GOVERNMENT OF INDIA
OFFICE OF
THE ASSISTANT ENGINEER (E)-III
C.P.W.D., ELECTRICAL DIVISION, BHOPAL

# NOTICE INVITING TENDER

| | | |
|---|---|---|
| **N.I.T. NO.** | : | **54/EE(E)/BHOPAL/2026-27 - Recall 1** |
| **NAME OF WORK** | : | **Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.** |
| **ESTIMATED COST** | : | **Rs. 2,75,550/-** |
| **EARNEST MONEY** | : | **Rs. 5,511/-** |
| **TIME ALLOWED** | : | **01 Months** |

Assistant Engineer (E),
CPWD, Bhopal

## INDEX FOR e-TENDERING

**Name of work-** **Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal..**


| S. No. | Description | Page Nos. |
|---|---|---|
| 1 | Index | 01-02 |
| 2 | Information & Instructions for contractors for e-tendering | 03-04 |
| 3 | List of Document & Information & Instruction for e-tendering | 05-06 |
| 4 | Notice Inviting Tender (CPWD 6 for e-tendering) | 07-10 |
| 5 | Tender & Contract (CPWD-7 ) | 11-14 |
| 6 | Schedule 'A' to 'F' | 15-25 |
| 7 | Additional Terms & conditions | 26-37 |
| 8 | Schedule of works | 38 |


Certified that this Bid documents contains pages__**01 TO 38**__ excluding front and back cover page.

Assistant Engineer (E)-III,
CPWD, Bhopal

**INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING FORMING PART OF NIT AND TO BE POSTED ON WEBSITE**

**The Assistant Engineer(E)-III, CPWD, Bhopal (Ph:- 0755-2679301 Fax No.2679300) invites on behalf of president of India invites online Percentage rate tenders from specialized firms/ CPWD Enlistment contractors in two bid system i.e. (Part-I Eligibility / Pre-Qualification Bid & Part-II Price Bid) for the following work (s): (For class – III, IV and V contractor whose enlisting is issued by SDG, Mumbai and ADG, Bhopal are only eligibile) for the following work (s): -**

| Sl. | NIT No. | Name of work & Location | Estimated cost put to tender | Earnest Money | Period of Compl-etion | Date of Pre-bid conference | Period of submission /uploading of eligibility and financial bids | **Last date and time of submission of bid, original EMD, copy of receipt for deposition of orginal EMD, and other documents as specified in the press notice.** | Time & date of opening of tender |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 \| | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | ***54/EE(E)/BHOPAL/26-27-Recall 1*** | **Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.** | ***RS. 2,75,550/-*** | **Rs. 5,511/-** | **01 Months** | **N.A** | **up to 3.00 PM 12.11.2026** | **up to 12.00 PM on 12.11.2026** | **Up to 03:30 PM on 12.11.2026** |

1. Contractors who fulfil the following requirement shall be eligible to apply. Joint ventures are not accepted. {1 (b), 1(c) & 1(d) are not applicable for CPWD enlisted contractors of appropriate class. 1(a) (i), (ii), (iii) are applicable for CPWD enlisted contractors also}

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

(i) One similar completed works each of value not less than **Rs. 2.20 Lakhs.**

**OR**

(ii) Two similar completed works each of value not less than **Rs. 1.66 Lakhs.**

**OR**

(iii) Three similar completed works each of value not less than **Rs. 1.10 Lakhs.**

**Similar Works means Work of: - "SITC of solar photovoltaic power plant".**

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

(b) Should have had Average Annual Financial Turnover of **Rs. 0.82 lacs** on above work during the last three consecutive years ending 31st March 2025. 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 (Scanned copy of Certificate from CA with Unique Document Identification Number (UDIN) to be uploaded).

(c) Should not have incurred any loss (profit after tax should be positive) in more than two years during the available last five consecutive balance sheets (standalone financial statement), duly certified and audited by the Chartered Accountant.

(d) Should have a Banker's Certificate from a commercial Bank for **Rs. 1.10 Lacs** or Net Worth certificate From CA with Unique Document Identification Number (UDIN) of minimum 10 % amount of ECPT (Scanned copy of original to be uploaded).

The firm should submit the attested copies of completion certificate issued by the officer not below the rank of Executive Engineer of department where firm has executed similar work. Incomplete certificate shall be summarily rejected. The completion certificate must clearly indicate the following (originals shall be produced for verification, if required).

i) The date of completion of work
ii) Nature and value of the work
iii) That the work has been completed satisfactorily
iv) Work done amount of completion certificate.

1. 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.

2. Information and Instructions for bidders posted on website shall form part of bid document.
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 **etender.cpwd.gov.in** or www.cpwd.gov.in or www.eprocure.gov.in free of cost.

3. **The Contractor can deposite 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. (The EMD document shall only be issued from the place in which the office of receiving division office is situated). The contractor shall obtain the receipt of EMD from the concerned Executive Engineer in the prescribed format uploaded by NIT issuing Executive Engineer.** The Bid document as uploaded can be viewed and downloaded free of cost by anyone including intending bidder. But the bid can only be submitted after uploading the mandatory scanned documents such as **Insurance Surety Bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipt and Bank Guarantee (For Balance amount as prescribed) from any of the Commercial Bank against EMD or Deposit at Call Receipt or Fixed Deposit Receipt of a Scheduled Bank** in favour of respective Executive Engineer, **copy of receipt of original EMD** and other document specified in the press notice.

4. 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. (The EMD document shall only be issued from the place in which the office of receiving division office is situated)** and uploading the mandatory scanned documents such as **Insurance Surety Bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipt and Bank Guarantee (For Balance amount as prescribed) from any of the Commercial Bank against EMD or Deposit at Call Receipt or Fixed Deposit Receipt of a Scheduled Bank** in favour of Executive **Engineer as mentioned in NIT, receipt for deposition of orginial EMD to division office of any Executive Engineer, CPWD** and other documents as specified.

5. **The Contractors already registered on the e-tendering portal will have option to continue by paying tender processing fee upto one year from the date of registration, or to switch over to (new) registration without tender processing fee any time. All new registrations from 01.04.2015 will be without tender processing fee.**

6. Those contractors not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online tendering process as per details available on the website. The intending bidder must have valid class-III digital signature to submit the bid.

7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.

8. Contractor can upload documents in the form of JPG format and PDF format.

9. **Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipt and Bank Guarantee (For Balance amount as prescribed) from any of the Commercial Bank against EMD or Deposit at Call Receipt or Fixed Deposit Receipt of a Scheduled Bank (drawn in favour of Executive Engineer(E), CPWD, Electrical Division, Bhopal) shall be scanned and uploaded to the e-Tendering website within the period of bid submission**.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, 50% of earnest money or Rs. 20 lakh, whichever is less, will have to be deposited in shape prescribed above, and balance in shape of Bank Guarantee of any scheduled Bank **having validity for 180 days or more from the last date of receipt of bids** which is to be scanned and uploaded by the intending bidders.

Copy of Enlistment / Annually pre-qualified certificate or the work experience and other documents as specified in the press notice shall be scanned and uploaded to the e-tendering website within the period of bid submission. **However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of tender opening authority.**

The bid shall be opened at 3.30 pm on _ **12.11.2026**

**--*-- To be filled in by Executive Engineer(E), CPWD, Electrical Division Bhopal.**
**# To be filled as per modified provisions of DG/MAN/299.**

10. When tenders 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 tender submitted earlier shall become invalid.

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

12. 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.

**13. Procedure for dealing with ambiguities in rates:-**

(i) In item rate tender, intending bidder can quote his rates in figures only, amount of each item and total is generated automatically.

(ii) In percentage rate tender, the tendered percentage quoted in figures shall be taken as correct.

(iii) In lump sum tenders the amount quoted in figures shall be taken as correct.

14. The eligibility / Pre-Qualification bids 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.

**14. ~~The Prebid meeting shall be held on __.10.2019 at this office up to 12:00 PM~~**

15. **Certificate of Financial Turn Over:** At the time of submission of bid contractor may upload

Affidavit/Certificate from CA mentioning Financial Turnover 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 eligibility / Pre-Qualification bids. There is no need to upload entire voluminous balance sheet.

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

I. Insurance Surety Bond/ Demand Draft/ Account Payee Banker's Cheque / FDR/ Bank Guarantee of any commercial Bank against EMD. **(drawn in favour of Executive Engineer(E), CPWD, Electrical Division, Bhopal)**

II. Copy of receipt of deposition of original EMD issued from division office of any Executive Engineer, CPWD (including NIT issuing EE)

III. Certificates of Work Experience (Completion Certificate).

IV. Certificate of Financial Turnover from CA. (Form A)

V. Banker's Certificate or Net Worth Certificate . (Form B/B1)

VI. Safety Measures At Site (Format C-1) (Applabile for specialized & Enlistement Contractor)

VII. Undertaking for Site Inspection (Format C-2) (Applabile for specialized & Enlistement Contractor)

VII. To become eligible for issue of bid, the bidders shall have to furnish **an Affidavit (On Non- Judicial stamp paper of Rs 100)** as under**:-**

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

**VIII.** Enlistment Order of the Contractor in appropriate class of B & R category in CPWD (For CPWD Contractor).
As per OM No. DG/Enlist Rules 2026/Misc/01 dated 31-12-2025.

a. The enlisted contractors of class-II and above can tender within their tendering limit for works all over the country irrespective of jurisdiction of the enlisting authority. The tendering limit is uniform all over India. Enlisted contractors of class-III, IV and V can tender within their tendering limit for works in the region of enlisting authority only. Enlisted contractors of class-III, IV and V can participate in tenders within the jurisdiction as detailed in table-9 as per their tendering limit for CPWD works, or as amended from time to time. Enlisted contractors of any class shall also have to meet the other requirements of eligibility as per NIT for Class-III, IV and V enlisted only.

b. Table 9 :-

**Table 9: Tendering jurisdiction and Enlisting authorities for Buildings & Roads category contractors of class III, IV and V and Horticulture category contractors of class III and IV:**

| Sl. No. | Region | Enlisting authority | Tendering Jurisdiction |
|---|---|---|---|
| 1. | NR | SDG(Chandigarh), ADG(Chandigarh), ADG(Lucknow), ADG(Jammu), ADG(DR) and ADG(PRD) | Punjab, Chandigarh, Rajasthan, Haryana, Uttarakhand, Himachal Pradesh, Uttar Pradesh, Jammu & Kashmir, Leh & Ladakh and Delhi |
| 2. | SR | SDG(Chennai), ADG(Kochi), ADG(Bengaluru) and ADG(Hyderabad) | Tamil Nadu, Andaman & Nicobar, Puducherry, Kerala, Karnataka, Lakshadweep, Andhra Pradesh, and Telangana |
| 3. | ER | SDG(Kolkata), ADG(Patna) and ADG(Guwahati) | West Bengal, Sikkim, Odisha, Bihar, Jharkhand, Assam, Arunachal Pradesh, Tripura, Nagaland, Meghalaya, Mizoram and Manipur. |
| 4. | WR | SDG(Mumbai) and ADG(Bhopal) | Maharashtra, Goa, Daman and Diu, Gujarat, Madhya Pradesh and Chhattisgarh |

IX. 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 under taking 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".

X. Valid Electrical contractor licence OR undertaking that they will either obtain valid electrical licence at the time of execution of electrical work or associate contractor having valid electrical licence of appropriate class.

XI. Structure & Organization (Form-E).( For Non CPWD Bidders)

XII. Existing Enlisted Contractor -Upload the ERP Training Certificate of the ERP (Enterprise Resource Planning) training through any of the CPWD Regional Training Institutes (RTIs) at Delhi, Mumbai, Chennai and Kolkata. National CPWD Academy (NCA) Ghaziabad as per NIT condition. (The enlisted contractor will not be allowed to participate in tendering process without uploading the certificate of above training).

XIII. Newly Enlisted contractor -Upload Certificate or Undertaking for the ERP Training Certificate of the ERP (Enterprise Resource Planning) training through any of the CPWD Regional Training Institutes (RTIs) at Delhi, Mumbai, Chennai and Kolkata. National CPWD Academy (NCA) Ghaziabad within 45 days of the date of issue of enlistment order, after which they will not be allowed to participate in tendering process without uploading the training certificate.
**(Annexure-I)**

XIV. Any other document as specified in the NIT.

Assistant Engineer (E)-III,
CPWD, Bhopal

## FINANCIAL INFORMATION ( FORM 'A')

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

| Financial years | 2025 | 2024 | 2023 | 2022 | 2021 |
|---|---|---|---|---|---|
| | | | | | |

i) Gross Annual turn Over on construction works.
ii) Profit/Loss (Standalone financial statement and consolidated financial statement both)

2. Financial arrangements for carrying out the proposed work.

**Signature of Chartered Accountant with seal**

**Signature of Bidder(s)**

## FINANCIAL INFORMATION ( FORM 'B')

This is to certify that to the best of our knowledge and information that M/s/ Sh …… …… .Having marginally noted address…… as a customer of our bank are/is respectable and can be treated as good for any engagement upto a limit of Rs……(Rupees……..).

This certificate is issued without any guarantee or responsibility on the bank or any of the others.

**(Signature) For the Bank**

**Note:**

1. Banker's certificates should be on 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**

**(Format – C1)**

## SAFETY MEASURES AT SITE

(A)

In order to ensure safe construction, following shall be adhered for strict compliance at the site:-

(i) The work site shall be properly barricaded.

(ii) Adequate signage indicating 'Work in Progress – Inconvenience caused is Regretted' or Diversion Signs shall be put on the sites conspicuously visible to the public even during night hours. These are extremely essential where works are carried out at public places in use by the public.

(iii) The construction malba at site shall be regularly removed on daily basis.

(iv) All field officials and the workers must be provided with safety helmets, safety shoes and safety belts.

(v) Proper MS pipe scaffoldings with work – platforms and easy-access ladders shall be provided at site to avoid accidents.

(vi) Necessary First-Aid kit shall be available at the site.

The above provisions shall be followed in addition to the provisions of General Condition of Contract.

(B)

**The Contractor has to take care of all safety measures required during execution of work for protection of his own labour as well as the residence residing there in the campus. In case of any accident happens in the campus during execution, due to lack of safety measures or any other reason what so ever, the agency is fully responsible and all the expenses on this account shall be bear by the contractor and nothing extra on this account shall be paid to the contractor and CPWD will not be responsible at all.**

Place :
Date :

Yours faithfully

(Signatures of Bidder(s))

**(Format – C2)**

# FORMAT FOR UNDERTAKING FOR SITE INSPECTION

**To,**

**The Assistant Engineer (E)-III,**
**C.P.W.D., Bhopal.**

**I/we hereby give an undertaking for the given work as follows:**

**NIT No.:- 54/EE(E)/BHOPAL/2026-27-Recall 1**

**Name of work:** Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.

I/we have inspected and examined the site and its surroundings is / are satisfied before submitting our bid 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 I/we may require and in general shall myself / ourselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect our bid. I/we shall be deemed to have full knowledge of the site whether I/we inspect it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. I/we shall be responsible for arranging and maintaining at our 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 I/we implie(s) that I/we have read this notice and all other contract documents and has made myself / ourself 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 us by the Government and local conditions and other factors having a bearing on the execution of the work.

Place :
Date :

Yours faithfully

(Signatures of Bidder(s))

**FORM "E"**
**STRUCTURE & ORGANISATION**

1. Name & address of the bidder:

2. Telephone no./Telex no./ Fax no.

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. Particular of registration with various Government Bodies( Scan & upload attested photocopy)

| **Organization/Place of registration** | **Registration No.** |
|---|---|
| 1. | |
| 2. | |
| 3. | |
| 4. | |

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 the court of Law? If so, give details.

8. In which field Civil Engineering construction the bidder has specialized and interest?

9. Any other information considered necessary but not included above.

**Signature of Bidder(s)**

**(Annexure-I)**

**UNDERTAKING REGARDING ERP Training in CPWD Department (For NEWLY ENLISTED CPWD Contractors)**

**To,**
**Assistant Engineer (E)-III,**
**CPWD, Bhopal.**

**Name of Work:-**Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal..

**NIT No.-54/EE(E)/BHOPAL/2026-27- Recall 1**

Having examined the details given in the bid document for the above work, I/we hereby submit that the Undertaking that,

"If work is awarded to me, I/we shall obtain ERP( Enterprise Resource Planning) training from CPWD Regional Training Institutes, as applicable, within Forty Five Days from the date issue of enlistment order, after which I/We not be allowed to participate in tendering process without uploading the training certificate."

Signature of Bidder(s) or an authorized Officer of the firm with stamp

Date of Submission:

## 20A.14 Information and instruction for Executive Engineer for e-tendering:

1. The Executive Engineer of all divisions of CPWD should receive the original EMD for tender of other division.
2. The NIT approving authority/EE at the time of issue of NIT shall also fill and upload the following prescribed format of receipt of deposition of original EMD along with NIT:-

| Receipt of deposition of original EMD<br>(Receipt No. …….. / date……) |
|---|
| 1. **Name of Work:- Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.**<br>2. **NIT No. 54/EE (E)/BHOPAL/2026-27- Recall 1**<br>3. Estimated Cost **Rs. 2,75,550.00**<br>4. Amount of Earnest Money Deposit **Rs. 5,511.00**<br>5. Last date of submission of bid **12.11.2026** .*<br><br>(* To be filled by NIT approving authority/EE at the time of issue of NIT and uploaded along with NIT) |

1. Name of contractor ……..….#
2. Form of EMD ……..#
3. Amount of Earnest Money Deposit ……#
4. Date of submission of EMD ……#

Signature, Name and Designation of EMD receiving officer (EE/AE(P)/AE/AAO) alongwith Office Stamp

(* To be filled by EMD receiving EE)

3. The Executive Engineer receiving EMD in original form shall examine the EMD deposited by the bidder and shall issue a receipt of deposition of earnest money to the agency in a given format uploaded by tender inviting EE. The receipt may be issued by the AE(P)/AE/AAO.
4. The Executive Engineer receiving original EMD shall also intimate tender inviting Executive Engineer about deposition of EMD by the agency by email/fax/ telephonically.

5. The original EMD receiving Executive Engineer shall release the EMD after verification from the e-tendering portal website (**etender.cpwd.gov.in)** >tender free view> advance search>awarded tenders) that the particular contractor is not L-1tenderer and work is awarded.
6. The tender inviting Executive Engineer will call for original EMD of the L-1 tenderer from EMD receiving Executive Engineer immediately.

**Govt. of India**
**Central Public Works Department**
**Notice Inviting Tender**

The Assistant Engineer(E)-III, CPWD, Bhopal (Ph:- 0755-2679301 Fax No.2679300) invites on behalf of president of India invites on line **Percentage rate** tenders from **specialized firms**/contractors in **two bid** system i.e Eligibility cum technical bid (Part-I) & Financial bid (Part-II) for the following:

## Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.

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 : ₹ **2,75,550/-.** This estimate, however, is given merely as a rough guide.

1.2 Intending tenderer is eligible to submit the bid provided he fulfill the criteria **eligibility for issue of tender documents.**

1.2.3 **To become eligible for issue of tender, the firm/ agency shall have to furnish an affidavit (On Non-Judicial stamp paper of Rs.100) as under:- as under:-**
**"I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for 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". (Scanned copy to be uploaded at the time of submission of bid).**

2 Agreement shall be drawn with the successful tenderer on prescribed form No. CPWD7/8 modified / amended upto last date of receipt of tender (or other Standard Form as mentioned) which is available as a Govt. of India Publication. Tenderer 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 **01 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 tender documents.

4. (i) The site for the work is available. **YES** OR
The site for the work shall be made available in parts as specified below:-
_____**Available**_____

--*-- To be filled in by **Assistant Engineer(E)-III, CPWD Electrical Division, Bhopal.**

5. The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved programme of completion submitted by the contractor after award of work. 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 tender 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 tender as notified.

8 When tenders 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 tender submitted earlier shall become invalid.

9. Earnest Money in the form of **Insurance Surety Bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipt and Bank Guarantee (For Balance amount as prescribed) from any of the Commercial Bank against EMD or Deposit at Call Receipt or Fixed Deposit Receipt of a Scheduled Bank** (drawn in favour of **Executive Engineer(E), CPWD, Electrical Division, Bhopal)** shall be scanned and uploaded to the e-tendering website within the period of bid submission. **The original EMD should be deposited either in this office of executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. (The EMD document shall only be issued from the place in which the office of receiving division office is situated). The EMD receving Executive Engineer** (including NIT issuing EE/AE) **shall issued a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT. This receipt shall also be uploaded to the e-tendering website by the intending bidder upto the specified bid submission date and time.**

9.1 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.

9.2 Copy of Enlistment / Annually pre-qualified certificate or the work experience and other documents as specified in the press notice shall be scanned and uploaded to the e-tendering website within the period of bid submission. **However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of tender opening authority.**

9.3 **The bid Submitted shall be opended at 03.30 PM on 12.11.2026.**

10. The bid submitted shall become invalid and e-Tender processing fee shall not be refunded if::

(i) The bidder is found ineligible.

(ii) **The bidder does not deposite orginal EMD with division office of any Executive Engineer, CPWD (The EMD document shall only be issued from the place in which the office of receiving division office is situated.**

(iii) **The bidder does not upload scanned copies of all the documents stipulated in the bid document..**

(iv) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest tenderer in the office of tender opening authority.

(v) **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 ECPT amount or Contract amount, whichever is higher and additional PG as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Security 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 the action as per EMD declaration Proforma will be taken by the CPWD 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 sub-contractors, if any, engaged by the contractor for the said work and Programme Chart (Time and Progress) within the period specified in Schedule F..

12. Intending Firm/ agencies are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders 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 tender. A firm/ agency 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 firm/ agency 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 tender by a firm/ agency 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 tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the firm/ agency shall be summarily rejected.

14. Canvassing whether directly or indirectly, in connection with firm/ agency is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the tender and the firm/ agency shall be bound to perform the same at the rate quoted.

16. The Agency shall not be permitted to tender 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 Urban Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

17. No Engineer of gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractor's service.

18. The bid for the works shall remain open for acceptance for a period of **Seventy Five (75)**days from the date of opening of bids.

(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 d rawings, 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.

Assistant Engineer (E)-III,
CPWD, Bhopal

**--*-- To be filled in by Assistant Engineer(E)-III, CPWD, Electrical Division, Bhopal.**

**GOVERNMENT OF INDIA**
**CENTRAL PUBLIC WORKS DEPARTMENT**

## Percentage Rate Tender & Contract for Works

Tender for the work of: -

# Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.

(i) To be uploaded by 15:00 hours on **12.11.2026** to **Assistant Engineer (E)-III, CPWD, Bhopal.**
(ii) To be opened in presence of tenderers who may be present at 15:30 hours on **12.11.2026 in the office of Assistant Engineer (E)-III, CPWD, Bhopal.**

## निविदा T E N D E R

मैंने/हमने कार्य के लिए निविदा आमंत्रण सूचना, अनुसूची क,ख,ग,घ, ड., और च, लागू विनिर्देश, नक्शे एवं डिजाइन, सामान्य नियम एवं निर्देश, ठेके के उपबंध, विशिष्ट शर्ते, दर अनुसूची एवं अन्य कागजात तथा ठेके की शर्तो में दिए गए नियम तथा निविदा कागजात में उल्लिखित अन्य बातों को पढ़ व जांच लिया है।

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.

मै/हम, एतत्द्वारा भारत के राष्ट्रपति के लिए अनुसूची 'च' में विनिर्दिष्ट समय के भीतर विनिर्दिष्ट कार्य, यथा–मात्राओं की अनुसूची तथा सभी संबंधित विनिर्देशों, डिजाइनों, नक्शों के अनुरूप तथा सामान्य नियमावली के नियम–1 और ठेके की शर्तो के खंड–11 में उल्लिखित लिखित अनुदेशों एवं ऐसी सामग्रियों, जो प्रदान की जाती है और उसके संबंध में, ऐसी शर्ते जो लागू हो, के अनुरूप निष्पादन हेतु निविदा देता हूं/देते हैं ।

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

We agree to keep the tender open for **Seventy Five (75) days** from the due date of opening of financial bid and not to make any modification in its terms and conditions.

₹ **5,511/-** की धनराशि, धरोहर राशि के रूप में ट्रेजरी चालान रसीद/अनुसूचित बैंक की मांग जमा रसीद/ अनुसूचित बैंक की सावधी जमा रसीद /अनुसूचित बैंक का डिमांड ड्राफ्ट/ अनुसूचित बैंक द्वारा जारी बैंक गारंटी के रूप में इसके साथ भेजी जा रही है। यदि मैं / हम निर्धारित निष्पादन गारंटी को निर्धारित समय अवधि में प्रस्तुत करने में असफल रहते हैं तो मैं/ हम यह मंजूर करते है कि भारत के उक्त राष्ट्रपति या उनके कार्यालय के उत्तराधिकारी किसी अन्य अधिकार या उपचारी उपाय पर प्रतिकूल प्रभाव डाले बिना उक्त धरोहर राशि जब्त करने के लिए पूर्णतया स्वतंत्र होंगे । इसके अलावा, यदि मैं/हम विनिर्दिष्ट कार्य प्रारंभ करने में असफल रहते हैं तो मैं/ हम यह मंजूर करते हैं कि भारत के राष्ट्रपति या उनके कार्यालय के उत्ताधिकारी कानून में उपलब्ध किसी अन्य अधिकार या उपचारी उपाय पर प्रतिकूल प्रभाव डाले बिना उक्त धरोहर राशि, तथा निष्पादन गारंटी जब्त करने के लिए पूर्णतया स्वतंत्र होंगे अन्यथा उक्त धरोहर राशि निविदा कागजात के अनुसार उसमें निहित शर्तों व निबंधनों के अनुसार कार्यो के निष्पादन एवं आदिष्ट विचलनों को अनुसूची 'च' में वर्णित प्रतिशत से अनधिक व निविदा प्रपत्र के खण्डों 12.2 व 12.3 में निहित प्रावधानों के अनुसार निश्चित की जाने वाली दरों पर उस सीमा से अधिक के विचलनों के करने के लिए उनके द्वारा प्रतिभूति–निपेक्ष के रूप में रोक ली जाएगी। इसके अतिरिक्त मैं/हम सहमत हैं कि बयाना राशि या बयाना राशि तथा उपर्युक्त निष्पादन गारंटी जब्त हो जाने के मामले में मुझे/हमें कार्य की पुनः निविदा प्रक्रिया में भाग लेने से रोक दिया जाएगा ।

A sum of₹ **5,511/-**is hereby forwarded in Multiple **Insurance Surety Bonds, Account Payee Demand Draft or Bankers cheque or Fixed Deposit Receipt and Bank Guarantee (For Balance amount as prescribed) from any of the Commercial Bank against EMD or Deposit at Call Receipt or Fixed Deposit Receipt of a Scheduled Bank** as earnest money. 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 his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely. The said Performance Gurantee shall be 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. **Futher, I/we agree that in case of forfeiture of earnest money or both earnest money and 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 aviolation 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.

मैं/हम एतत्द्वारा घोषणा करते है कि मै/हम निविदा कागजातों, नक्शों और कार्य से संबंधित अन्य अभिलेखों को गुप्त/गोपनीय कागजात के रूप में रखेगे और उनसे प्राप्त/ली गई जानकारी किसी अन्य को, जिन्हें मैं/हम सूचित करने के लिए प्राधिकृत हो, से भिन्न किसी को,नहीं बताएगें या जानकारी को किसी ऐसे रूप में प्रयोग नही करेंगे जो राज्य की सुरक्षा के लिए प्रतिकूल हो।

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 therefrom to any person other than a person to whom I/We am/are authorised to communicate the same or use the information in any manner prejudicial to the safety of the State.

तारीख Dated **#**.....

ठेकेदार के हस्ताक्षर Signature of Contractor**#**

डाक का पता Postal Address**#**

साक्षी Witness : **#**

पता Address: **#**

उपजीविका Occupation : **#**

**# To be filled in by the contractor/witness as applicable**

# स्वीकृति ACCEPTANCE

मै भारत के राष्ट्रपति की ओर से तथा उनके लिए ₹ ……’…… (रूपए ……’……) की राशि के लिए उपर्युक्त निविदा (अधोलिखित पत्रों के अनुसार परिवर्तित) स्वीकार करता हूं।

The above tender (as modified vide letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of ₹. ____*_____

(Rupees_____*_____)

नीचे दिए गए पत्र इस ठेका करार का हिस्सा होंगे।

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

a) *

b) *

c) *

भारत के राष्ट्रपति की ओर से तथा उनके लिए
For & on behalf of the President of India.

हस्ताक्षरSignature .....

तारीख Dated ..... *.....

पदनाम Designation .....

* To be filled in by **Assistant Engineer (E)-III/ CPWD// Bhopal**.

## SCHEDULES

**SCHEDULE 'A'**

Schedule of quantities (enclosed) — As per Schedule of work attached.

**SCHEDULE 'B'**

Schedule of materials to be issued to the contractor:

| S.No. | Description of item | Qty. | Rates in figures & words at which the material will be charged to the contractor. | Place of issue |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| ---------- NIL ---------- | | | | |

**SCHEDULE 'C'**

Tools and plants to be hired to the contractor:

| S. No. | Description | Hire charges per day | Place of issue |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| ---------- NIL ---------- | | | |

**SCHEDULE 'D'**

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

**SCHEDULE 'E'**

| | | |
|---|---|---|
| Reference to General Conditions of contract | : | Applicable GCC is GCC Maintenance Works 2023 as modified and corrected upto previous day of the last date of submission of tender. |
| Name of work | : | **Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal..** |
| Estimated cost of work | : | **Rs.2,75,550/-** |
| (i) Earnest money | : | **Rs.5,511/-** (To be returned after receiving performance guarantee) |
| (ii) Performance Guarantee | : | **(a) 5% (Five Percent) of the tendered amount or Estimated Cost put to Tender (ECPT) (Whichever is higher).**<br>**b) Where the tendered amount is less then 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 eight percent (80%) of the ECPT and the tendered amount.tendered amount.** |
| (iii) Security deposit | : | 2.5% of tendered Value |

**SCHEDULE 'F':-**

General Rules & Directions: -

| | | |
|---|---|---|
| Officer inviting tender: | : | **Assistant Engineer (E)-III, CPWD, Bhopal** |

**Definitions:**

| | | |
|---|---|---|
| 2 (v) Engineer-in-Charge | : | **Assistant Engineer (E)-III, CPWD, Bhopal** |
| 2 (viii) Accepting Authority | : | **Assistant Engineer (E)-III, CPWD, Bhopal** |
| 2 (x) Percentage on cost of materials and labour | : | 15 % |

| | | |
|---|---|---|
| to cover all overheads and profits. | | |
| 2 (xi) Standard schedule of Rates | : | Based on DSR 2025 / Market Rates |
| 2 (xii) Department | : | CPWD |
| 9 (ii) Standard CPWD contract form | : | CPWD form 7 (Percentage rate) as modified and corrected upto previous day of the last date of submission of the tender. |

**Clause 1**

| | | |
|---|---|---|
| Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable labour license, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance. | : | 07 days |
| Maximum allowable extension with late fee 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above. | : | 03 days |

**Clause 2**

| | | |
|---|---|---|
| Authority for fixing compensation under clause – 2 | : | **Chief Engineer(Bhopal), CPWD, Bhopal** |

**Clause 2A**

Applicable Clause 2/ Clause 2A : Clause 2 ( Applicable)

**Clause 5**

Number of days from the date of issue of letter of acceptance for reckoning date of start : 10 Days

Note:- Levy of compensation under clause-2/2A will be granted by the **Chief Engineer(Bhopal), CPWD, Bhopal**

**MILE STONE (S) AS PER TABLE GIVEN BELOW**

**Table of Milestone (s)**

| S No | Discription of Milestone (Physical) | Time allowed in days (From date of start) | Amount to be withheld in case of non-achievement of milestone |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |

Time allowed for execution of work : **01 Months**

Authority to decide:

| | | |
|---|---|---|
| 1. Authority to convey the decision of shifting of milestone and extension of time. | : | **Executive Engineer (Bhopal), CPWD, Bhopal** |
| 2. Authority to decide rescheduling of milestone and extension of time | : | **Chief Engineer (Bhopal), CPWD, Bhopal or his successor thereof.** |
| 3. Shifting of date of start in case of delay in handing over of site. | : | **Chief Engineer (Bhopal), CPWD, Bhopal or his successor thereof.** |

**Clause 5 :-**
Applicable Clause 5/ Clause 5A : 5

**Clause 6 :-**
Mode of Measurement : Electronic Measurement Book (EMB)

**Clause 7 :-**
Gross work to be done together with net payment/adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment. : 25% of ECPT or reasonable part thereof to facilitate progress of work

**Clause 7 A:-**
*Whether Clause 7A shall be applicable.* : Not applicable

**Clause 10A :-**
List of testing equipment to be provided by the contractor at site lab. : As per requirement at site & as per direction of Engineer-in-Charge.

**Clause 10 – B(ii) :-**
Whether clause 10-B(ii) shall be applicable : Not Applicable

**Clause 10C –** :
Component of labour expressed as percent of value of work : **25% (**Qualifying amount for labour component will be 85% of the value of the work executed during period under consideration)

**Clause 10CC :-**
**Clause 10CC** to be applicable in contracts with stipulated period of completion exceeding 12 months period. : Not Applicable

Schedule of component of other Materials, Labour, POL etc. for price escalation.

| | | |
|---|---|---|
| Component of civil (Except materials covered under clause 10 CA)/ Electrical construction materials expressed as percent of total value of work. | Xm | Not Applicable |
| Component of labour expressed as percent of total value of work. | Y | |
| Component of POL expressed as percent of total value of work. | Z | |

**Clause 11 :-**
Specifications to be followed for execution of work : General Specifications for Electrical Work Part-I (Internal) 2023, Part-II (External) 2023 and Solar Photovoltaic Power Plant - 2019 amended upto date and additional terms & conditions attached.

**Clause 12 :-** Authority to decide deviation upto 1.5 times of tendered amount**.** Chief Engineer(Bhopal), CPWD, Bhopal

Type of work Maintenance Work.

**Clause 16** :-
Competent Authority for deciding reduced rates. Chief Engineer(Bhopal), CPWD, Bhopal

**Clause 18 :-**
List of mandatory machinery, tools & plants to be deployed by the contractor at site. As required for timely execution of work

**Clause 25**

i) **Conciliator – Additional Director General (Regional Bhopal)**
ii) **Arbitrator Appointing Authority- Chief Engineer(Bhopal), CPWD, Bhopal**
iii) **Place of Arbitration – As decided by Arbitrator**

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

| Cost of work (Rs. in Crore) | Requirement of Technical Staff | | Minimum experience (Years) | Designation of technical staff | Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause |
|---|---|---|---|---|---|
| | Qualification | Number (Civil + Electrical) | | | |
| ~~More than 15 Lacs to 1.50 crore~~ | ~~Graduate Engineer or Diploma Engineer~~ | ~~1~~ | ~~2 or 5 Respectively~~ | ~~Project Manager cum Planning/ Quality/Site/building Engineer~~ | ~~Rs.15,000/=(Rs. Fifteen thousand only) per month per person~~ |
| Upto 15 lacs | ~~--~~ | ~~--~~ | ~~--~~ | ~~--~~ | ~~--~~ |

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

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

**Clause 38 :-**

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

(ii) Variations permissible on theoretical quantities:

| | | |
|---|---|---|
| a) Cement for works with estimated cost put to tender not more than Rs. 5 lakhs | | N/A |
| for works with estimated cost put to tender more than Rs 5 lakh | | N/A |
| b) Bitumen for all works. | | N/A |
| c) Steel Reinforcement and structural steel sections for each diameter, section and category. | | N/A |
| d) All other materials. | | Nil |

**RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION**

| Sl. No | Description of Item | Rates in figures and words at which recovery shall be made from the Contractor. | |
|---|---|---|---|
| | | Excess beyond permissible variation | Less use beyond the permissible variation |
| ----------NIL---------- | | | |

**Assistant Engineer (E)-III**
CPWD, Bhopal)

**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 (herein after called "The Government") has entered into an agreement bearing number……with .....(name and address of the contractor)…….. (hereinafter called "the Contractor") for execution of work..... ... (name of work)……..... 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)…….. (herein after 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 hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. …….. (Rupees ……only).
4. We, ……(indicate the name of the Bank)……. further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.
5. We, ……. (indicate the name of the Bank)……. further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. We, ..... (indicate the name of the Bank)……. further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.
7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
8. We, ……. (indicate the name of the Bank) …… undertake not to revoke this guarantee except with the previous consent of the Government in writing.
9. This guarantee shall be valid up to ……unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. …… (Rupees ……..) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.
10.

**Date……**

**Witnesses:**

**Authorized signatory :**
**Name :**
**Designation :**
**Staff code no. :**
**Bank seal:**

1. **Signature.....**
   **Name and address**
2. **Signature …….**

**Name and address**

## GENERAL CONDITIONS

**1.0 General**

The work shall be executed as per CPWD General Specifications for Electrical Work Part-I (Internal) 2013, Part-II (External) 1995 as amended upto date wherever applicable, as per relevant IS and as per directions of Engineer-in-Charge. The technical specifications are to be read in conjunction with above and in case of variations, technical specifications of tender document shall apply. Nothing extra shall be paid on account of additional features in the technical specifications as the same are to be read along with schedule of quantities for the work.

**Location: New Office Building at Income Tax, Bhopal.**

1.1 The Department shall not issue any T & P and nothing extra shall be paid on this account.

1.2 The work to be awarded by this tender shall be treated as indivisible works contract.

1.3 Before quoting the rates the tenderer should visit the site, so as to acquaint themselves of the site condition.

1.4 Any damage done to the existing structure shall be restored to its original shape & colour by the contractor for which nothing extra shall be paid.

**2.0** 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.

**3.0 Rate:**

The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including GST), custom duty, entry tax, duties and levies and all charges for packing forwarding, insurance, freight and delivery, installation, testing, commissioning etc at site i/c temporary constructional storage, risks, overhead charges, general liabilities/obligations and clearance from local authorities.

**4.0 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 equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specifically mentioned in the tender documents or not.

**5.0 Storage and custody of materials:**

Contractor has to make his own arrangement for storage of material and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the department.

**6.0 Care of the Building:**

Care shall be taken by the contractor while handling and installation the various equipment 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.

**7.0 Completion period**:

The completion period indicated in the tender documents is for the entire work of planning, designing, approval of General arrangement drawings, supplying, installation, testing, commissioning and handing over of the entire installation to the satisfaction of the Engineer-in-charge.

**8.0 Performance Guarantee:**

8.1 The tenderer shall guarantee among other things, the following vis-à-vis specifications.

a. Quality, strength and performance of the materials used.

b. Safe mechanical and electrical stress on all parts under all specified conditions of operation.

**9.0 Defect Liability Period:**

(i) All the equipment's shall have defect liability period of **24 months** to be reckoned after the date of recording of completion certificate by the department.

The equipment's or components, or any part thereof, so found defective during warrantee 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.

**10.0** Contractor has to submit OEM test certificate at the time of submission of bills.

11. Proper Shop Drawing Scheme Plan showing piping route & accessories need to be approved before executive of work.

**12.0 Power Supply:**
Power Supply for the purpose of Installation of plant and equipment shall be arranged by the tenderer.

13. The bidder should submit undertake to use material as specified in the technical specification of tender including makes and declare that no deviation will be taken from the specifications, makes as specified in tender during execution.

14. **Water Supply:-** Contractor has to make arrangement of water for testing of Fire Fighting Work.

15. In case Engineer-in-charge feels that some brand is not meeting the product specifications, the same shall not be allowed even if its brand name is included in list of approved make/brand. No claim of contractor on this account shall be entertained.

16. Bidder should submit original leaflet & letter of authority from the manufacturer.

**17.0 Compliance with Regulations and Indian standards**

**17.1** All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to this work. In particular, the equipment and installation shall comply with the following:

a. Factories Act
b. Indian Electricity Rules
c. I.S. & BS Standards as applicable
d. Workmen's compensation Act
e. statutory norms prescribed by local bodies

**17.2** Nothing in this tender 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.

**18.0 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 department shall not 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 third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer due to the above.

**19.0 Erection Tools**:
No tools and tackles either for unloading for shifting the material for erection purposes would be made available by the department. The successful tenderer shall make own arrangement for all these facilities.

**20.0 Mobilization Advance:**
No mobilization advance shall be paid for this work.

**21.0 Verification of correctness of Equipment at Destination:**
The contractor shall have to produce all the relevant records to certify that the genuine equipment from the manufacturers has been supplied and erected.

**22.0 Painting:**
This shall include cost of painting of entire exposed iron work in the installation. All material works shall be painted at the works before dispatch to the site.

**23.0 Quality Assurance:**

23.1 The conduiting plan, Internal EI layout, schematic diagram as per contract specifications shall be prepared by the respective contractor and will be submitted by contractor duly signed before placing the order. The engineer-in-charge shall approve the shop drawing/ plan /layout as per contract conditions.

23.2 All the materials to be used in the work shall be new and of good quality and shall be not older more than 6 months from the date of receipt at site or year of manufacturing should be current. The equipment shall be procured directly from the manufacturer or authorized dealer and delivery challan / proof of dispatch of material of the Agency from where the material is purchased in support of genuineness of material shall be submitted along with bill for verification.

23.3 Manufacturer test certificates of all the equipment and material shall be submitted along with supply.

24.0 Department may send any material for testing. Testing charges if any shall be borne by the contractor. No amount will be paid for sample material sent for testing purpose.

**25.0 Completion Plans:**

After completion of work the contractor shall submit three sets of manufacturer's maintenance and operating instructions.

26. The order of preference in case of any discrepancy as indicated in condition No. 8.1 under "Conditions of Contract" give in standard CPWD contract form may be read as the following:

i) Nomenclature of items as per schedule of quantities.
ii) General conditions, Particular specification and additional condition, if any.
iii) CPWD specifications.
iv) Architectural Drawings
v) Indian standard specifications of B.I.S.
vi) Sound Engineering Practice

A reference made to any Indian Standard specification in these documents, shall imply to the latest version of that standard. Including such revision/amendments as issued by the bureau of Indian standard upto last date of receipt of tenders. The contractor shall keep at his own cost all such publications of relevant Indian standard applicable to the work at site

27.0 The material should purchase from OEM or their authorized dealers.

28.0 It will be the responsibility of contractor to get the statutory CEA approval from Electricity Board. The statutory payments shall be made/reimbursed by the department on production of receipt/ challan/ demand note etc.,

29.0 As the building is operational, contractor has to arrange the work in phased manner.

30.0 Terms of Payment:

The following percentage of contract rates shall be payable against the stages of work as shown.

| SL No. | Stage of Work | All Items |
|---|---|---|
| 1 | After delivery at site in good condition on pro rata basis | 70% |
| 2 | On completion of pro-rata installation | 20% |
| 3 | On successful testing and commissioning of the system | 10% |

**Assistant Engineer (E) P.**
**CPWD, Bhopal**

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

## SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

### SCOPE OF WORK

a. Scope of work covers Design, Supply, Installation, Commissioning and handing over of Grid Connected SPV Rooftop Plant under Net Metering the technical specification given in this bid.

b. Wiring up to Distribution Board from the SPV Rooftop system will be in the scope of the successful bidder(s). The maximum cable length of 25m for every solar power plant installed shall be in the scope of the bidder and supply of excess cable length if required shall be in the scope of purchaser.

c. Performance testing of the complete system.

d. The contractor shall do necessary coordination with concerned agencies like MSEDCL for obtaining necessary approvals on behalf of the department. However the cost of approvals and bi- directional meter, shall be borne by the department after submission of invoice by the contractor.

### TECHNICAL SPECIFICATIONS

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

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

- Solar PV modules consisting of required number of Crystalline PV cells.
- Grid interactive Power Conditioning Unit with Remote Monitoring System
- Mounting structures
- Junction Boxes.
- Earthling and lightening protections.
- IR/UV protected PVC Cables, pipes and accessories

### SOLAR PHOTOVOLTAIC MODULES:

Solar PV modules should be of the crystalline silicon type, manufactured in India. Detailed specifications of the solar PV modules are given below

| Type | Crystalline silicon |
|---|---|
| Efficiency | >= 23% |
| Fill factor | >= 70% |
| warranty | Panel output ($W_p$) capacity to be >=90% at the end of 12 years and >=80% of at the end of 25 years. |
| Module frame | Non-corrosive and electrically compatible with the mounting structure material |
| Termination box | Thermo-plastic, IP 65, UV resistant |
| Module minimum rated power | The nominal power of a single PV module shall not be less than 450 Wp. |
| Identification tag for each solar module | Shall be provided inside the module and must be able to withstand environmental conditions and last the lifetime of the solar module. |

| | |
|---|---|
| Identification tag data | Name of the manufacturer with logo<br>Month and year of manufacture<br>Model No ( Should consists of the voltage and rate wattage)<br>Module serial number |
| Power output rating | To be given for standard test conditions (STC). I- V curve of the each module shall be submitted. |
| Compliance with standards and codes | IEC 61215 / IS 14286<br>IEC 61730 Part 1 and 2 |
| Salt Mist Corrosion Testing | As per IEC 61701 |

The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his project proposal submitted to department.

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

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

**Solar PV Mounting Structure**

The PV modules shall be mounted on fixed metallic structures having adequate strength and as per requirement of site to withstand the load of the modules and high wind velocities. The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be incompliance of latest IS 4759.

**Detailed specifications for the mounting structure are given below:**

| | |
|---|---|
| Wind velocity withstanding capacity | 150 km / hour<br>The designs have been certified by a recognized Lab/ Institution/certified engineers in this regard and submit wind loading calculation sheet to users if they desire so. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed. |
| Structure material | Pre galvanized sheet steel with a minimum galvanization thickness of 80 microns and the structural patterns shall be made before galvanizing |
| Bolts, nuts, panel mounting clamps, fasteners<br>(with spring washers) | Stainless steel SS 304/ GI |
| Mounting arrangement formetal sheet roofs | Mounting directly on the sheet metal, ensuring stability and wind withstanding capacity or penetrating the sheet metal and fixing tothe sub-structure, ensuring that the roof remains water proof and ensuring stability and wind withstanding capacity. |
| Mounting arrangement for elevated structures | The elevated structure has to be securely anchored to the supporting surface. Concrete foundations of appropriate weight and depth for elevated structures mounted directly on the ground; Bolted with anchor bolts of appropriate strength for elevated<br>structures mounted on RCC surfaces. |
| Mounting arrangement forground installations | With removable concrete ballast made of pre-fabricated PCC(1:2:4), M15; assuring enough ground clearance to prevent<br>damage of the module through water, animals and other environmental factors. |
| Mounting arrangement for RCC-flat roofs Installation | With removable concrete ballast made of pre-fabricated PCC (1:2:4), M15. The structures shall be designed for simple mechanical on-site installation. There shall be no requirement<br>of welding or complex machinery at the installation site. |

| | |
|---|---|
| Minimum distance betweenroof edge and mounting structure | 0.5m |
| Access for panel cleaningand maintenance | All solar panels must be accessible from the top for cleaning andfrom the bottom for access to the module- junction box. |

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

The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m2. The array structure shall be grounded properly using maintenance free earthing kit suitable for mounting over building terrace

**Solar Array Fuse**

The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating and current rating as required. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

**Solar Grid Inverter**

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of thesystem are termed the “Power Conditioning Unit (PCU)”. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker). Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

| | | |
|---|---|---|
| 1 | Total output power (AC | To match solar PV plant capacity while achieving optimum system efficiency |
| 2 | Input DC voltage range | As required for the solar grid inverter DC input |
| 3 | Maximum power point (MPPT) | Shall be incorporated |
| 4 | Number of independent MPPT inputs | 1 or more |
| 5 | Operation AC voltage | ▪ For up to 5kWp - Single phase 230V<br>▪ For above 5kWp up to 50KW/63KVA –Threephase 415V four wire |
| 6 | Operating Frequency range | 50 +/- 2.5% |
| 7 | Nominal frequency | 50 Hz |
| 8 | Power factor of the inverter | >0.98 at nominal power |
| 9 | Total harmonic distortion | Less than 3% |
| 10 | Built-in Protection | AC high / low voltage; AC high /low frequency |
| 11 | Anti-islanding protection | As per VDE 0126-1-1 / IEC 60255.5/ IEC 60255.27/IEC 62116 |
| 12 | Operating ambient temperature range | 0 $^{o}$C to + 50 $^{o}$C |
| 13 | Humidity | 0 – 95% Rh |
| 14 | Inverter efficiency | >97% |
| 15 | Protection degree | IP 65 for outdoor mounting, IP 54 for indoor mounting |
| 16 | Communication interface | RS 485 / RS 232 / RJ45 |
| 17 | Safety compliance | IEC 62109-1, IEC 62109-2 |
| 18 | Environmental Testing | IEC 60068-2 (1, 2, 14, 30) |
| 19 | Efficiency Measurement Procedure | IS/IEC 61683 |
| 20 | Cooling | Convection |
| 21 | Display type | LCD /LED |
| 22 | Display parameters to include | Output power(W), cumulative energy (Wh),<br>DC voltage (V), DC current (A), |

| | | |
|---|---|---|
| | | AC voltage (V), AC frequency (Hz),<br>AC current (A), cumulative hours of operation(h). |

**GRID ISLANDING**:

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

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

The AC output of the solar grid inverter shall be connected to the building's electrical system after the DISCOM service connection meter and main switch on the load side. The solar grid inverter output shall beconnected to a dedicated module in the Main Distribution Board (MDB) of the building. It shall *not* be connected to a nearby load.

**DATA ACQUISITION SYSTEM / PLANT MONITORING(for the plant 10 KW and above )**

Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC, Metering and Instrumentation for display of systems parameters and status indication to be provided. Solar Irradiance: An integrating Pyranometer / Solar cell based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system The following parameters are accessible via the operating interface display in real time separately for solar power plant:

- AC Voltage.
- AC Output current.
- Output Power
- Power factor.
- DC Input Voltage.
- DC Input Current.
- Time Active.
- Time disabled.
- Time Idle.
- Power produced

Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Underfrequency ground fault, PV starting voltage, PV stopping voltage.

All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel. PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All

3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor andAC energy (All 3 phases and cumulative) and frequency shall be monitored. Computerized AC energy monitoring shall be in addition to the digital AC energy meter. The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form. All instantaneous data shall be shown on the computer screen. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant. Provision for Internet monitoring and download of data shall be also incorporated.

Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system. Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided. Remote Monitoring and data acquisition through Remote Monitoring System software at the owner/ UPNEDA Lucknow with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier. Provision for interfacing these data on UPNEDA server and portal in future shall be kept.

**PROTECTIONS**

The system should be provided with all necessary protections like earthing, Lightning, and gridislanding as follows:

**LIGHTNING PROTECTION**

The SPV power plants shall be provided with lightning & overvoltage protection. The main aimin this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 /IS 2309 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

**SURGE PROTECTION**

Surge protection shall be provided on both the DC and the AC side of the solar system. The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar gridinverter.

The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter. 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

**EARTHING PROTECTION**

(a) Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043- 1987. In addition the lighting arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Discom /UPNEDA as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.

(b) Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing pointsare bonded together to make them at the same potential.

**CABLES**

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

a) Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards Temp. Range: –10$^{o}$C to +80$^{o}$C. Voltage rating 660/1000V

b) For the DC cabling, Solar cables with multi stranded copper conductors XLPE or XLPO insulated and sheathed with the voltage rating of 1000 V DC or higher UV stabilised single core flexible copper cables shall be used. Multi-core cables shall not be used.

c) For the AC cabling, PVC or XLPE insulated and PVC sheathed single or multi-core flexible copper cables shall be used. Outdoor AC cables shall have a UV-stabilised outer sheath

d) The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 1.0%.

e) The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%

*f) The DC cables from the SPV module array shall run through a **UV-stabilised PVC conduit pipe** of adequate diameter with a minimum wall thickness of 1.5mm or through a High Density Poly Ethylene (HDPE) conduit. The conduits shall not run across the path way of the terrace. Flexible corrugated PVC conduits shall not be used.*

g) Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.

h) *All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm.* The minimum DC cable size shall be 4.0 $mm^2$copper. The minimum AC cable size shall be 4.0 $mm^2$ copper for up to 10kWp and 16.0$mm^2$ for above 10kWp / required standard size. In three phase systems, the size of the neutral wire shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:

i) DC positive: **red** (the outer PVC sheath can be black with a **red** line marking)

**j)** DC negative: **black**

**k)** AC single phase: Phase: **red**; neutral: **black**

**l)** AC three phase: Phases: **red, yellow, blue**; neutral: **black** Earth wires: **green**

**m) Cables and conduits that have to pass through walls or ceilings shall be taken througha PVC pipe sleeve.**

n) Cable conductors shall be terminated with tinned copper end-ferrules to prevent frayingand 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.

o) Cable lugs and end –ferrules for all cable conductor and wire terminations shall be crimped with crimping pliers and end-ferrule pliers

p) All cable ties shall be UV resistant.

q) The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25years

r) The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.

**TOOLS & TACKLES AND SPARES:**

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

**DANGER BOARDS AND SIGNAGES:**

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

**DRAWINGS & MANUALS**:

Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be

supplied.

**PLANNING AND DESIGNING:**

The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layoutconsidering optimal usage of space, material and labor.

**SAFETY MEASURES:**

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

**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 cable(s) to the DC Distribution Box.

**DC Distribution Box**

A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations:

Incoming positive and negative DC cables from the DC Combiner Box;

DC circuit breaker, 2 pole (the cables from the DC Combiner Box will be connected to thiscircuit breaker on the incoming side); DC surge protection device (SPD), class 2 as per IEC 60364-5-53; Outgoing positive and negative DC cables to the solar grid inverter.

As an alternative to the DC circuit breaker a DC isolator may be used inside the DC Distribution Box orin a separate external thermoplastic IP 65 enclosure adjacent to the DC Distribution Box. If a DC isolator is used instead of a DC circuit breaker, a DC fuse shall be installed inside the DC Distribution Box to protect the DC cable that runs from the DC Distribution Box to the Solar Grid Inverter.

**AC Distribution Box**

An AC distribution box shall be mounted close to the solar grid inverter. The AC distribution box shall be of the thermo plastic 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

~~**Metering**~~

~~The existing service connection meter needs to be replaced with a bidirectional (import kWh and export kWh) service connection meter for the purpose of net metering for eligible categories. Installation of the net meter will be carried out by Discom. Beneficiary will submit application to Discom to enable the connectivity of Solar rooftops with Grid and to avail net metering benefits. The beneficiaries can also purchase the Net meter from market and get it install by the DISCOM.~~

~~**Documentation**~~

~~**The Installer shall supply the following documentation:**~~

~~i. System description with working principles.~~
~~ii. System single line diagram.~~
~~iii. Solar PV array lay-out.~~
~~iv. Routing diagram of cables and wires.~~
~~v. Data sheets and user manuals of the solar PV panels and the solar grid inverter.~~
~~vi. A system operation and maintenance manual.~~
~~vii. Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.~~
~~viii. Warranty cards.~~
ix. ~~Maintenance registers~~.

**Test Certificates and Reports to be Furnished**

Test Certificates / Reports from IECQ / NABL accredited laboratory for relevant IEC / equivalent BIS standard for quoted components shall be furnished. Type Test

Certificates / reports shall be provided for the solar modules and solar grid tied inverters up to 20kW to provide evidence of compliance with standards. **For solar grid tied inverters above 20kW, self-certification by the manufacturer of the said inverter is acceptable.**

**Notes for Bidder**

1. The installation should not be protruding outside the building and there should not beoverhang type structure on any terrace.

2. Location and area for inverter and other interconnection equipment should be located insuitable and secure place and this should be approved by the respective Beneficiary.

3. Installation diagram and wiring from array to proposed location of inverter and interconnection should be clearly presented by the Empaneled Bidder before work starts on the site if desired by the department.

4. Any installations on the terrace should be planned and executed in such a way that water proofing will not be disturbed and harmed. In case any area water proofing is affected it will be Bidders's responsibility to correct it and put it right.

5. It will be the responsibility of the contractor to liason with the state electricity board/DISCOM to obtain necessary approval for installation of grid interactive Solar PV system.

6. The installation is to be carried on slanted RCC roof structure. Structure shall be designed accordingly.

**Assistant Engineer (E)-III**
**CPWD, Bhopal**

## LIST OF PREFERRED MAKES

**The following makes of material are preferable for use in above work. The material shall be confirming to relevant IS specification and same shall bear ISI marking, wherever available.** If any make stated below does not comply with the technical specification given in the tender then such a make will not be acceptable.

| Sl.No | Item | Preferred Makes |
|---|---|---|
| 1 | Mono/ Poly-Crystalline solar Panel 330 WP and above | Tata Solar Power / Vikram Solar /Waaree / Adani/ Havells |
| 2 | Copper Wire /cable | KEI/ Havells/ Polycab/ RR Kabel/ Finolex / V-Marc / Plaza. |
| 3 | MCB/RCCB/MCB DB/Industrial sockets | Legrand/ Siemens/ LK (Formerly L&T)-AU series / Schneider / ABB(ITUS) |
| 4 | MCCB's | Legrand/ Siemens/ LK (Formerly L&T) / Schneider / ABB |
| 5 | String Inverter/PCU | SUN GROW / POLYCAB / ABB / Havells/ Sofar / Schneider |
| 6 | Junction box | HENSEL /HONEYWELL / Syntex/ Indoasian |
| 7 | Module mounting structure | As per MNRE/Manufacture standard ( Design to be got approved from Engineer-in-charge as per NIT |
| 8 | Multifunction meter | L&T / SCHNEIDER / AE / TRINITY |
| 9 | **Any other item not mentioned above** | **As per samples approved by Engineer-in-charge** |

**Assistant Engineer (E)-III**
**CPWD, Bhopal**

**Schedule of work**

**NIT No.-54/EE(E)/BHOPAL/2026-27 (Recall 1)**

Name of work :-Repairing and servicing of 150 kWp Solar PV plant installed at New Office Building of Income Tax, Bhopal.

| S.N. | Description of Item | Qty. | Unit | Rate | Amount Rs. | DSR-2025/ MR |
|---|---|---|---|---|---|---|
| 1 | Repair and rectification of existing 150 kWp Solar PV power generation plant in New Office Income Tax Building to ensure performance and configuration of net power generation by following below points- | | | | | |
| | a) Checking of all strings. | | | | | |
| | b) Tightening of AC connection. | | | | | |
| | c) Time study minimum 2 hours of power generation on Solar & without solar system. | | | | | |
| | d) Installation of 2 Nos. existing solar PV modules. | 1 | Job | **70310.00** | 70310.00 | MR |
| | | | | | | |
| 2 | Supplying, Installation, Testing & Commissioning of High energy solar photovoltaic module of capacity 585 Wp or above manufacture in India confirming to IS 14286/IEC 61215, IS/IEC 61730-Part-1, IS/IEC 61730-Part-2 complete etc. as required. | 8 | Each | **25655.00** | 205240.00 | MR |
| | | | | | | |
| | | | | **Total Rs.** | **275550.00** | |

(Rs. Two Lakhs Seventy Five Thousand Five Hundred Fifty Only)

Assistant Engineer(E)-III
CPWD, Bhopal.