



Government of India
Ministry of Communication
Department of Posts – Electrical Wing
Postal Electrical Division- Lucknow



NIT No: PEDL/NIT-42/01/20-21/D-1480 Dated:12.02.2021

TENDER DOCUMENT

For the work of

**Name of Work: SITC of 45 kWp Grid connected Roof Top Solar PV System
at Meghdoot Bhawan, Patna.**

Estimate Cost: - ₹1710000/-
EMD: EMD Declaration as per NIT
Time Allotted: 04 Months

Executive Engineer (E)
Postal Electrical Division
Lucknow

Name of Work: SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.

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**Executive Engineer (E)
Postal Electrical Division
Lucknow**

INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING

The tender document has been published on the E-wizard portal at <https://dopcivil.euniwizarde.com>. The bidders are required to submit their bids electronically on the E-wizard portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on this portal; prepare their bids in accordance with the requirements; and submitting their bids online on the portal. For latest and detailed instructions, please see the Downloads section of the E-wizard portal at <https://dopcivil.euniwizarde.com>.

Registration

1. Bidders are required to enroll on the E-wizard portal at <https://dopcivil.euniwizarde.com> by clicking on the link "Register". Enrolment is free of charge.
2. As part of the enrolment process, the bidders will be required to choose a unique User Name and assign a Password for their accounts.
3. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the E-wizard portal.
4. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class III Certificates with signing and encryption) issued by any Certifying Authority recognized by CCA India (e.g. Safe Script / TCS/nCode/ eMudra etc.) with their profile.
5. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.
6. Bidder then logs in to the site through the secured log-in by entering their User Name / Password and the password of the DSC/e-Token.

Searching for Tender Documents

1. Bidders can search for any tender by clicking on "Live Tender" under search option on Home Page. Once the bidders have selected the tenders they are interested in, they may download the required tender documents and tender schedules by clicking on "Tender Document".
2. The bidders should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

Preparation of Bid

1. Bidder should take into account any corrigendum published in the tender before submitting their bids. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted.
2. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document and generally, they can be in PDF / MS Excel / JPG formats. Bid documents may be scanned with 100 dpi with black and white option.
3. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. GST registration, PAN card, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Documents" area available to them to upload such documents. Those documents may be directly submitted from the "My Documents" area while submitting a bid, and need not to be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

Submission of Bid

1. Bidders should log into the site well in advance for bid submission so as to upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
2. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
3. Bidder has to select the payment option as required from the dropdown to pay the earnest money and processing fee and enter the details of demand draft / other accepted instrument.
4. The tender Inviting Authority will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders. The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.

5. Bidders are required to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. The price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and fill the **unprotected** cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the format of BoQ file is found to be modified by the bidder, the bid will be rejected.
6. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission. The bidders are requested to submit the bids through online e-tendering system to the TIA well before the bid submission end date & time as per server system clock.
7. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening.
8. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
9. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
10. The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

Assistance to Bidders

1. Any queries relating to tender document and the terms and conditions therein should be addressed to the officer inviting tender.

Any queries related to the process of online bid submission or queries relating to e-tendering portal in general may be directed to E-wizard Helpdesk. The contact number for Helpdesk is 011-49606060, Mr.AweshTyagi 92058-98224; Mr.Abhinav 79826-96347, Mr.Buneshwar 92058-98226, Mr.VarunTomar 92058-98229.

Earnest Money Deposit Declaration

Please submit following declaration on your letter head.

Where, I/We (name of Agency) _____ have
 submitted bids for (Name of Work)
 _____.

I/We hereby submit following declaration in lieu of submitting Earnest Money Deposit

(1) If, in case any provision of this tender are found violated by me/us or I/we withdraw or modify my/our bid during the period of validity of tender (including extended validity of tender) after the opening of tender, or specified in the tender document,

OR

(2) If, after the award of work, I/We fail to sign the contract, or to fail to submit performance guarantee before the deadline defined in the tender documents,

I/We shall be suspended for one year and shall not be eligible to bid for DOP tenders from date of issue of suspension order.

Signature of the contractor (s)

UNDERTAKING

To be submitted by bidders (on company letter head duly signed with stamp & seal) online on or before 22.02.2021 up to 15:00 Hours

To,

The Executive Engineer (E)
Postal Electrical Division,
Lucknow

Sub: Acceptance of Terms & Conditions of Tender and undertaking to deposit physical EMD.

NIT: No: PEDL/NIT-42/01/20-21/D-1480 Dated:12.02.2021

Name of Work: "SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna."

Dear Sir,

1. I/We have downloaded/obtained the tender document(s) for the above mentioned Tender/Work from the web site namely: <https://dopcivil.euniwizarde.com> as per your advertisement, given in the above mentioned website.
2. I/We hereby certify that I/We have read the entire terms and conditions of the tender document from Page No. 1 to 45 (including all documents like annexure, schedules etc.) & Page 1(for BOQ) which form part of the contract agreement and I/We shall abide hereby by the terms/conditions/clauses contained therein.
3. The corrigendum(s) issued from time to time by your department/organization too has also been taken into considerations, while submitting their acceptance letter.
4. I/ We hereby unconditionally accept the tender conditions of above mentioned tender document(s) /corrigendum(s) in it's totally/entirety.
5. I/we hereby undertake that the EMD declaration in original shall be submitted by me/us in the office of the Executive Engineer (E) Postal Electrical Division Lucknow in case I/We become the lowest bidder within 07 days of the opening of financial bid otherwise department may reject the bid and also take action to debar me/us from tendering in Department of Post.
6. In case any provisions of this tender are found violated, then your department/organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully

(Signature of the Bidder, with Official Seal)

AFFIDAVIT

(Scanned copy to be submitted by bidders at the time of submission of bid)

To

The Executive Engineer (E)
Postal Electrical Division
Lucknow

Tender Reference No: No: PEDL/NIT-42/01/20-21/D-1480 Dated:12.02.2021

Name of Work: SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.

Dear Sir,

I /We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of department, then I/we shall be debarred for bidding in Department of Post Civil Wing (Electrical) 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 Performance Guarantee.

Your Faithfully,

(Signature of the Bidder, with Official Seal)

Notice Inviting Tender

1. The Executive Engineer (E), Postal Electrical Division, Lucknow on behalf of the President of India invites online Percentage rate bids for the under mentioned work from the firm eligible as mentioned below in eligibility condition :

NIT No.	No: PEDL/NIT-42/01/20-21/D-1480 Dated:12.02.2021
Name of work	“SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.”
Estimated Cost	₹1710000/-
EMD	EMD Declaration as per NIT
Tender Processing Fee	As Applicable Non Refundable through e-Payment gateway
Time for Completion of Work	04 Months
Last Date & Time of Submission of Technical And Financial Bid	22.02.2021 up to 15:00 Hours
Date & Time of Opening of Technical Bid	22.02.2021 at 15:30 Hours
Validity of Tender	75 Days from the last day of receipt of technical bid

ELIGIBILITY CONDITIONS:

1. Specialized firms/ Contractor who fulfil the following requirements shall be eligible to apply. Joint ventures are not accepted

2. **(i) Financial**

The Firm should have average annual financial turnover of at least 100% of the estimate cost during the immediate last 03 consecutive financial years

(ii) Physical

The Firm should have satisfactorily completed the similar works with Central/State Govt. Departments/ Central/State PSUs during the last 7 years ending last day of the month previous to the one in which tenders are invited as follows:

Three similar works of Solar PV System, each of value not less than the amount equal to 40% of the estimated cost and with capacity being not less than 80% of the Solar PV system

OR

Two similar works of Solar PV System, each of value not less than the amount equal to 60% of the estimated cost and with capacity being not less than 80% of the Solar PV system

OR

One similar works of Solar PV System, each of value not less than the amount equal to 80% of the estimated cost and with capacity being not less than 80% of the Solar PV system in the last 7 years ending on the last day of the month previous to the one in which the tenders are invited.

Similar work shall means " ON Grid/ OFF Grid/ Hybrid Solar PV system". The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of receipt of applications for tenders.

(iii) The firm should have valid GST registration/Certificate of provisional registration for GST and copy of same is to be uploaded.

(iv) The firm will have to upload scanned copy of completion certificates of similar works of requisite magnitude issued by the officer of the client department of the rank of Executive Engineer or equivalent along with the bid. Works in which compensation is levied shall not be treated as satisfactory completion. If the work is completed beyond the stipulated date of completion then compensation levied or not levied should be mentioned in the completion report.

Note:

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.
3. 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 <https://dopcivil.euniwizarde.com>.
4. Online bid documents submitted by intending bidders shall be opened only of those bidders, who have uploaded scanned copy of EMD Declaration digitally signed by the bidder and other necessary documents in order.
5. Those contractors not registered on the website mentioned above, are required to get registered beforehand.
6. The intending bidder must have valid digital signature of Class II or Class III Certificates with signing key usage to submit the bid.
7. The e-Tenders invited under two envelopes system, the first electronic envelope will be named as Technical Envelope & will contain documents of bidder's satisfying the eligibility conditions & tender documents and 2nd electronic envelope will be named as Financial Envelope containing Schedule/Bill of Quantities (BoQ). The bidder shall submit TECHNICAL BID ENVELOPE & FINANCIAL BID ENVELOPE simultaneously. The technical bids will be evaluated first and thereafter financial bids of eligible bidders only shall be opened. These envelopes shall contain one set of the following documents:-

A) Technical BID Envelope shall contain the following documents:

- (i) Declaration of EMD digitally signed by the bidder in pdf format.
- (ii) Scanned copy of Chartered Accountant's Certificate for turnover.
- (iii) Scanned copy of PAN card.
- (iv) Scan copy of UNDERTAKING (as per page 5 of this document) Stamped and Signed in pdf format which also includes the undertaking that "The EMD declaration in original shall be submitted by me/us with the EE calling the bid in case I/we become the lowest bidder within a week of the opening of financial bid otherwise department may reject the bid and also take action to withdraw my/our enlistment/debar me/us from tendering in DOP."
- (v) Scanned copies of Certificate of Registration of GST/Certificate of provisional registration in pdf format.
- (vi) Affidavit (as per page 6 of this document)
- (vii) Scanned copies of Completion certificates as referred in 1(iv) of Eligibility Conditions.
- (viii) Tender Document in pdf format digitally signed.

b) FINANCIAL BID ENVELOPE shall contain

- i) Bill of Quantities (BoQ) in xls format file duly filled & digitally signed without changing the name of file.

Executive Engineer (E)
Postal Electrical Division
Lucknow

Copy to: 1. The CPMG, Bihar Circle, Patna 2. The SE (E), PEC, Bangalore, 3. The Executive Engineer (E), PED, Bangalore/Kolkata with a request to put the NIT on notice board 4. The Assistant Engineer (E), PESD, Patna/Ranchi with a request to put the NIT on Notice Board. 5. Tender Clerk/ cashier in Division office for information. 6. Notice Board 7. Work file 8. Draft NIT

Executive Engineer (E)

DEPARTMENT OF POSTS
O/o The Executive Engineer (E)
Postal Electrical Division,
Lucknow
NOTICE INVITING eTENDER
 (e- Tendering mode)

Percentage rate tenders are invited on behalf of President of India from approved and eligible contractors for the work of **SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna..**

- 1 The work is estimated to cost ₹1710000/- This estimate, however is given merely as a rough guide."
- 2 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the tenders. He will also nominate Division, which will deal with all matters relating to the invitation of tenders.
For composite tenders, besides indicating the combined estimated cost put to tender, should clearly indicate the estimated cost of different components separately. The eligibility of tenderer will correspond to the combined estimated cost of different components put to tender.
- 3 Agreement shall be drawn with the successful tenderer on prescribed form No.C.P.W.D.- 7 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.
- 4 The time allowed for carrying out the work will be 120 Days after award of work 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."
- 5 The site for the work is available.
- 6 The bid documents 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 from website <https://dopcivil.euniwizarde.com>.
- 7 After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.
- 8 While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.
- 9 The bidder shall not deposit any amount in respect of Earnest Money Deposit. The EMD Declaration digitally signed by the bidder as specified in the tender document shall only be uploaded alongwith other requisite documents as per NIT.

Interested contractor who wish to participate in the bid has to make payment for E-Tender Processing Fee (As applicable) which shall be payable to M/s ITI Limited through their e-payment gateway by Credit/ Debit card, internet banking or RTGS/ NEFT facility before last date & time of submission of bid.

Copy of certificate of work experience and other documents as specified in the NIT 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 NIT shall have to be submitted by the lowest bidder only along with declaration of EMD in original 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, who has uploaded the EMD declaration and other documents.

- 9.1 The e-Tenders shall be submitted under two envelopes system to the e-tendering website before, the first electronic envelope will be named as Technical BID Envelope & shall contain documents of bidder's satisfying the eligibility conditions and tender document and second electronic envelope shall be named as Financial BID Envelope containing Bill of Quantities (BoQ). These envelopes shall contain one set of the following documents:-

9.1.1 Technical Bid Envelope shall contain :

- i) Declaration of EMD digitally signed by the bidder in pdf format.
- ii) Scanned copy of Chartered Accountant's Certificate for turnover.
- iii) Scanned copy of PAN Card.

Scanned copy of UNDERTAKING (as per page 5 of this document) Stamped and Signed in pdf format which also includes the undertaking that "The EMD declaration in original shall be submitted by me/us with the EE calling the bid in case I/we become the lowest bidder within a week of the opening of financial bid otherwise department may reject the bid and also take action to withdraw my/our enlistment/debar me/us from tendering in DOP."

iv)

Scanned copies of Certificate of Registration of GST/Certificate of provisional registration for GST in pdf format.

v)

vi) Affidavit (as per page 6 of this document)

vii) Scanned copies of Completion certificates as referred in 1(iv) of Eligibility Conditions.

viii) Tender Document in pdf format (TENDER XXXX.pdf file) digitally signed.

9.1.2 **Financial Bid Envelope shall contain :**

i) Bill of Quantities (BoQ) in xlsx format (BoQ_XXXXX.xlsx) file duly filled & digitally signed without changing the name of file.

9.2 The online bids shall be submitted before or on..... up to Online Technical bid envelope will be opened by Executive Engineer (E), Postal Electrical Division, Lucknow or his authorized representative in his office, on at The technical bids will be evaluated first and thereafter financial bids of eligible bidders only shall be opened."

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The bid submitted shall become invalid if:

10.1

The bidder is found ineligible.

10.2

The bidder does not upload all the documents (including GST registration Certificate /Certificate of provisional registration for GST) as stipulated in the bid document including the EMD declaration.

10.3

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

10.4

The lowest bidder does not submit EMD declaration in original within a week of opening of bid.

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The contractor whose bid is accepted will be required to furnish performance guarantee of 3% of the bid amount within the period specified in Schedule F. This guarantee shall be in the form of cash (in case guarantee amount is less than ₹ 10000/-) or Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/ Pay order of any Scheduled Bank of any scheduled bank (in case guarantee amount is less than ₹ 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank (in case guarantee amount is more than ₹ 1,00,000/-) in accordance with the prescribed form given at page 46 of this NIT. 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, DOP shall take suitable action as per the EMD declaration of the agency.

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The description of the work is as follows: SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna. Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidders implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

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The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that

of conditional rebate is put forth by the bidders shall be summarily rejected.

- 14 Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.
- 15 The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
- 16 The contractor shall not be permitted to bid for works in the Postal Electrical Circle, Bangalore responsible for award and execution of contracts, in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of Junior Engineer and Superintending 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 Department of Posts. Any breach of this condition by the contractor would render him liable to be debarred for tendering in this Department.
- 17 No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.
- 18 The bid for the works shall remain open for acceptance for a period of 75 days from the last day of receipt of technical bid. If any bidders withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to take action as per EMD declaration. Further the bidders shall not be allowed to participate in the rebidding process of the work.
- 19 This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 10 days from the stipulated date of start of the work, sign the contract consisting of:-
- 19.1 The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online (in BoQ_XXXXX.xlsx file) at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
- 19.2 Standard C.P.W.D. Form 7/8 or other Standard C.P.W.D. Form as applicable.
- 19.3 CPWD General Conditions of Contract 2014 (GCC2014)
- 20 In case any discrepancy is noticed between the document as uploaded at the time of submission of the bid online and hard copies as submitted physically in the office of Executive Engineer, then the bid submitted shall be come invalid and the Government shall, without prejudice to any other right or remedy, be at liberty to take action as per EMD declaration. Further the bidder shall not be allowed to participate in the retendering process of the work.

Executive Engineer(E)
Postal Electrical Division
Lucknow
For & on behalf of the President of India

IMPORTANT NOTE FOR CONTRACTORS

1 INSPECTION OF SITE AND CONTRACT DOCUMENTS

For purpose of inspection of site and relevant contract documents the firm is required to contact the **Assistant Engineer (E), Postal Electrical Sub Division, Patna Contact No: PEDL/NIT-42/01/20-21/D-1480 Dated:12.02.2021**, who shall give reasonable facilities for inspection of the same. The firm shall inspect and examine the site and shall satisfy himself before submission of the tender as to the form and nature of the work, their quantities materials necessary for completion of the work and in general shall himself obtain all necessary information as to risk contingencies and other circumstances which may influence or affect his tender. No extra charges consequent on any misunderstanding or otherwise shall be paid.

2 SUFFICIENCY OF TENDER

The firm shall be deemed to have satisfied himself before entering into the contract as to the correctness and sufficiency of his offer for the work and of the rates quoted in the schedule of works. These rates and amount shall, except as otherwise provided cover all his expenditure under the contract and all matters and things and co-ordination among DOP/EB/Statutory Inspection Authorities necessary for proper completion and maintenance and guarantee of the work.

3 TAX AND DUTIES:

- 3.1 All statutory deductions etc shall be made at source as per the prevalent laws.
- 3.2 The rates quoted by the tenderer, shall be firm and inclusive of all taxes, duties, levies, octroi etc and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning and clearance from Statutory Inspection Authorities etc inclusive of GST. Tax deduction at source (TDS) of all the applicable Taxes/duties shall be carried out at source as per the Government rules.
- 3.3 No concession forms will be issued by the Department.
- 4 The department reserves the right to accept the quantities in full or in parts or delete any item.

5 STANDING ORDER No.286

- 5.1 Tender rates are inclusive of all taxes and levies including GST. However pursuant to the constitution (Forty Six Amendment) Act 1982, If any further tax or levy is imposed by a state, after the date of receipt of a tender and the contractor thereupon necessarily and properly pays such taxes/ levies the contractor shall be reimbursed that amount to be paid provided such payment if any is not in the opinion of Superintending Engineer (E) (whose decision will be said binding) attributable to delay in execution of work within the control of the contractor.
- 5.2 The Contractor shall keep necessary books of accounts and other documents for the purpose of his condition as may be necessary of Government and further shall furnish such other information as the Engineer-in-charge may require.
- 5.3 The Contractor shall within 30 days of imposition of any further tax or variation in tax or levy pursuant to the Constitution (46th amendment) Act 1982 gives written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition together with all necessary information relating thereto.
- 5.4 Clause 10CC is not applicable to this tender.

6 SECURITY DEPOSIT

The person/ persons whose tender(s) may be accepted (hereinafter called the contractor (s) shall permit Govt. at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 7.5% of the gross amount of each running bill till the sum will equal the amount of security deposit i.e. 7.5% of the tendered value of the work.

7 PERFORMANCE GUARANTEE

The successful tenderer shall submit an irrevocable performance guarantee of 3% of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement within 10 days of issue of letter of acceptance. This guarantee shall be in the form of government securities or fixed deposit receipts or guarantee bonds of any scheduled bank or the State Bank of India in the specified format. The performance guarantee shall be valid upto the stipulated date of completion plus 60 days beyond that.

8 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 & Regulations for any accident occurring due to any cause and the department shall not be responsible for any accident and damage incurred or claims arising there from during the period of Erection, construction & 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.

9 **ERECTION TOOLS**

No tools and tackles either for unloading or for shifting the equipment for erection purpose would be made available by the Department. The contractor shall make his own arrangement for all the facilities.

10 **CO-OPERATION WITH OTHER AGENCIES**

At the site of work more than one agency may be working. Full co-operation shall be extended to other agencies during progress of work. The work will be carried out in such a way so that it may not cause abnormal noise and hindrance to the offices of the DOP.

11 **STORES AND SAFETY**

All the stores and materials required for the satisfactory completion of the work shall be arranged at site by the contractor from his own sources. Lockable space, if available, for storing the material may be provided on request. However, safe custody of the material stored at site will be responsibility of the contractor.

12 **COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS.**

All works shall be carried out in accordance with relevant regulations both statutory and those specified by the Indian Standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following.

a). Factories Act.

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

c). IS &BS Standards as applicable.

d). Workmen's compensation Act.

e). Statutory norms prescribed by local bodies like CEA, ISEB etc.,

13 Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable statutory regulations and safety codes.

14 Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirement of safety codes in respect of labour employed on the work by the tenderer, Failure to provide and safety requirement will be at liberty of the department to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

15 **COMPLETION 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.

16 **CARE OF THE BUILDING**

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

17 No mobilization amount/ incentive for early completion shall be paid for this work.

Executive Engineer (E)
Postal Electrical Division
Lucknow

INSTRUCTIONS TO TENDERERS

1 Background

DOP shall mean The Executive Engineer (E), Postal Electrical Division, Lucknow (Tender Calling Authority). Wishes to select competent, experienced and financially sound manufacturers / suppliers to Supply, Install, commission and to maintain Solar Photovoltaic Grid connected System at Meghdoot Bhawan, Patna. under Bihar Circle. The work is to be carried out on 'Turn Key Basis' which includes design, supply of SPV systems with all accessories and equipments, installation, testing, commissioning and maintenance services for 5 years with free replacement warranty on spare parts against manufacturing defects of any part of the system including solar panel mounting structure/frame for five years. Expected capacity of SPV systems will be **45kWP**, however quantity taken in schedule of work can be deviated by +/- 25% at the time of approval of tender or during execution of work.

2 Mode of Execution of Programme:

The basis of evaluation of the bids shall be the percentage rate quoted in the Price Schedule. To further clarify, installation and commissioning cost and taxes etc. shall be inclusive to the cost of supply of complete system including **FIVE years warranty**. Proposers are required to quote percentage rate on firm basis and no price variation on any account shall be considered.

3 Abbreviations / Terms:

i)	Manufacturers	Manufacturers of SPV Modules (Meeting technical specification and other parameters specified by MNRE).
ii)	Channel Partners	MNRE Approved Channel Partners
iii)	EMD	Earnest Money Deposit
iv)	SD	Security Deposit. which will be deducted from payment against supply and installation for warrantee period
v)	Performance guarantee	Performance guarantee shall be deposited by the successful bidder as per schedule prescribed in the bid document.
vi)	Systems	SPV Roof Top /Ground mounted Gird connected Systems
vii)	Proposal	Tender / Bid / Quotation
vii)	Proposer	Tenderer/Bidder/Applicant
ix)	Cost of System	Total Price of System
x)	CMC	Maintenance services for 5 years with free replacement warranty on spare parts against manufacturing defects.

4 CONTENT OF TENDER DOCUMENT

- 4.1 The tender procedure and contract terms are prescribed in the tender document. In addition to the invitation of tender, the tender document includes the various other documents as given in the table of particulars of tender.
- 4.2 The tenderer is expected to examine/read all instructions, terms and conditions, specifications, forms and formats etc as mentioned/ enclosed in the tender document. Failure to furnish all information required in the tender document or submission of a tender not substantially responsive to the tender document in every respect will be at the tenderer's risk and is likely to result in out-right rejection of the tender.

5 CLARIFICATION OF TENDER DOCUMENT

- 5.1 Any prospective tenderer requiring any clarification on the tender document regarding various provisions/ requirements/ preparation/ submission of the tender, may contact DOP in writing by letter or fax/email within one week (7 days) from the date of publication/ up-loading of tender at Website. Queries received later shall not be entertained
- 5.2 Verbal clarifications and information shall not be entertained in any way.

Executive Engineer (E)
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Lucknow

THE TENDER DOCUMENT- SCOPE OF WORK

Scope of work covers **SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.** conforming to technical specification enumerated in relevant JNNSM guidelines amended upto date.

Detailed scope of work is given here under:-

- 1** Work of installation of SPV Grid connected Systems shall involve:
 - 1.1 Submission of program of execution to Engineer-in-charge for approval within 10 days after issue of letter of acceptance of tender
 - 1.2 Preparation of Detailed Project Report (DPR) of the proposed SPV Power Plant.
 - 1.3 Obtaining No objection certificate from concerned supply company for grid connectivity
 - 1.4 Design, supply, storage, civil work, erection, testing and commissioning of SPV grid connected Power Plant as per schedule given at the time of allotting targets.
- 2** PROJECT COST
 - 2.1 The Project cost shall include all the costs related to above Scope of work. Bidder shall quote for the entire facilities on a "single responsibility" basis such that the total Bid Price shall cover the obligations mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty for a period of 5 years of the whole system i/c solar panel mounting frame. The Bidder has to take all permits, approvals and licenses, insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.
 - 2.2 The project cost shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work irrespective of his actual cost of execution of the project. No escalation will be granted on any reason whatsoever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever.
 - 2.3 The maintenance of Solar Photo voltaic Power Plant would include warranty against machine breakdown, insurance, and replacement of defective modules, invertors/ Power Conditioning Unit (PCU), spares, consumables, mounting frame/structure & other parts for a period of 5 years.
 - 2.4 The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning.
 - 2.5 The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and work men and also covering the risks of damage to the third party / material/ equipment/ properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.
- 3** Net metering of Power :

Net metering is the concept which records difference between export of generated energy and import of energy from supply company grid during billing cycle. The SPV power consumer shall pay for the net energy in a billing period as per applicable retail supply tariff as determined by regulatory commission, if the supplied energy by the supply company is more than the injected energy by the solar PV sources of the consumer(s).

State Electricity Regulatory Commission has issued "Regulation for net metering and grid connectivity". The SPV Power generators going for installation of SPV Power Plants will also be governed by the rules & regulations of Net Metering scheme as notified by RERC / CERC / CEA and amended time to time.

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

4 PLANT PERFORMANCE EVALUATION:

DOP shall monitor the performance of the Grid connected SPV Power Plants subject to availability of proper measuring equipment being in use in supply company as under:

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

5 LANGUAGE OF TENDER AND MEASURE

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

6 EARNEST MONEY

- 6.1 The bidder shall not deposit any amount in respect of Earnest Money Deposit. The EMD Declaration digitally signed by the bidder as specified in the tender document shall only be uploaded along with other requisite documents as per NIT.

7 FORMATS AND SIGNING OF TENDER

- 7.1 The tender must contain the name and places of business of the firm/person/persons participating in the tender and must be signed and sealed by the tenderer with his usual signature. The name and designation of all persons signing the tender document should be written below every signature. Tender by a partnership firm must be furnished with full name of all partners with a copy of partnership deed.
- 7.2 Certified copy of all the scanned and uploaded documents must be signed with the legal name of the corporation/ company by the President/ Managing Director/ Secretary of the firm or a person duly authorized to bid. In case of authorized person the letter of authorization by written power-of-attorney should be enclosed with the technical bid of the tender. The person or persons signing the tender shall initial all pages of the tender document.

**Executive Engineer (E)
Postal Electrical Division
Lucknow**

GENERAL CONDITIONS OF CONTRACT

1 COMPLETION PERIOD

- 1.1 The completion period of the entire work shall be as mentioned in the NIT from the stipulated date of start. The work shall have to be completed within time and shall be binding on the contractor.
- 1.2 In case the contractor fails to execute the said work or related work within stipulated time, DOP will be at liberty to get the work executed from the open market at the risk and cost of the contractor. Any additional cost incurred by DOP during such execution of the work shall be recovered from the contractor.

2 QUALITY, WARRANTY/ GUARANTEE

- 2.1 The contractor shall warrant the Solar PV Power Plant as per applicable standards of quality. Anything to be furnished shall be new, free from all defects and faults in material and workmanship. The manufacture shall be in accordance with the specified technical parameters and should be of the highest grade and consistent with established and generally accepted standards for material. It shall be in full conformity with the drawing or samples if any and shall operate properly if operatable.
- 2.2 After installation of the Solar PV Power System at site, the contractor shall ensure satisfactory performance of the equipment for a period of time as specified in the scope of work. Contractor shall submit the performance report of the system on quarterly basis in addition to routine check-up of the system including checking of battery (if applicable) and inverter etc. duly signed from user regarding functioning of the system during the warranty period.
- 2.3 The contractor shall rectify defects developed in the Systems within warranty period promptly. In case the contractor does not rectify the defects within 5 days of the receipt of complaint, DOP may restore the System in working condition on contractor's expenses.

3 INSPECTION AND TESTS

- DOP or its authorised representative may inspect material as per following.
- 3.1 DOP or its duly authorized representatives shall have the right to inspect and /or to test the goods to confirm their quality according to the contract and shall have access to the contractor's works premises and the power to inspect and examine the materials and workmanship of the Solar PV Power Plant at all reasonable times during their manufacture.
- 3.2 The contractor shall inform DOP through a written notice regarding any material being ready for testing at least 7 days in advance. The conditions of contract and/or the technical specifications shall specify what inspections and tests shall be conducted by DOP. All the arrangements of necessary equipment and expenses for such tests shall be on the contractor's account excluding the expenses of the inspector.
- 3.3 DOP's Inspector, unless the witnessing of the tests is virtually waived off, will inspect and attend such test within 7 days from the date on which the equipment are notified as being ready for test /inspection. MNRE officer may also be present at the time of such testing.
- 3.4 DOP shall within 7 days, give written notice to the contractor, about any objection regarding the quality of the system. The contractor shall either make the necessary modifications to remove the cause of such objection or shall clarify the objections in writing if modifications are not necessary to comply with the contract.
- 3.5 After satisfactory testing of the systems during inspection, DOP's Inspector shall issue dispatch clearance for the supply.

4 SPARE PARTS

The contractor shall make arrangement to maintain a sufficient stock of essential spares and consumable spare parts to ensure proper maintenance of the system promptly in case of CMC.

5 PACKING FORWARDING

- 5.1 Contractors, wherever applicable shall properly pack and crate all materials in such a manner as to protect them from deterioration and damage during transportation. The contractor shall be responsible for all damage due to improper packing.
- 5.2 The contractor shall inform the Executive Engineer (E)/Engineer in charge, DOP regarding the probable date of each shipment of materials from his works.

6 TRANSPORTATION

The contractor is required to deliver the goods at locations as defined in the scope of work.

7 DEMURRAGE WHARFAGE, ETC

All demurrage, wharf age and other expenses incurred due to delayed clearance of the material or any other

reason shall be on the account of the contractor.

8 INSURANCE

- 8.1 The goods supplied under the contract shall be fully insured against loss or damage incidental to manufacture or acquisition; transportation and the expenses shall be borne by the contractor.
- 8.2 The contractor shall arrange security & storage of their materials to avoid any theft or losses during execution of work. DOP will, in no case, shall be responsible for providing any security/storage for the materials & equipment lying at site during execution of work. Under the contract, contractor shall be responsible for any loss or damage until the systems/ supplies are taken over.

9 LIABILITY FOR ACCIDENTS AND DAMAGES

During the warranty period, the contractor shall assume all responsibilities for direct damages covering all type of accident, injury or property damage caused by manufacturing defects or faulty installation on the systems.

10 PATENT RIGHT AND ROYALTIES

The contractor shall indemnify DOP against all third party claims of infringement of patent, royalties, trademark or industrial design rights arising from use of the goods supplied/ installed by the contractor or any part thereof.

11 RIGHT TO VARY QUANTITIES

DOP reserves all the rights to increase or decrease the quantity of goods mentioned in the contract by +/- 25% at the time of approval of tender or during execution of work without any change in price or other terms and conditions.

12 LOCAL CONDITIONS

- 12.1 It will be imperative on contractor to have full information of all local conditions and factors which may have any effect on the execution of the works. The contractor shall be deemed to have collected all the relevant information regarding the proposed place of works/ site, its local environment, approach road and connectivity etc. and be well acquainted with actual working and other prevailing conditions.
- 12.2 The contractor is advised to pre-visit the site before quoting for as well as starting the work. DOP shall not entertain any request of contractor for clarifications related to such local conditions and shall bear no responsibility in this regard.

13 TOOLS & TACKLES

The contractor shall provide all necessary tools & tackles for proper execution of work and operation/ maintenance of systems after installation. DOP shall in no way, responsible for supply of any tools & tackles.

14 TERMINATION FOR DEFAULT

DOP without prejudice to any other remedy for violation of contract, by written notice of default sent to the contractor, may terminate the contract in whole or in part:

- 14.1 If the contractor fails to deliver the Services within the allocated time period(s).
- 14.2 If the contractor fails to perform any other obligation(s) under the contract. However in the event of termination of the contract in part, the contractor shall continue performance of the contract to the extent not terminated.

15 TERMINATION FOR INSOLVENCY

DOP may at any time terminate the contract by giving written notice to the contractor without compensation to the contractor if he becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to DOP.

16 COMPLETION OF WORK

On completion of the work, the contractor shall submit 5 sets of "As Executed Report" to DOP which will include photographs, drawings and as executed reports of various systems containing details of installation from the point of view of future maintenance of the installed systems. This report must also contain all Technical Details, Detailed Circuit Diagram of the Electronic/ Electrical components of all the system. The report shall include satisfactory performance report from appropriate authority for each site along with photograph of representative of the authority and the party.

17 OTHERS CONDITIONS

- 17.1 The contractor shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party.
- 17.2 Work carried out without DOP approval shall not be accepted and DOP shall have rights to get it removed and to recover the cost so incurred from the contractor.

17.3 The contractor shall not display the photographs of the work and not take advantage through publicity of the work without written permission of DOP.

18 PAYMENT TERMS

18.1 No advance payment shall be made.

18.2 65 % of the ordered value after the supply of the complete system at site (The contractor shall raise bill of 65% of the ordered value after the supply of the complete system at site, as per the technical specification and terms and conditions specified in the contract)

18.3 20 % of the ordered value after installation (The contractor shall raise bill of 20 % of the ordered value after installation of the system)

18.4 15 % of the ordered value after successful completion of net metering work, commissioning of the system with remote monitoring.

Note: i) **Security Deposit shall be kept by the Department @ 7.5% of total amount of work done or agency can submit Bank Guarantee of equal amount i.e 7.5% of the total work done which shall be released @ 1.5 % Per Year during the warranty period of 5 years subject to satisfactory performance of comprehensive maintenance of Solar Power Plant on year-over-year basis for 5 year after completion of work.**

**Executive Engineer (E)
Postal Electrical Division
Lucknow**

TECHNICAL SPECIFICATION FOR GRID CONNECTED SPV SYSTEM

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

1 DEFINITION

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

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

Earthing and lightning protections.

IR/UV protected PVC Cables, pipes and accessories

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

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

3 STANDARDS

Applicable BIS/Equivalent IEC standards/MNRE Specifications

Sl No	Equipment	Standard Number
1	Crystalline silicon Terrestrial PV modules poly/mono	IEC 61215/IS 14286
2	Solar PV module safety qualification requirements	IEC 61730(P1-P2)
3	PV modules to be used in a highly corrosive atmosphere(Coastal area etc) must qualify Salt Mist corrosion testing	IEC 61701/IS 61701
4	Earthing	IS 3043: 1986/1987
5	Switches/Circuit breakers/Connectors	IEC 60947 Part I, II, III/IS 60947 Part I, II, III/EN 50521
6	Junction boxes/Enclosures for Charge controllers/Luminaries	IP 65(for out door) IP 21 (for indoor) As per IEC 529
7	Cables	IEC 60227/IS 694 IEC 60502/IS 1554(Part I & II)

4 SOLAR PHOTO VOLTAIC MODULES

4.1 The PV modules used should be made in India.

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

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

ii). The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 300 Wp. Module capacity less than minimum 300 watts shall not be accepted.

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

iv). The solar PV panel shall be certified for performance induced degeneration through IEC 62804/1

certification. The certificate to be submitted.

- v). PV modules must be tested and approved by one of the IEC authorized test centers.
- vi). The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- vii). The bidder shall carefully design & accommodate requisite number of the modules to achieve the rated power in his bid. DOP shall allow only minor changes at the time of execution.
- viii). Other general requirement for the PV modules and sub systems shall be as per the following:
 - a). The rated output power of any supplied module shall have tolerance of -0/+2%.
 - b). The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
 - c). The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of bypass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-68 rated and should be fully potted and certificate of IP 68 to be submitted.
 - d) Potting material should be of 2-component (potting agent) - certificate to be submitted.
 - e) Junction box and/or frame sealant material should not be used for potting.
 - f) Back sheet to have very good moisture protecting property and Moisture Vapour Transfer Ratio (MVTR) value should be <1 gm/day/m².
 - g) I-V curves at Standard Testing Condition should be provided by bidder.
 - h) **Module may be tested (randomly picked from production or modules supplied at site) for third party lab test for power measurement (max. 5% of the total modules at the site). The bidder shall bear the cost and no extra payment shall be made by the department. If the test results are not as per NIT, then Engineer-in-charge shall prepare necessary report and submit to the competent authority for taking necessary action to debar the agency.**

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

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

5 Warranties:

5.1 Material Warranty:

- i) Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (5) years from the date of commissioning.
- ii) Defects and/or failures due to manufacturing
- iii) Defects and/or failures due to quality of materials
- iv) Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s).

5.2 Performance Warranty:

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

6 ARRAY STRUCTURE

- 6.1 Hot dip galvanized MS mounting structures may be used for mounting the modules/panels/arrays. Minimum thickness of galvanization should be at least 120 microns.
- 6.2 Each structure should have angle of inclination as per the site conditions to take maximum insulation. However to accommodate more capacity the angle inclination may be reduced until the plant meets the

- specified performance ratio requirements.
- 6.3 **The mounting structure shall be so designed to withstand wind velocity as per the local meteorological conditions or 185 Km/hr whichever is more. The structural design for mounting of solar panels shall be approved by qualified structural engineer and a certificate duly signed by the qualified structural engineer in this regard shall be submitted by the contractor to the Engineer-in-charge before start of installation.** Suitable fastening arrangement such as grouting and clamping should be provided to strengthen the firmity of the installation against the specific wind speed.
- 6.4 The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS:4759.
- 6.5 Structural material shall be corrosion resistant and electrolytic ally compatible with the materials used in the module frame, its fasteners, and nuts and bolts. Aluminum structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.
- 6.6 Aluminium frames should be avoided for installation in coastal areas.
- 6.7 The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.
- 6.8 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.
- 6.9 The total load of the structure (when installed with PV modules) on the terrace should be less than 75 kg/m².
- 6.10 The minimum clearance of the structure from the roof level should be 300 mm for Roof and 100 mm for shade.

7 Civil Work Specifications

7.1 Concreting

- a. Concrete mix shall be of M-20/M-25 grade for pedestal and earth pit chambers.
- b. Pedestal base shall be provided with tapered gola using water proofing compound of IS-2649.
- c. Curing of all complete work shall be carried out continuously for minimum of 7 days.
- d. The solar panels are very much prone to uprooting at very high wind speed during the storms, therefore, they have to be anchored properly on the roof top by suitably designing the fixtures and its support system considering the design wind speed for the area as per the relevant IS code.
- e. During fixing the solar panels on the roof top, the damage to the structural slabs/water proofing treatment should be carefully avoided.
- f. The solar panels should be fixed on the roof surface in such a way that the rain water flow to the rain water pipe should not be obstructed and maintenance of other items such as water supply pipelines should not be disturbed and there should be no hindrance for maintaining it.
- g. For the upkeep and cleaning, a lightweight folding ladder of height about 8 feet should be provided.

7.2 Array Layout

Contractor shall design the array layout by incorporating following dimensions :

- a. Approx. 750 mm space around the periphery wall of rooftop.
- b. Minimum 900 mm spaces near the rain water exhaust pipe, water tank and rooftop entrance.

7.3 Structural design

Latest IS code shall be followed for structural design. Contractor shall submit the structural analysis and desgin (STAAD) calculations along with the structural design.

8 JUNCTION BOXES (JBs)

- 8.1 The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.
- 8.2 Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single /double compression cable glands. Provision of earthings. It should be placed at 5 feet height or above for ease of accessibility.
- 8.3 Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

- 8.4 Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- 8.5 All fuses shall have DIN rail mountable use holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

9 DC DISTRIBUTION BOARD:

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

10 AC DISTRIBUTION PANEL BOARD:

- 10.1 AC Distribution Panel Board (DPB) shall control the AC power from PCU/inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid connected mode.
- 10.2 All switches and the circuit breakers, connectors should conform to IEC:60947, part I, II and III/ IS60947 part I, II and III.
- 10.3 The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- 10.4 All the Panels shall be metal clad, totally enclosed, rigid, free-standing, floor mounted, dust and vermin proof, air-insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz
- 10.5 The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- 10.6 All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- 10.7 Should conform to Indian Electricity Rules/ Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulation 2010.
- 10.8 All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.
- Variation in supply voltage: +/- 10 %
- Variation in supply frequency: +/- 3 Hz

11 PCU/ARRAY SIZE RATIO:

- 11.1 The combined wattage of all inverters should not be less than rated capacity of power plant under Standard Testing Condition.
- 11.2 Preferably maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

12 PCU / INVERTER :-

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

- Switching devices : IGBT/MOSFET
- Control : Microprocessor /DSP
- Nominal AC output voltage and frequency : 415V, 3 Phase, 50 Hz(Suitable arrangement for balancing the load in each phase must be made)
- Output frequency : 50 Hz
- Grid Frequency Synchronization range : + 3 Hz or more
- Ambient temperature considered : -20° C to 50° C
- Humidity : 95 % Non-condensing
- Protection of Enclosure : IP-20(Minimum) for indoor.
- IP-65(Minimum) for outdoor.
- Grid Frequency Tolerance range : + 3 Hz or more
- Grid Voltage tolerance : - 20% & + 15 %
- No-load losses : Less than 1% of rated power

- Inverter efficiency: >93% (In case of 10kW or above with in built galvanic isolation) and >97% (In case of 10kW or above without in built galvanic isolation)
 - Inverter efficiency: > 90% (In case of less than 10 kW)
 - Total Harmonic Distortion(THD): < 3%
 - PF : > 0.9
- 12.1 Three phase PCU/ inverter shall be used with each power plant system (10kW and/or above) but In case of less than 10kW single phase inverter can be used.
- 12.2 PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- 12.3 The output power factor of PCU inverter should be suitable for all voltage ranges or sink of reactive power. Inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- 12.4 Built-in meter and data logger to monitor plant performance through external computer need to be provided.
- 12.5 Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.
- 12.6 The PCU/ inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.
- 12.7 The power conditioning units / inverters should comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2(1,2,14,30) /Equivalent BIS Std.
- 12.8 The MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- 12.9 The PCU/ inverters should be tested from the MNRE approved test centers /NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

13 INTEGRATION OF PV POWER WITH GRID:

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

14 DATA ACQUISITION SYSTEM / PLANT MONITORING:

- 14.1 Data Acquisition System shall be provided for the solar PV plant.
- 14.2 Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, Metering and Instrumentation for display of systems parameters and status indication to be provided.
- 14.3 Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with read out integrated with the data logging system.
- 14.4 The following parameters are to be made accessible via the operating interface display in real time separately for solar power plant:
- AC Voltage.
 - AC Output current.
 - Output Power
 - Power factor.
 - DC Input Voltage.
 - DC Input Current.
 - Time Active.
 - Time disabled.
 - Time Idle.
 - Power produced/ Units Generated
 - Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency, ground fault, PV starting voltage, PV stopping voltage).
- 14.5 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.
- 14.6 Solar Meter: Energy Meters to log the actual value of Energy generated by the PV system be provided. Energy meter with CT/PT should be of accuracy class as per requirement of supply company.
- 14.7 Computerized DC string monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- 14.8 String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
- 14.9 Computerized AC energy monitoring shall be in addition to the solar meter.
- 14.10 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.
- 14.11 All instantaneous data shall be shown on the computer screen.
- 14.12 Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- 14.13 Provision for instantaneous Internet monitoring and downloading of historical data shall also be incorporated.
- 14.14 Remote Server and Software for centralized Internet monitoring system shall also be provided for download and analysis of cumulative data of all the plants and the data of the solar irradiation and temperature monitoring system.
- 14.15 Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.
- 14.16 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.
- 14.17 Remote Monitoring and data acquisition through Remote Monitoring System with provision for both SIM card & RJ-45 port including software at the owner with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control of the same to be ensured by the supplier. Provision for interfacing these data on DOP server and portal in future shall be kept.
- 14.18 DOP shall arrange SIM or broadband connection of ISP to connect LAN connection or LAN connection of the postal building for remote monitoring. The usage bill/recharging of the SIM shall also be paid by DOP.
- 14.19 The bidder shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at reciver location (cloud server) in XML/JSON format, preferably.
- 15 METERING:**
- 15.1 The bi-directional electronic energy meter (accuracy class as per requirement of supply company) shall be installed for the measurement of import/Export of energy.
- 15.2 The bidder must co-ordinate for taking approval/NOC from the Concerned supply company for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to DOP before commissioning of SPV plant. However any expenditure carried out for seeking approval viz. deposition of fee, form cost etc. shall be borne by the dept.
- 15.3 Reverse power relay shall be provided by bidder (if necessary), as per the local supply company requirement.
- 16 POWER CONSUMPTION:**
- a) Regarding the generated power consumption, priority need to be given for internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of DOP. Decisions of appropriate authority like supply company/Regulatory authority of the site may be followed.
- 17 PROTECTIONS:**
- The system shall be provided with all necessary protections like earthing, Lightning protection, and grid islanding as follows:
- 17.1 **LIGHTENING PROTECTION:**
The SPV power plants shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be 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 IEC62305 standard. The protection against induced high-voltages shall be provided by the use of Metal Oxide Varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.
- 17.2 **SURGE PROTECTION:**

- Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement)
- 17.3 **EARTHING PROTECTION:**
Each array structure of the PV yard should be grounded/ earthed properly as per CPWD specification. In addition the lightning arrester/masts should also be earthed inside the array field. PCU, ACDB and DCDB should also be earthed properly. Earthing work and earthing connections shall be provided by the bidder.
- NO. OF EARTHING**
GI Plate earthing shall be provided as per the following quantity:
i) For AC Surge Protection/ DC Surge Protection/ Lightning Arrester - 3 Nos
ii) For Body Earthing - 2 Nos.
- 17.4 **GRID ISLANDING:**
a). In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-connected equipment. The 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.
b). A manual disconnect 4pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.
- 18 CABLES:**
Cables of appropriate size to be used in the system shall have the following characteristics:
- 18.1 Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- 18.2 Temp. Range: –10° C to +80° C.
- 18.3 Voltage rating 660/1000V
- 18.4 Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- 18.5 Flexible
- 18.6 Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- 18.7 For the DC cabling, XLPE or, XLPO insulated and sheathed, UV- stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.
- 18.8 For the AC cabling, PVC or, XLPE insulated and PVC sheathed single or, multi-core multi-stranded flexible copper cables shall be used; Outdoor AC cables shall have a UV-stabilized outer sheath.
- 18.9 The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. Outer sheath of cables shall be electron beam cross-linked XLPO type and black in colour.
- 18.10 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- 18.11 All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm² copper; the minimum AC cable size shall be 4.0 mm² copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
- 18.12 Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- 18.13 The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.
- 18.14 The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/ layout drawings should be incorporated in O & M Manual.
- 18.15 Multi Strand, Annealed high conductivity copper conductor PVC type ‘A’ pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/equivalent BIS Standards as specified below:
BIS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 150 V,UV resistant for outdoor

- installation IS /IEC 69947.
- 18.16 The size of each type of DC/AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.
- 19 CONNECTIVITY**
The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified by the supply company/regulatory authority for Grid connectivity and norms of supply company and amended from time to time.
- a). The maximum permissible capacity for rooftop shall be 1 MW for a single net metering point.
b). Utilities may have voltage levels other than above, supply company may be consulted before finalization of the voltage level and specification be made accordingly
c). For large PV system (Above 50 kW) for commercial installation having large load, the solar power can be generated at low voltage levels and stepped up to 11 kV level through the step up transformer. The transformers and associated switchgear would require to be provided by the SPV bidders.
- 20 TOOLS & TACKLES AND SPARES:**
- 20.1 After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder for approval of specifications and make will be collected from Engineer in Charge.
- 20.2 A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs /arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment or can be maintained at supplier end. A minimum set of spares shall be maintained in the plant itself or can be maintained at supplier end for the entire period of warranty and Maintenance which upon its use shall be replenished
- 21 DANGER BOARDS AND SIGNAGES:**
Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery –cum–control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with Dept.
- 22 DRAWINGS & MANUALS:**
I) Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical datasheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
II) Approved ISI and reputed makes of equipments shall be used.
III) For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to Department before progressing with the installation work
IV) The completion plan with ink and three blue print copies of the same shall be submitted by the contractor for : A. Connection diagram and
B. Cable root showing the following:
i) Layout of cable
ii) Length, size, type and grade of cables.
iii) Method of laying i.e. direct in ground or in pipe.
iv) Location of each joint with jointing method
v) Routes marker and joint marker with reference to permanent land mark available at site, failing which Rs. 500/- will be recovered from his final bills.
- 23 PLANNING AND DESIGNING:**
i). The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to Dept for approval.
ii). Dept reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/ requirements.
iii). The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any, The bidder submit three sets of soft copy in CD of final drawing for formal approval to proceed with construction work.
- 24 DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT**
- 24.1 The Contractor shall furnish the following drawings and obtain approval
a). General arrangement and dimensioned layout.

- b). Schematic drawing showing the requirement of SPV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- c). Structural drawing along with foundation details for the structure/frame duly signed by structural engineer.
- 24.2 Itemized bill of material for complete SV plant covering all the components and associated accessories.
- 24.3 Layout of solar Power Array
- 24.4 Shadow analysis of the roof
- 25 SOLAR PV SYSTEM ON THE ROOFTOP FOR MEETING THE PART / FULL ANNUAL ENERGY REQUIREMENT**
- The Solar PV system on the rooftop of the selected buildings will be installed for meeting the annual energy requirements of PV capacity permissible by supply company as per regulation issued by Regulatory authority.
- 26 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.
- 27 DISPLAY BOARD :-**
- The bidder has to display a board at the project site (above 10 kWp) mentioning the following:
- a). Plant Name, Capacity, Location, Type of Renewable Energy plant (Like solar / wind etc.), Date of commissioning, details of tie-up with transmission and distribution companies, Power generation and Export FY wise.
- b). The size and type of board and display shall be appropriate.
- 28 SCOPE OF MAINTENANCE OF SPV POWER PLANT FOR A COMPREHENSIVE WARRANTY PERIOD OF 5 YEARS FROM DATE OF SATISFACTORY COMMISSIONING OF SYSTEM.**
- 28.1 Maintenance of the SPV Power Plant after satisfactory commissioning of system includes routine and on call maintenance of the system including supply all spare parts required for reliable operation of the system under 5 (Five) years comprehensive warranty period from the date of successful commissioning of the system.
- 28.2 The SPV power plants shall be warranted for 5 years comprehensive maintenance from the date of successful commissioning. The complete system including all equipments/components/accessories/mechanical structures/ electrical works such as PCU/Inverter, MPPT Units, Distribution Boards/ digital meters/switchgears/cabling/earthing /lightning arrestors etc along with supply of consumable items
- 28.3 Complete maintenance of the plants has to be carried out by the contractor and cannot be sublet to any third party.
- 28.4 The security of the power plants will rest with the contractor till such time the power plant is not handed over to the department
- 28.5 The Contractor shall be responsible for all required activities for successful maintenance of the SPV Power Plant during the 5 year Comprehensive warranty period.
- 28.6 The deputed personnel during his routine visits / breakdown visits shall check and test all the equipment, so that, preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behaviour of any equipment shall be brought to notice of Engg.-in-charge immediately for appropriate action.
- 28.7 Normal and preventive maintenance of the power plant such as checking of all the equipments and accessories as a part of routine and breakdown maintenance on regular interval, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of terminals etc. shall be under the scope of the contract.
- 28.8 During maintenance period of 5 years of the power plants, if there is any loss or damage of any component of the power plants due to miss management/miss handling or any other reasons, whatsoever, the bidder shall be responsible for immediate replacement/rectification. The damaged component may be repaired, if it is understood after examination that after repairing performance of the component shall not be degraded, otherwise the defective component shall have to be replaced by new one without any extra cost.
- 28.9 The contractor shall keep sufficient inventories to assure ready stock supply of all spares, consumables and fixtures as required. Stock should be maintained all associated equipments and materials as per manufacturer/ supplier recommendations.
- 28.10 The spares and measuring instruments which are supplied along with the systems are the property of the department and the contractor will use these spares sparingly with express permission of the department in case of emergency breakdowns, however, the contractor will have to refill the used spares within one month of drawn down.
- 28.11 All the spares inventory of the department has to be fully refilled with new and unused spares at the time of handing over of the plant after completion of the 5 years of maintenance of the plants by the contractor. In

- case of non-compliance, the department will refill these spares with new ones at the cost of the contractor.
- 29 Comprehensive Annual Maintenance Contract (AMC)**
- 29.1 The quoted rate shall include comprehensive annual maintenance contract for five years after from the date of commissioning of system for the complete system supplied under this contract. The agency shall make preventive maintenance visit to the site minimum once in a three months and record the site observations and actions taken.
- During AMC if the problem reported to the agency, service engineer has to report to site within next 24 hours. The agency shall ensure availability of spare parts and maintenance support services for the offered equipment for at least 10 years from the date of supply. The agency shall give a notice of at least one year of equipment before phasing out the product/spares to enable for placement of order for spares and services.
- Please note that cleaning of Solar PV panels are excluded from the scope of agency.**
- 29.2 **Following jobs are required to be covered under quarterly visit:-**
- i) Visual inspection of Modules and mounting clamps for any broken glass/ discoloration, misaligned modules.
 - ii) Visual inspection of mounting structures, inspection & tightening of screws and fasteners as needed, Check for rust on structure.
 - iii) Checking and tightening of solar inter connections, Visual inspection of junction boxes and wiring Tightening of any interconnections as needed.
 - iv) **PCU/Inverters-** General checking e.g. Check LCD displays & working of inverter.
 - v) Checking & ensuring Remote Monitoring and Log of daily production data.
 - vi) Submission of detailed inspection report.
- 30 MAINTENANCE INSTRUCTIONS:**
- 30.1 Maintenance of the plants shall be carried out by the contractor during Comprehensive Maintenance warranty period of 5 years, a maintenance schedule shall be prepared in consultation with the Engineer-in-Charge for quarterly / half yearly /annual review check-up of plant and equipment.
- 30.2 The contractor shall depute qualified and experienced Engineers/Technician well versed in Maintenance of SPV plants and having knowledge of computers. The details of the Engineer/technician ie Name, Address, Mobile number etc should be submitted to the department
- 30.3 Proper re-painting, re-coating of exposed surfaces to prevent rusting & replacement of worn out parts shall be carried out along with the maintenance of the PCU/INVERTER.
- 30.4 The routine maintenance work to be carried out when plant is not in operation.
- 30.5 All breakdown maintenance/major break down should be attended in real time and to be completed within 24 hour (including arranging spares). Any additional time (more than 24 hour) taken for making the plant generation worthy, will invite the adequate compensation commensurate to the loss of generation due to non-availability of power.
- 30.6 Replacement & repair of damaged parts shall be carried out immediately during the maintenance period so as to ensure at least 95% uptime.
- 30.7 The contractor shall ensure replacement of worn out parts and components during the maintenance period for which purpose the contractor shall carry and maintain minimum inventory levels of spares.
- 30.8 In case of delay in repair & maintenance and non-observance of Engg.-in-charge'' maintenance schedule, the department shall have the right to impose any penalties including forfeiture of security.
- 30.9 The Five year Comprehensive maintenance warranty period covers routine, preventive, breakdown and capital maintenance of complete plant and equipment including SPV Array, INVERTER, SCADA system with dedicated telephone lines shall be carried out by the supplier in accordance with manufacturer''s instructions, manufacturer''s procedures, relevant safety codes, Indian Electricity Act, 2003, Central Electrical Authority (Measures relating to safety and electric supply) Regulation 2010, Engg.-in-charge instructions, prudent utility practices, etc.
- 31 ROUTINE AND PREVENTIVE MAINTENANCE**
- This shall include such checks and maintenance activities as and when required to be carried out on all the components of the power plant to minimize breakdowns and to ensure smooth and trouble free running of the power plant. The contractor shall be responsible to carry out routine and preventive maintenance and replacement of each and every component/equipment of the power plant and shall provide all labour, material, consumables etc. for routine and preventive maintenance at their own cost.
- 32 BREAKDOWN MAINTENANCE**
- This shall mean the maintenance activity including repairs and replacement of any component or equipment of the power plant which is not covered by routine and preventive maintenance and which is required to be carried out as a result of sudden failure/breakdown of that particular component or equipment while the plant

is running. The contractor shall be responsible to carry out breakdown maintenance of each and every component of the power plant and he shall provide the required manpower, materials, consumables, components or equipment etc. for breakdown maintenance at his own cost irrespective of the reasons of the breakdown/failure.

33 CAPITAL MAINTENANCE

- 33.1 This shall mean the major overhaul of any component or equipment of the power plant which is not covered by routine, preventive and breakdown maintenance which may become necessary on account of excessive wear & tear, aging, which needs repair/replacement. The capital maintenance of power plant and all civil structures shall normally be planned to be carried out on an annual basis. For this purpose a joint inspection by the contractor and the engineer-in-charge or his authorised representative shall be carried out on all the major components of the power plant, about two months in advance of the annual maintenance period, in order to ascertain as to which components of the power plant require capital maintenance. In this regard the decision of the department will be final and binding.
- 33.2 However, if the condition of any plant and component warrants its capital maintenance at any other time, a joint inspection of the engineer-in-charge or his authorised representative and contractor shall be carried out immediately on occurrence of such situation and capital maintenance shall be carried out by arranging the shutdown of the plant/part of the plant, if required, in consultation with concerned authorities. The decision of the department shall be final and binding.

**Executive Engineer (E)
Postal Electrical Division
Lucknow**

List of approved makes of items

Sl. No.	Brief Description	Make
1	Mono/Polycrystalline module	Indigenous make of M/s. CEL/BEL/BHEL/ Tata Solar/ Vikram/ Waaree/ Emmvee/ Goldi Green/ Saatvik/ HHV/ Moser Baer/ Alpex/ Websol Energy
2	PCU/ Inverter	M/s. SMA/KACO/ Schneider/ Delta/ Tata Solar/ Borg/ ACME/ BHEL/ Solar Edge/ ABB/ Techser/ Power One
3	Array Junction Box	Tyco/ Hensel
4	Main Junction Box	Tyco/ Hensel
5	DC Distribution Board	ABB/ Siemens/ Schneider/ Legrand
6	AC Distribution Board	L&T/ ABB/ Schneider/ Legrand
7	Power & Control Cables	Havells/ Finolex/ Grandley/ Lobster/ Polycab/ KEI/ Incab
8	Switchgears	ABB/ Siemens/ Schneider/ L&T/ GE
9	Conduits	ISI Marked
10	Monitoring System	ABB/ Schneider/ SMA/ KAKO
11	Fire Extinguisher	ISI Marked
12	Any other item	As approved by the Engineer-in-charge

Annexure-A, B,C

A. SCHEDULE OF EXPERIENCE (Supply, Installation, Testing & Commissioning)

(Please attach certificates in support from the concerned nodal agency /Govt. Organization / MNRE authorized Agency / Project owner for work executed)

Sl No	Details of SPV systems Installed during Last 7 Years	Year	Deptt./Agency /Beneficiary for which work carried out	Total KW size of work	Cost of works in { Amt in Lakhs.}	Attachment at Page No. of Techno-Commercial bid
1						
2						
3						
4						
5						
Total						

Signature and Seal of Proposer
{Please refer NIT for eligibility in this tender}

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

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

SIGNATURE & SEAL OF
TENDERER

C. Details of after sale service centres proposed in the state

Sl No	Name of Dealer/Centre	Village	Tehsil	District

Note: 1. Final details can be given later on.

2. This is for information purpose only.

SIGNATURE & SEAL OF TENDERER

FORMAT OF INSTALLATION CERTIFICATE

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

INSTALLATION CERTIFICATE

Date Of Installation :

Name of Beneficiary :

Address of Place of Installation :

Name of City :, Tel.No:/Mobile No:

Certified thatkW PV Capacity SPV Roof Top/ Ground mounted Grid connected Power Plant in reference to DOP Agreement No:.....Dated:..... issued vide letter No: Dated:..... has been installed and commissioned at the place mentioned and taken over the system by beneficiary in good working condition: The details of material supplied and installed are as under :

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

Signature of Beneficiary:

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

Signature of Firm's authorized Person with seal.

DOP Verification

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

CORRECTION SLIPS**CPWD FORM 6:**

- 1 Wherever Form -7/8 is appearing in this form, figure 8 stands deleted.
- 2 Wherever item rate tender is appearing in this form, it stands deleted.
- 3 Para 1 of this form is substituted as Press Notification enclosed in the tender documents.

CPWD FORM 8:

- 1 Wherever Form -7/8 is appearing in this form, figure 8 stands deleted.
- 2 Wherever item rate tender is appearing in this form, it stands deleted.
- 3 All the Para's in this form related to Form CPWD-8 (for item rate tender) may be treated as deleted.
- 4 Clause 2A of this form related to incentives for early completion may be treated as deleted.
- 5 Clause -16 & 17-Time period shall be 5 years.

**GOVERNMENT OF INDIA
DEPARTMENT OF POSTS**

State : Bihar
Branch : Electrical Wing
Zone : North

Circle : PEC, Bangalore
Division: PED, Lucknow
Sub Dn.: PESD Patna

PERCENTAGE RATE TENDER & CONTRACT FOR WORKS

(A) **Tender or the work of:- “SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.”**

i) To be submitted through e-tendering by 22.02.2021 up to 15:00 Hours to Executive Engineer (Electrical) Postal Electrical Division, Lucknow

(ii) To be opened through e-tendering in Presence of tenderers who may be present on 22.02.2021 at 15:30 Hours in the office of the Executive Engineer (Electrical) Postal Electrical Division, Lucknow

Issued to: _____

(Contractor)

Signature of officer issuing the documents _____
Designation _____

Date of issue:

**Executive Engineer (E)
Postal Electrical Division
Lucknow**

TENDER

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

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

We agree to keep the tender open for 75 days from the last day of receipt of technical bid and not to make any modifications in its terms and conditions.

The bidder shall not deposit any amount in respect of Earnest Money Deposit. The EMD Declaration digitally signed by the bidder as specified in the tender document shall only be uploaded along with other requisite documents as per NIT.

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 take action as per EMD declaration. Further, if I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely, otherwise the said performance guarantee shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision, contained in Clause 12.2 and 12.3 of the tender form. Further, I/We agree that in case of forfeiture of Performance Guarantee as aforesaid. I/We shall be debarred for participation in the re-tendering process of the work.

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

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

Dated :.....

Signatures of Contractor
Postal Address

Witness :

Address :

Occupation :

ACCEPTANCE

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

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

- i)
- ii)
- iii)

Signatures:.....
Designation:.....

Dated :.....

For & on behalf of the President of India

SCHEDULES

Schedule 'A'- Schedule of Quantities, (BoQ_XXXXX.xls file on the website against this work items)

Schedule 'B'-

Schedule of materials to be issued to the contractor:

S.No.	Description of item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of issue
1	2	3	4	5
As Per Schedule of Work				

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 specified requirements/ documents for the work, if any NIL

Schedule 'E'-

Reference to general conditions of contract

Name of work "SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna."

- | | | | |
|------|------------------------|---|----------------------------|
| i) | Estimated cost of work | : | ₹1710000/- |
| ii) | Earnest money | : | EMD Declaration as per NIT |
| iii) | Performance Guarantee | : | 3% of tendered value |
| iv) | Security Deposit | : | 7.5% of Tendered Value |

Schedule 'F'-

General Rules & Directions:

Officer Inviting tender: : Executive Engineer (E), Postal Electrical Division, Lucknow

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3

Definitions:

- | | | |
|------|---|---|
| i) | Engineer-in-charge | Executive Engineer (E), Postal Electrical Division, Lucknow |
| ii) | Accepting Authority | SE (E) Postal Electrical Circle, Bangalore |
| iii) | Percentage on cost of materials and labour to cover all over-heads and profits. | 15% |
| iv) | Standard schedule of Rates | N/A |
| v) | Department | Department of Posts |
| vi) | Standard CPWD contract Form : General conditions. | CPWD form 8 as modified & corrected upto date correction slip and |

Clause 1

- | | | |
|-----|--|---------|
| i) | Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance, in days. | 10 days |
| ii) | Maximum allowable extension with late fees @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above in days. | 05 days |

Clause 2

Authority for fixing compensation under clause 2

S.E. (E), PEC, Bangalore

Clause 2A

Whether Clause 2A shall be applicable:

No

Clause 5

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

10 Days

Table of milestones

S.No.	Description of Milestone (Physical)	Time allowed (From date of start)	% Amount to be with-held in case of non achievement of mile stone
1			
2.			
3.			
4.			

Time allowed for execution of work

04 Months

Authority ton Decide:

i)	Extension of time for completion of work	E.E.(E)/ S.E.(E)
ii)	Rescheduling of mile stones	S.E.(E)

Clause 6,6A

Cause applicable – (6or 6A) -----NA-----

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.

-NA-

Clause 10 A

List of testing equipment to be provided by the contractor at site lab.

N.A.

Clause 10 B(ii)

Whether clause 10 B(ii) shall be applicable

No

Clause 10C

Component of labour expressed as percentage of value of work:

N.A.

Clause 10 CC

Clause 10 CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column.

NOT Applicable

Clause 11

Specification to be followed for execution of work

: As per NIT/MNRE/ JNNSM guidelines amended up to date

Clause 12

12.2 & 12.3 Deviation limit beyond which clauses 12.2 & 12.3 shall apply for building work.

25%

Deviation limit beyond which clauses 12.2 & 12.3 shall apply for foundation work.

N.A.

Clause 16

Competent Authority for deciding reduced rates.

S.E. (E), PEC, Bangalore

Clause 18

NA

Clause 25

Construction of Dispute Redressal Committee (DRC)	Competent Authority to Appoint DRC
DRC shall constitute one chairman and two members	Chief Engineer or Additional Director General if there is no Chief Engineer

Clause 36 (i)

Sl No.	Minimum qualification of Technical Representative	Discipline	Designation (Principal Technical/Technical representative)	Minimum experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
						Figures	Words
1.	Recognized Diploma Holder	Electrical	Electrical	03 Year	1	Rs. 10000/- Per Month	Ten thousand only
2.	Recognized Degree Holder	Electrical	Electrical	3 years	1	Rs.15000/- per month	Fifteen Thousand Only

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

Clause 42

- i) (a) Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates _____ printed by C.P.W.D. N.A
- ii) Variations permissible on theoretical quantities. N.A
- a) Cement for works with estimated cost put to tender not more than ₹ 5 lakhs 3% plus / minus
- Cement for works with estimated cost put to tender more than ₹ 5 lakhs 2% plus / minus
- b) Bitumen for all works 2.5% plus only & nil on minus side
- c) Steel Reinforcement and structural steel sections for each diameter, section and category 2% plus / minus
- 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
		Rate in schedule 'B' plus 10% in case materials issued by Department
		Excess beyond Permissible variation Less use beyond Permissible variation
1	Cement	N.A.
2	Steel reinforcement	
3	Structural Sections	
4	Bitumen issued free	
5	Bitumen issued at stipulated fixed price	

Form of Performance guarantee / Bank guarantee bond [Reference para 21.1.(1)(V)]

In consideration of the President of India (hereinafter called "The Government") having offered to accept the terms and conditions of the proposed agreement between.....and (hereinafter called "the said Contractor(s)") for the work..... (hereinafter called "the said agreement") having agreed to production of an irrevocable Bank Guarantee for ₹ (Rupees..... only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

- 1 We, (hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding ₹ (Rupees..... Only) on demand by the Government.
- 2 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 ₹..... (Rupeesonly)
- 3 We, the said 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 thereunder and the Contractor(s) shall have no claim against us for making such payment.
- 4 We, (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in- Charge on behalf of the Government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.
- 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 This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
- 7 We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.
- 8 This guarantee shall be valid up tounless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to ₹ (Rupees) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged. Dated theday of for..... (indicate the name of the Bank)

Name of Work: SITC of 45 kWp Grid connected Roof Top Solar PV System at Meghdoot Bhawan, Patna.

Estimate Cost: -	₹1710000/-
EMD:	EMD Declaration as per NIT
Time Allotted:	04 Months

S No	Description of Work/ Items	Qty	Rate	Unit	Amount
1	Supplying, Installation, Testing & Commissioning of roof top on grid PV solar Power generation system as per the specifications and requirement of DISCOM, earthing, earthing connections to SPV panels and inverter including of following as required.				
	(a) poly/mono crystalline highly durable grade solar panels of not less than 300 WP with back frame and 5 yrs of product warranty				
	(b) Photo voltaic power conditioning unit/inverter with three phase AC output with IP 65 enclosure and built in metering arrangement for measurement of solar energy production with data log-in facility for track record of energy generation along with remote monitoring system complete as required .				
	(c) Specially crafted panel mounting structure of high grade galvanized steel and Aluminium holding brackets and adjustable tilt angle to encapsulate max solar irradiance.				
	(d) Combiners boxes (IP 65) Connectors (TUV IEC 60283 certified) and connection Wires (TUV IEC 616363 graded special Tinted copper wires) to withstand high harmonic DC current.				
	(e) Comprehensive Warranty of roof top photo voltatic solar power generation system comprising of all panels and equipment installed along with solar power generation system for the 5 years.	45	38000	kWp	1710000
	Total				₹1710000

**Executive Engineer (E)
Postal Electrical Division
Lucknow**