and waterways. All waste or superfluous materials shall be carted away by the Contractor, entirely to the satisfaction of the Engineer-in-Charge. Utmost care shall be taken to keep the noise level to the barest minimum so that no disturbance as far as possible is caused to the occupants / users of adjoining buildings. No claim whatsoever on account of site constraints mentioned above or any other site constraints not specifically stated here, shall be entertained from the Contractor. Therefore, the Contractors are advised to visit site and get firsthand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.
- 1.39 All ancillary and incidental facilities required for execution of work like labour camp, stores, fabrication yard, offices for Contractor, watch and ward, temporary ramp required to be made for working at the basement level, temporary structure for plants and machineries, water storage tanks, installation and consumption charges of temporary electricity, telephone, water etc. required for execution of the work, liaison and pursuing for obtaining various No Objection Certificates, completion certificates from local bodies etc., protection works, barricading, testing facilities / laboratory at site of work, facilities for all field tests and for taking samples etc. during execution or any other activity which is necessary (for execution of work and as directed by Engineer-in-Charge), shall be deemed to be included in rates quoted by the Contractor, for various items in the schedule of quantities. Nothing extra shall be payable on these accounts. Before start of the work, the Contractor shall submit to the Engineer-in-Charge, a site / construction yard layout, specifying areas for construction, site office, positioning of machinery, material yard, cement and other storage,

steel fabrication yard, site laboratory, water tank, etc.

- 1.40 The Contractor shall display all permissions, licenses, registration certificates, bar charts, other statements etc. under various labour laws and other regulations applicable to the works, at his site office.
- 1.41 No tools and plants including any special T&P etc. shall be supplied by the Department and the Contractor shall have to make his own arrangements at his own cost. No claim of hindrance (or any other claim) shall be entertained on this account.
The Contractor shall be allowed to use the facilities if available at site & arranged by the associate-Contractors and other agencies working at site of the work. The Contractor shall be
- (i) Allow to use of scaffolding already erected, toilets, sheds etc.
 - (ii) Properly co-ordinate their work with the work of other Contractors.
 - (iii) Provide control lines and benchmarks to his associate-Contractors and the other Contractors.
 - (iv) Provide electricity and water at mutually agreed rates.
 - (v) Provide hoist and crane facilities for lifting material at mutually agreed rates.
 - (vi) Co-ordinate with other Contractors for leaving inserts, making chases, alignment of services etc. at site.
 - (vii) Adjust work schedule and site activities in consultation with the Engineer-in-Charge and other Contractors to suit the overall schedule completion.
 - (viii) Resolve the disputes with other Contractor amicably and the Engineer-in-Charge shall not be made intermediary or arbitrator. The contractor shall indemnify the Department against any claim(s) arising out of such disputes.
- 1.42 On completion of work, the contractor shall submit at his own cost four prints of “as built” drawings of the completed work to the Engineer-in-Charge. These drawings shall have the following information.
- a) Run off of all piping and their diameters including soil, waste pipes and vertical stacks.
 - b) Ground and invert level of all drainage pipes together with locations of all manholes and connections, upto out fall.
 - c) Run off of all water supply lines with diameters, location of control valves, access panels etc.
- In case the contractor fails to supply “as built drawing” aforesaid within 30 days of the date of completion, then the recovery @ Rs. 10,000/- for each such set of drawings shall be made from the contractor’s final bill.
- 1.43 The contractor shall have to arrange water of desirable quality for the construction purpose for which he may have to install RO/ Water Softening plant at site or might have to bring/ purchase water from outside as per decision of Engineer-in-charge. Nothing extra shall be paid on this account.
- 2.0** Unless otherwise specified in the schedule of quantities or CPWD specifications, the rates for respective items shall be all inclusive and apply to the following: -
- (i) All lifts & all heights, floors including terrace, leads and depths.
 - (ii) All labour, material, tools and plants and other inputs involved in the execution of the item.

- (iii) Any of the conditions and specifications mentioned in the tender documents.
- (iv) Providing sunk flooring in bath-rooms, kitchen, etc.
- (v) Any legal or financial implications resulting out of disposal of earth, if any.
- (vi) Payment of Royalty at the prevailing rates, if any, on the boulders, metal, shingle, sand and bajri etc. or any other material collected by him for the work direct to revenue authorities.
- (vii) Performance test of the entire installation(s) before the work is finally accepted.
- (viii) Any cement slurry added over base surface (or) for continuation of concreting for better bond is deemed to have been built in the items.
- (ix) All incidental charges for cartage, storage and safe custody of materials brought to site.
- (x) Pumping/ bailing out surface water/rain water/ sub soil water, if necessary for any reason.

Name of Work : Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).

MATERIAL AND EQUIPMENT – PREFERRED MAKES

All materials and equipment shall conform to the relevant standards and shall be one of the preferred makes indicated below :-

S.No.	Details of Materials/Equipment	Manufacturer's Name
1.	SOLAR PV PANEL	TATA SOLAR/ WAAREE ENERGY/ADANI SOLAR
2.	POWER CONDITIONING UNIT (PCU)/ Solar inverter	SMA(GERMANY)/DELTA/SCHNEIDER ELECTRIC/ABB/PANASONIC
3.	Junction Box	Hensel / Spelsberg / ABB / Cooperbusman / Sintex / Neptune
4.	LT Jointing kit	Rachem / Mahindra / M-Seal / 3M
5.	Cable glands / Bi-Metallic Cable lugs	Dowells / Comet / Jainson
6.	MCCB	SCHNEIDER – COMPACT NSX/ LAURITZ KNUDSEN - D-SINE/C&S(Winbreak 1) / ABB TMAX / LEGRAND DPX3/BCH / SIEMENS 3VJ
7.	MCB/ RCCB/ ISOLATOR	SCHNEIDER - ACTI9/ HAGER – NOVELLO+ /BCH/ SIEMENS BETA GUARD / ABB SB200M / C&S (Win Trip 1) / LAURITZ KNUDSEN – EXORA / LEGRAND – DX3
8.	MCB DB	HAGER (NOVELLO+) / SIEMENS (BETAGARD)/ BCH/ SCHNEIDER (ACTI-9)/ C&S (Epitome IK-09 IP-43 /ABB (ITUS) / LAURITZ KNUDSEN – EXORA / LEGRAND – EKINOX3
9.	MAIN LT PANEL/ SUB LT PANELS/ CAPACITOR PANEL/ SYNCHRONIZING PANEL WITH ACCESSORIES/ STARTER PANEL	NEPTUNE/ ADVANCE PANELS& SWITCHGEAR (P) LTD / ADLEC / TRICOLITE/ASPL/ENGINEERS & ENGINEERS / MILESTONE / SPC ELECTOTECH / EXPERT ENGINEERS / R.P. CONTROLS
10.	Voltmeter/Ameter / Energy meter– Electronic Digital Meter	Siemens / Schneider / Secure / Genus
11.	DC Cables and wires	Havells / KEI / LAPP / Agilon / Siechem / Polycab
12.	PVC Conduits and accessories (ISI marked)	Precision / AKG / BEC / Polycab / Norpack / Supreme
13.	GI Pipes (ISI marked)	TATA / JINDAL (HISSAR) / Prakash Surya
14.	DWC-HDPE underground pipes for Cables	Gemini Tirupati / Sudhakar Supreme/ Prince/ Duraline /Crown / Astral / Rex

15.	Indicating Lamps, LED type, Push Button	Schneider Electric / Siemens / Vaishno
16.	WIRES AND CABLES PVC INSULATED FRLS / HFFR COPPER CONDUCTOR SINGLE CORE CABLE 1.1 KV GRADE XLPE POWER CABLE AND CONTROL CABLE FIRE SURVIVAL CABLE 33KV/11 KV GRADE XLPE POWER CABLE COMMUNICATION CABLE SUBMERSIBLE CABLE	POLYCAB/ KEI/ HAVELLS/RR KABEL/ FINOLEX / BONTON / AGILON
17.	Selector Switch, Toggle switch	Salzer / Siemens / Kaycee
18.	Timer	Siemens / Schneider / GIC / Legrand
19.	Fire Sealant	Promat / Hilti / Birla / 3M
20.	Cat-6 / 6A LAN cable	Panduit Systimax / COMMScope / Molex / Legrand / Agilon / Extreme / Belden
21.	Surge Protection	OBO / ABB/ Legrand
CIVILITEMS		
22.	Cement (Portland Pozzolona Cement)	ACC, Ultratech, Ambuja Cement, J.K. Lakshmi Cement, Shree Cement
23.	Reinforcement Steel	SAIL, Tata Steel, Rashtriya Ispat Nigam Ltd.(RINL), JSW Steel Ltd., Jindal Steel & Power Ltd.
24.	Synthetic Enamel Paint	Asian :Apcolite Premium gloss enamel, Nerolac : Synthetic Hi gloss Berger : Luxol Hi gloss. British Paint ICI –Dulux : Gloss Synthetic enamel

Note:

1. The Contractor shall obtain approval from the Engineer-In-Charge before placing order for any specific material or engaging any of the specialized agencies wherever applicable.
2. The Engineer-In-Charge may approve any material equivalent to that specified in the tender subject to proof being offered by the Contractor for equivalence to his satisfaction.
3. Unless otherwise specified, in the tender document all the materials which are BIS/ISI Marked shall be used in the work and if the BIS/ISI marked materials are not available, materials conforming to IS shall be used, and for the materials which are neither ISI marked nor conform to IS, the manufacturer's Specification shall be followed.

PART - C

(Schedule of Quantity)

Schedule of Work

Name of work: - Supplying, Installation, Testing & Commissioning of rooftop solar plant at Locust, Churu(Raj.).

S. No.	Description of Item	Qty	Unit	Rate	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, zipes, cable trays and other accessories etc. as required.				
a)	High Energy Efficiency Solar Photovoltaic Module of capacity 535 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 0C, 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 cladded, having copper bus bar, having required protection and control gears, connection-interconnection, etc. as required.	20	kWp	54280.00	1085600.00
	Total Rs.				1085600.00

Executive Engineer (Elect)
C.P.W.D., Jaipur