NAME OF WORK: - Providing 100kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.

NIT No: e - 20/EE(E)/Vadodara/2021-22

INDEX

Certified that this NIT contains 44 pages i.e.1 to 44 pages.

Executive Engineer (E)
O/o EE (E), Vadodara, CPWD, Vadodara – 390 002

Name of Work: - Providing 100kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.

This Bid document consists of:

Technical Cum Eligibility Bid /Price Bid

Technical Cum Eligibility Bid to be opened on 30/06/2021 at 03:30 PM

Date of Opening of Price Bid shall be intimated later.

भारत सरकार /Government of India

केंद्रीय लोक निर्माण विभाग / Central Public Works Department

	कार्यपालकअभियंता(वै),वडोदरा का कार्यालय केंद्रीय लोक निर्माण विभाग, डाक बंगलो, फतेहगंज, वडोदरा -390 002 दूरभाष संख्या : ई-मेइल :eeevadodara@yahoo.com	**O/o. THE EXECUTIVE ENGINEER (E) VADODARA** **CENTRAL PUBLIC WORKS DEPARTMENT** **DAK BUNGLOW, FATEHGUNJ,** **BEHIND POST OFFICE,** **VADODARA – 390 002.** **Phone No. :** **E-mail : eeevadodara@yahoo.com**	

इ-निविदा आमंत्रित नोटिस

The Executive Engineer (Electrical), Vadodara, O/o EE (E), Vadodara, Central Public Works Department, Dak Bunglow, Fatehgunj, Behind Post Office, Vadodara – 390 002 e-mail ID eeevadodara@yahoo.com on behalf of President of India, invites online percentage rate e-tenders from "Specialized Agencies" in Two bid system for the following work.

NIT No.:- e - 20/EE(E)/Vadodara/2021-22

Name of Work: - Providing 100kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.

Estimated Cost: - Rs.61,06,000/-

Earnest Money: - Rs. Nil

Period of Completion: - Six (06) Months

Last time & date of submission of bid:- up to 03:00 PM on 30-06-2021

The bid forms and other details can be seen and downloaded from the website www.tenderwizard.com/CPWD or www.cpwd.gov.in free of cost.

कार्यपालक अभियंता (वैद्युत), वडोदरा
कार्यपालक अभियंता (वैद्युत), वडोदरा का कार्यालय
के .लो .नि .वि ., वडोदरा

प्रतिलिपि :

1.सहायक अभियंता (वै), सूरत, के.लो.नि.वि., सूरत |

2.सूचना पट |

कार्यपालक अभियंता (वैद्युत), वडोदरा

INFORMATION AND INSTRUCTIONS FOR BIDDER FOR e-TENDERING

The Executive Engineer (E), O/o Executive Engineer (E), Vadodara, CPWD, Vadodara - 390 002 (Ph. / Fax No. 022 -2666628), e-mail ID : eevadodara@yahoo.com) on behalf of President of India invites online Percentage rate tenders in Two bid system from the Specialized Agencies who meet eligibility criteria given below in NIT for the following work.

Sl. No.	NIT No.	Name of work & Location	Estimated cost put to bid	Earnest Money	Period of Completion	Last date & time of submission of bid, copy of declaration and other document as specified in the press notice	Time and date of opening of Technical Cum Eligibility Bid.
1	2	3	4	5	6	7	8
1	e - 20/EE(E)/Vadodara/2021-22	**Providing 100kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**	**Rs.61,06,000/-**	**Nil**	**06 Months**	**30/06/2021Up to 03:00 PM**	**30/06/2021at 03:30 PM**

1. **Contractors who fulfil the following requirements shall be eligible to apply. Joint ventures are not accepted.**

a) Should have satisfactorily completed the works as mentioned below during the last 7 (seven) years ending last date of the month previous to the one in which tenders are invited.

Three similar completed works each costing of value not less than Rs.24,42,400/-

OR

Two similar completed works each costing of value not less than Rs.36,63,600/-

OR

One similar completed works costing of value not less than Rs.48,84,800/- .

Similar work shall mean **"SITC of Solar Power generation System of minimum capacity having 80 kWp."** 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 bids.

b) The Annual financial statement for the last five year in (Form "A") and Net worth Certificate in (Form "B-1").
(Scanned copy of Certificate from CA to be uploaded).

c) Should not have incurred any loss in more than two years during the last five years ending 31stMarch 2021. (Scanned copy of Certificate from CA to be uploaded

d) The bidder should submit Solvency Certificate of minimum **₹24,42,400/- (40% of ECPT)** issued by his bankers.

e) The bidder should submit Net worth Certificate of minimum **₹6,10,600/- (10% of ECPT)** issued by the certified Chartered Accountant (on the format prescribed in form B-1).(Scanned copy of original to be uploaded)

* To be struck off for works with estimated cost more than Rs. 25 Crore.

2. The intending bidder must read the terms and conditions of CPWD-6 carefully, He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.

3. Information and instructions for bidders posted on website shall form part of bid document.

4. The intending bidder must have valid Class-III digital signature to submit the bid.

5. ~~**The contractor can deposit original EMD either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission (The EMD document shall only be issued from the place in which the office of receiving division office is situated). The contractor shall obtain the receipt of EMD from the concerned the Executive Engineer in the prescribed format uploaded by NIT issuing Executive Engineer**~~. The bid document as uploaded can be viewed and downloaded free of cost by anyone including intending bidder. But the bid can only be submitted after uploading the mandatory scanned documents such as ~~Demand Draft/Pay order or Banker's Cheque /Bank Guarantee of any Scheduled Bank towards EMD in favor of respective Executive Engineer, copy of receipt of original EMD and other documents specified in NIT.~~

6. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website www.tenderwizard.com / CPWD.

7. **The contractors already registered on the e-tendering portal will have option to continue by paying tender processing fee upto one year from the date of registration, or to switch over to (new) registration without tender processing fee any time. All new registrations from 01/04/2015 will be without tender processing fee.**

8. Those contractors not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online tendering process as per details available on the website.

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

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

11. Contractor must ensure to quote rate of each item. The column meant for quoting rate in figures appears in **yellow colour** and the moment rate is entered, it turns in to **sky blue**.

In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as **"0".**

Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as **"0" (ZERO).**

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

13. If it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.

14. SC/ST contractor enlisted under Class V category are exempted from processing fee payable to ITI.

15. At the time of submission of bid contractor may upload the Annual financial statement for the last five year in (Form “A”) and Net worth Certificate in (Form “B-1”)

Name of Work: - **Providing 100 kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**

NIT No.: e - 20/EE(E)/Vadodara/2021-22

List of Documents to be scanned copy of original and uploaded within the period of tender submission:

~~I. Treasury challan / Demand Draft / Pay order or Banker's Cheque / Deposit at Call Receipt / FDR / Bank Guarantee of any Scheduled Bank against EMD.~~

~~II. Enlistment order of contractor in CPWD to be uploaded in the eligibility document section.~~

III. Attested copy of valid electrical contractor license.

IV. Certificate of Registration of GST in Gujarat or Undertaking as per provision in OM No. DG/MAN/353 dated 14/08/2017and OM No. DG/MAN/374 dated 05/07/2018

~~V. Copy of receipt for deposition of original EMD issued from division office of any Executive Engineer, CPWD (the EMD document shall be issued from the place in which the office of receiving division office is situated).~~

VI. Copy of EPF and ESIC registration or undertaking of Not Applicable for EPF and ESIC registration.

VII. Experience certificate issued by the competent authority.

VIII. The Annual financial statement for the last five year in (Form "A").

IX. Certificate of Profit & Loss Statement of Five years ending 31/03/2021 from CA

X. The Solvency Certificate of minimum ₹ 24,42,400/- issued by the bankers.

XI. Net worth certificate of minimum ₹6,10,600/- issued by the certified Chartered Accountant.

XII. Affidavit as per clause 1.2.3 of CPWD- 6.

XIII. Performa for Earnest Money Deposit Declaration. (As per page no. 26)

Executive Engineer (E)
O/o EE (E), Vadodara, CPWD, Vadodara – 390 002

EVALUATION CRITERIA FOR FIRST STAGEPRE-QUALIFICATION

(a)	**Attributes**		**Evaluation**			
	Financial Strength (20 Marks)					
	(i) Average annual Turnover 16 marks (ii) Solvency Certificate 4marks		(i) 60% marks for minimum eligibility criteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) - on pro-rata basis			
(b)	Experience in similar Class of work (20 Marks)		(i) 60% marks for minimum eligibility riteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) - on pro-rata basis			
(c)	Performance on Works (Time overrun) (20 marks)					
	Parameter	Calculation For points	Score			Maximum Marks
	If TOR =		1.00	2.00	3.00	>3.50	20
	(i) Without levy of compensation		20	15	10	10	
	(ii) With levy of compensation		20	5	0	-5	
	(iii) Levy of compensation not decided		20	10	0	0	
	TOR = AT/ST, where AT=Actual Time; ST=Stipulated Time in the Agreement plus (+) justified period of Extension of Time Note: Marks for value in between the stages indicated above is to be determined by straight line variation basis.					
(d)	Performance of works (Quality) (40 marks) (i) Outstanding 40 (ii) Very Good 30 (iii) Good 20 (iv) Poor 0					

12.0 The details submitted by the bidder will be evaluated in the following manner:

A) The Initial Criteria in respect of experience of eligible similar works completed, loss, solvency and financial turnover etc. will first be scrutinized and the bidder's eligibility for the work be determined.

B) The Bidders to qualify the initial minimum criteria as set out above will be evaluated for following attributes by scoring method on the basis of details furnished by them.

(a) Financial strength(Form 'A') Maximum 20marks
(b) Experience in eligible similar nature of work during last seven years (Form 'B') Maximum 20 marks
(c) Performance on works (Form 'C') – Time over run Maximum 20marks
(d) Performance on works (Form D')-Quality Maximum 40marks
Total 100marks

(i) To become eligible for short listing the bidder must secure at least fifty percent marks in each (Section a, b, c & d) and sixty percent marks in aggregate.

(ii) The department, however, reserves the right to restrict the list of such qualified contractors to any number deemed suitable by it.

(iii) Note: The average value of performance of works for time over run and quality shall be taken on the basis of performance report and eligible similar works.

NIT No: e - 20/EE(E)/Vadodara/2021-22

FINANCIAL INFORMATION

(FORM 'A')

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

Financial Years	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
Gross Annual Turn Over	**Not Required**	**Not Required**			
Profit/Loss					

II. Financial arrangements for carrying out the proposed work.

Signature of Chartered Accountant with Seal

Signature of Bidder (s)

NIT No: e - 20/EE(E)/Vadodara/2021-22

Form "B-1"

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

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

Signature of Chartered Account

……..

Name of Chartered Accountant

……..

Membership No. of ICAI

Date and Seal

CPWD – 6	CPWD

CPWD-6 FOR e-TENDERING

1. Percentage rate tenders are invited on behalf of President of India invites online Percentage rate tenders in Two bid system from the Specialized Agencies who meet eligibility criteria given below in NIT for the following work.

Name of Work: - **Providing 100 kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**

~~The enlistment of the contractors should be valid on the last date of submission of tenders. In case the last date of submission of tender is extended, the enlistment of contractor should be valid on the original date of submission of tenders.~~

1.1 The work is estimated to cost **Rs.61,06,000/-.** This estimate, however, is given merely as a rough guide.

1.1.1 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids.

For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.

1.2 Intending bidders is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:-
Criteria of eligibility for submission of bid documents Conditions

~~1.2.1 **Conditions for Non-CPWD contractors only, if bids are also open to non- CPWD contractors. For works estimated cost up to Rs. 20 Crore** (the figure of Rs. 20 Crore may be modified as per bidding limit of CPWD class I/Group A contractors of respective discipline such as Electrical, Horticulture and Furniture etc. as the case may be)~~

~~**Note:-**~~

~~For works costing above Rs. 5 Crore but up to Rs. 20 Crore, (the figure of Rs. 5 Crore and Rs. 20 Crore may be modified as per bidding limit of CPWD class II/ Group B and CPWD Class I / Group A contractors respectively of respective discipline such as Electrical, Horticulture and Furniture etc. as the case may be) when bids are open to non-CPWD contractors also, then class II contractors of CPWD shall also be eligible if they satisfy the eligibility criteria specified in 1.2.1 above~~……**NOT APPLICABLE**

~~1.2.2~~ Criteria of eligibility for ~~CPWD as well as non- CPWD contractors~~ **Specialized Agencies**.(For specialized work).

~~For works estimated to cost above Rs. 20 Crore. (the figure of Rs. 20 Crore may be modified as per bidding limit of CPWD class I/ Group A contractors of respective discipline such as Electrical, Horticulture and Furniture etc. as the case may be)~~

A) Work experience

Three similar works each of value not less than Rs.24,42,400 /- or two similar work each of value not less than Rs.36,63,600/- or one similar work of value not less than Rs.48,84,800/- in last 7 years ending previous day of last date of submission of bids. (Modified vide OM No. DG/MAN/293 dated 31.10.2013) The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum, calculated from the date of completion to the last date of submission of bid. This is applicable for 1.2.1 as well 1.2.2. (Modified vide OM DG/MAN/284 dt. 13.8.2013)

Similar work shall mean works of "**SITC of Solar Power generation System of minimum capacity having 80 kWp."**
B) At the time of submission of bid contractor may upload the Annual financial statement for the last five year. **(Form "A")**

C**) An assurance on contractor's letter head duly signed stating "In case of lowest, I shall submit an undertaking rom the OEM of solar panel and invertor both along with PG i.e. within 15 days from the date of issue of letter of intent"**

(i) Authorization Certificate

(ii) The OEM shall unconditionally support-technically throughout the execution of contract as well as for maintenance for the useful life of the system.

(iii) OEM shall provide all the spares required for healthy functioning of the equipment for coming seven years from the date of supply of equipment's.

(a) Performance guarantee / warrantee against manufacturing defects of solar module to give minimum 90% of rated output for 10 years and to give minimum 80% of rated output for 25 (twenty five) years.

(b) Minimum seven years performance guarantee /warrantee to overload 150% for one minute Against manufacturing defect of invertor.

D) Should The bidder should submit Net worth Certificate of minimum **₹6,10,600/-** issued by the Certified Chartered Accountant (on the format prescribed in form B-1).

E) Certificate of registration for GST/ Undertaking as per provision of Sr. No. 3 of OM No. DG/MAN/374 dated - 05/07/2018.

F) Should not have incurred any loss in more than two years during the last five years ending 31st March 2021.

G) Performa for Earnest Money Deposit Declaration

H) Affidavit as per clause 1.2.3 of CPWD- 6.

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

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

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

~~But for such bids, Class- I contractors of CPWD are eligible to submit the bids without submission of work experience certificate and affidavit. Therefore, CPWD class-I contractors shall upload two separate letters for experience certificate and affidavit that these documents are not required to be submitted by them. Uploading of these two letters is mandatory otherwise system will not clear mandatory fields.~~

1.3 The work is estimated to cost **Rs.61,06,000/-.** This estimate, however, is given merely as a rough guide.

2. Agreement shall be drawn with the successful tenderer on prescribed Form No. CPWD – 7 (or other Standard Form as mentioned) which is available as a Govt. of India publication and also available on website www.cpwd.gov.in . Bidders shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
3. The time allowed for carrying out the work will be **06 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.
4. The site for the work is available.
5. The tender document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen from the web Site www.tenderwizard.com/CPWD or www.cpwd.gov.inor www.eprocure.gov.in free of cost.
6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of tender as notified.
7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.
8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the tender submitted earlier shall become invalid.
9. ~~**Earnest Money in the form of Treasury Challan or Demand Draft or Pay order or Banker's Cheque or Deposit at Call Receipt or Fixed Deposit Receipt (drawn in favour of Executive Engineer (Elect), SCED, CPWD, Surat -395007) shall be scanned and uploaded to the e-Tendering website within the period of bid submission.**~~

   ~~The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission (The EMD document shall only be issued from the place in which the office of receiving division office situated). The EMD receiving Executive Engineer shall issue a receipt of deposition of earnest money deposit to the bidder in prescribed format(enclosed) uploaded by tender inviting EE in NIT.~~

~~This receipt shall also be uploaded to the e- tendering website by intending bidder up to Specified bid submission date and time.~~

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

(i) Copy of Enlistment Order and other documents as specified in the press notice shall be scanned and uploaded to the e-Tendering website, within the period of bid submission. **However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of tender opening authority.**

Online bid documents submitted by intending bidders shall be opened of those bidders, **~~whose original EMD deposited with any division office of CPWD and other documents scanned and uploaded are found in order.~~**

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

i) The bidder is found ineligible.

~~(i) The bidder does not deposit original EMD with division office of any Executive Engineer, CPWD (The EMD document shall only be issued from the place in which the office of receiving division office situated).~~

~~(ii) The bidder does not upload all the documents as stipulated in the bid document **including the copy of receipt for deposition of original EMD.**~~

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

(iv) **If a Tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above / below on the total amount of the tender or any section / sub head in percentage rate tender , the tender shall be treated as invalid and will not be considered as lowest tender.**

12. The contractor, whose tender is accepted, will be required to **furnish performance guarantee of 3% (Three Percent)** of the tendered amount in favor of **"The Executive Engineer, VCD, CPWD, Vadodara"** within the period specified in Schedule F. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs.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 Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F' including the extended period if any. **The contractor shall be suspended for one year and shall not be eligible to bid for CPWD Tender from date of issue at suspension order.**

The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labor licenses, registration with EPFO, ESIC and BOCW Welfare Board and Programme Chart (time and progress) within the period specified in Schedule F.

13. Intending Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer 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 tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer 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.

14. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

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

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

17. The contractor shall not be permitted to tender for works in the CPWD Circle (Division in case of contractors of Horticulture / Nursery category) responsible. for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazette officer in the Central Public Works Department or in the Ministry of Urban Development. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

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

19. The tender for the works shall remain open for acceptance for a period of **Thirty (30) days** from the date of opening of tenders. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to suspended for one yearand shall not be eligible to bid for CPWD Tender from date of issue at suspension order. Further the tenderer shall not be allowed to participate in the retendering process of the work.

20. This notice inviting Tender shall form a part of the contract document. The successful tenderer /contractor, on acceptance of his tender by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:-

(a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender as uploaded at the time of invitation of tender and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

(b) Standard C.P.W.D. Form – 7 or other Standard C.P.W.D. Form as applicable.

Executive Engineer (E)
O/o EE (E), Vadodara, CPWD, Vadodara – 390 002

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

Tender for the work of : **Providing 100kWp Solar Photo Voltaic Power generation systems at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**

(i) To be uploaded by **03:00** P**M** on **30/06/2021** to upload at www.tenderwizard.com/cpwd

(ii) Technical cum Eligibility bid to be opened in presence of eligible tenderers who may be present at **03:30 PM** on **30/06/2021 in** the office of EE (E), Vadodara, CPWD, Vadodara.

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 respect with the specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for by, and in respect of accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for **Sixty (60) days** from the date of opening of technical bid in case tenders are invited on 2/3 bid system for specialized work and not to make any modification in its terms and conditions.

A sum of **Rs. Nil** is hereby forwarded in cash/receipt treasury Challan / deposit at call receipt of a Scheduled bank/Fixed deposit Receipt of Scheduled Bank/Demand Draft of a Scheduled Bank/Bank Guarantee issued by a Scheduled Bank as Earnest Money.

~~A copy of earnest money in receipt treasury challan/deposit at call receipt of a scheduled bank /fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank is scanned and uploaded~~. 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 suspend for one year and shall not be eligible to bid for CPWD Tender from date of issue at suspension. 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 suspend for one year and shall not be eligible to bid for CPWD Tender from date of issue at suspension. Further, If I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause **12.2 and 12.3** of the tender form.

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

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

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

Dated: -

Signature of Contractor

Witness: -

Address: -

Occupation: - **Postal Address: -**

ACCEPTANCE

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

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

(a)

(b)

(c)

For & on behalf of President of India

Signature

……

Dated:

Designation:
Executive Engineer (E)
O/o EE (E), Vadodara, CPWD, Vadodara – 390 002

PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities (as per PWD-3) **As per schedule of work attached.**

SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any: -Additional Conditions & Specifications attached

SCHEDULE 'E'

Reference to General Conditions of contract	**: General conditions of contract for CPWD works-2020 with amendment issued upto Date of submission of tender.**
Name of Work	**: Providing 100 kWp Solar Photo Voltaic Power generation systems at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**
Estimated cost of work	**: Rs.61,06,000/-**
(i) Earnest Money	**: Rs. Nil**
(ii) Performance Guarantee	**: 3% of tendered value**
(iii) Security Deposit	**: 2.5% of tendered amount**

SCHEDULE 'F'

(GENERAL RULES & DIRECTIONS) :

Officer inviting tender	**:**	Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002
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.**	**:**	See below.
Definitions	**:**	
2(v) Engineer -in- Charge	**:**	Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002
2(viii) Accepting Authority	**:**	Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002
2(x) Percentage on cost of materials and Labour to cover all overheads and profits	**:**	**15%**

2(xi) Standard Schedule of Rates : **Market Rate/ DSR - 18**
2(xii) Department : **Central Public Works Department.**

9(ii) Standard CPWD Contract Form GCC 2019, CPWD Form 7/ 8 as modified & corrected upto 17.07.2020 : **GCC 2020, CPWD Form 7 modified& Corrected up to date of submission of tender.**

Clause 1

(i) Time allowed for submission of Performance Guarantee, program chart (Time and progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance : **07 days**

(ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above …….. : **07 days (With late fee @ 0.1% per day of performance guarantee amount).**

Clause 2

Authority for fixing compensation under clause- 2 : **Superintending Engineer, CPWD, Vadodara.**

Clause 3A

Whether Clause 3A shall be applicable : **No**

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start Mile stone(s)as per table given below:- : **14 days**

Sl. No.	Description of Milestone	Time Allowed in days (from date of start)	Amount to be with-held in case of non-achievement of milestone
	NOT APPLICABLE		

Time allowed for execution of work : **06 Months**
Authority to decide
(i) Extension of time : Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002

(ii)Rescheduling of mile stones : Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002

(iii) Shifting of date of start in case of delay in handing over of site : Executive Engineer (E), O/o EE (E), Vadodara, CPWD, Vadodara 390 002

PROFORMA OF SCHEDULES Clause 5 Schedule of handing over of site

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

Clause 7

Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment : **Rs.05 Lakhs (₹Five Lac)**

Clause 7 A

Whether clause 7A shall be applicable : **Yes**

Clause 10A

List of materials to be provided by the contractor at his own expense. :

1. **Magger**
2. **Earth Tester**
3. **Lux Meter**
4. **Wire Gauge**
5. **Micro Meter**
6. **Vernier Caliper**

Clause 10B (ii)

Whether **Clause 10 B (ii)** shall be applicable : **No**

Clause 10C

Component of labour expressed as percent of value of work : **25%**

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**
Schedule of component of other Materials, Labour, POL etc. for price escalation. Component of civil (except materials covered under **clause 10CA)** /Electrical construction Materials expressed as percentage of total value of work	**:**	X m NIL %
Component of Labor		
Expressed as percentage of total value of work.	**:**	Y NIL%
Component of P.O.L.		
Expressed as percentage of total value of work.	**:**	Z NIL %
Clause 11		
Specifications to be followed for execution of work	**:**	**As per CPWD General Specifications for Electrical Works, Part-I Internal (2013), Part-II External (1994).**
12.2. & 12.3 Deviation Limit beyond which clauses12.2 & 12.3 shall apply for building work	**:**	**100%**
12.5 i)Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for foundation work (except items mentioned in earth work subhead in DSR and related items)	**:**	N.A.
ii) Deviation Limit for items mentioned in earth work subhead of DSR and related items	**:**	N.A.
Clause 16		
Competent Authority for deciding reduced rates	**:**	**Superintending Engineer, CPWD, Vadodara.**
Clause 18 List of mandatory machinery, tools & plants to be deployed by the contractor at	**:**	**1. Earth Tester** **2. Lux meter**

site

3. Wire Gauge
4. Micro meter
5. Vernier Calipers **Claus**
6. Insulation Tester LT/HT (Megger)

Clause 25

Constitution of Dispute Redressal Committee (DRC)	**Competent Authority to appoint DRC.**
Chairman	CE, Mumbai – I, CPWD, Mumbai-20 or his successor
Member	SE, (Works cum TLQA), O/o ADG, Region Mumbai or his successor.
Member	SE, Mumbai-II, CPWD, Mumbai or his successor.
Presenting Officer	Executive Engineer (E), CPWD, Vadodara or his successor, shall present the case but shall not have any part in decision making.

e 32

Requirement of Technical Representative(s) and recovery Rate

S. No	Designation	Discipline	Minimum Qualification	Minimum experience (years)	Number	Rate of recovery at following rates in case of noncompliance of Clause 36 (i)	
						Figures	Words
(i)	Project Planning / Site / Billing Engineer)	Mech. / Elect. Engg.	Graduate Engineer OR Diploma Engineer	2 years 5 years	ONE	15,000/- per month	Rs. Fifteen Thousand per month

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

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

Clause 38

(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.~~

(ii) ~~(i) Variations permissible on theoretical quantities:~~

~~(a) Cement~~

~~For works with estimated cost put to tender not more than Rs. 25 lakh.3% plus/minus.~~

~~For works with estimated cost put to tender more than Rs. 25 lakh. 2% plus/minus.~~

~~(b) Bitumin All Works~~

~~2.5% plus& only & nil on minus side~~

~~(c) Steel Reinforcement and structural steel 2% plus/minus.~~

~~(d) All other materials Nil~~

Executive Engineer (E), O/o EE (E), Vadodara,
CPWD, Vadodara 390 002

ANNEXURE – 20A.14

Information and instruction of Executive Engineer for e-tendering

1. The Executive Engineer of all divisions of CPWD should receive the original EMD for tender of other division.
2. The prescribed format of receipt of deposition of original EMD :-

Receipt of deposition of original EMD **(Receipt no.**……..……..……**/date**……**)**	
1.	**Name of Work: - Providing 100 kWp Solar Photo Voltaic Power generation systems at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.**
2.	**NIT No. : - e – 20/EE(E)/Vadodara/2021-22**
3.	**Estimated Cost :- Rs.61,06,000/-**
4.	**Amount of EMD :- Rs. Nil**
5.	**Last date of submission of bid :- 30/06/2021upto 03:00PM**
***To be filled by NIT approving authority / EE at the time of issue of NIT and uploaded along with NIT)**	
1.	**Name of Contractor :-**
2.	**Form of EMD:-**
3.	**Amount of EMD:-**
4.	**Date of submission of EMD :-**
	Signature, Name and Designation of EMD **Receiving officer (EE/AE(P)/AE/AAO)** **along with office stamp.**

3. The Executive Engineer receiving EMD in original form shall examined the EMD deposited by the bidder and shall issue a receipt of deposition of EMD to the agency in a given format uploaded by tender inviting EE. The receipt may be issued by EE/ AE(P)/AE/AAO.
4. The Executive Engineer receiving original EMD shall also intimate tender inviting Executive Engineer about deposition of EMD by the agency by E-mail/ fax/telephonically.
5. The original EMD receiving Executive Engineer shall release the EMD after verification from the e-tendering portal website (www.tenderwizard.com> tender free view> advance search>awarded tenders) that the particular contractor is not L- 1 tenderer and work is awarded.
6. The tender inviting Executive Engineer will call for original EMD of the L- 1 tenderer from EMD receiving Executive Engineer immediate.

Performa for Earnest Money Deposit Declaration

NIT NO.: e - 20/EE(E)/Vadodara/2021-22

Whereas, 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 after the opening of tender, I/we withdraw or modify my/our bid during the period of validity of tender (including extended validity of tender) specified in the tender documents.

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

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

Signature of the Contractor(s)

On non- Judicial stamp paper of minimum Rs. 100

(Guarantee offered by Bank to CPWD in connection with the execution of contracts)
Form of Bank Guarantee for Earnest Money Deposit /performance Guarantee/Security Deposit/Mobilization Advance

1 ~~Whereas the Executive Engineer……. (name of division)…….. CPWD on behalf of the President of India (hereinafter called "The Government") has invited bids under ..... (NIT number).....dated …….for..... (name of work) ……The Government has further agreed to accept irrevocable Bank Guarantee for Rs. .... (Rupees …….. only) valid upto ..... (date)***** ……..... as **Earnest Money Deposit** from ..... (name and address of contractor) ....,(hereinafter called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.~~

OR **

Whereas the Executive Engineer (name of division) CPWD on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number with .....(name and address of the contractor) ……..(hereinafter called "the Contractor") for execution of work..... (name of work)……..... The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. ..... (Rupees ..... only) valid upto ..... (date)..... as **Performance Guarantee/security Deposit/Mobilization Advance** from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We, ... (indicate the name of the bank) ……. (herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs…….....(Rupees ..... only) on demand by the Government within 10 days of the demand.

3. We, ... (indicate the name of the Bank) ……., do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees ..... only)

4. We,..... (indicate the name of the Bank) ....., further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending before any court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the contractor shall have no claim against us for making such payment.

5. We, ... (indicate the name of the Bank) further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions rerating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor

or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. We, ... (indicate the name of the Bank) ……,further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

8. We, ... (indicate the name of the Bank) ……,, undertake not to revoke this guarantee except with the consent of the Government in writing.

9. This Bank Guarantee shall be valid up to…… unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs.……(Rupees …….……only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date…….

Witnesses:

1. Signature.....

   Name and address

2. Signature…….

   Name and address

Authorized signatory

Name

Designation

Staff code no.

Bank seal

Terms and Conditions

Name of Work: - Providing 100 kWp Solar Photo Voltaic Power generation systems at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.

1.1 This specification covers designing, manufacturing, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of 100 kWp on grid PV solar power generation system complete with accessories etc. and final testing system.

1.2. The work is to be executed at **Aaykar Bhawan, Majura Gate, Surat.** The tenderer should in his own interest visit the site and get familiarize with the site conditions before-tendering.

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

1.4. The work shall be executed as per CPWD General Specifications for Electrical Works Part-I Internal (2013), Part-II (External-1994), Part-IV Sub-Station 2013**,** as per relevant IE Rules, BIS/IEC /ISMNRE guidelines and certified as per IEC 61215 and qualify IEC 61730 and IEC 61701 amended up to date and as per NIT wherever applicable, as per relevant IS and as per directions of Engineer-in-Charge. All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and Indian Electricity Rules, 1956 as amended up to date.

The technical specifications are to be read in conjunction with above and in case of variations technical specifications of tender document shall apply. Nothing extra shall be paid on account of additional features in the technical specifications as the same to be read along with schedule of quantities for the work. In case of discrepancy between the BOQ, List of Makes, Tech. Specifications, Drawings etc. the following order of preference shall be observed,:-

1. BOQ
2. List of Makes
3. Technical Specifications
4. Drawings
5. CPWD General Specifications
6. IS/ IEC/International Codes

There will be no deviation regarding technical specifications of the equipment's taken in the tender. However department may consider higher specifications if it meets our requirement.

1.4 The tenderer should, in its own interest, visit the site and get familiarized with the site Conditions before tendering

2.0 WORKS TO BE ARRANGED BY THE DEPARTMENT

Unless otherwise specified in the tender documents, the following works shall be arranged by the Department:

(i) Space for accommodating all the equipments and components involved in the Work. However, lock and key arrangement along with watch and ward shall be responsibility of the contractor.

3.0 WORKS TO BE DONE BY THE CONTRACTOR

Unless otherwise mentioned in the tender documents, the following works shall be done by the contractor and therefore, their cost shall be deemed to be included in their tendered cost whether specifically indicated in the schedule of work or not: -

i) Making good all damages caused to the structure during installation and restoring the same to their original finish.

ii) Minor building works necessary for installation of equipments, foundation trench and cable for making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc. as required.

iii) Painting of all exposed metal surfaces of equipments and components with appropriate colour.

iv) Tools and tackles required for handling and installation of equipments.

v) Protection required for the equipments from rain, dust storm etc. during transportation i.e. polythene cover and tarpaulin till completion & handing over to department.

vi) Necessary equipments for commissioning/site testing.

vii) Providing cement & concrete foundation as per manufacturer standard and approved the department.

4.0 INSPECTION AND TESTING:

4.1 a) Copies of manufacturer's routine and type test certificates of all the equipment, shall be furnished to The Engineer-in-charge .

b) The Major equipment like Solar PV Panels, Inverter and ACDB Panel shall be offered for initial inspection. The contractor will intimate the date of inspection well in advance.

4.2 After completion of the work in all respect the contractor shall offer the installation for testing and operation.

a) Installation of the Equipment shall be carried out under supervision of Engineer-in-charge.

b) All material required for the installation of the proposed Solar System shall be supplied in sufficient quantities so that the installation process is smooth. Any defective components, assemblies, sub-systems found during installations shall be replaced immediately. Nothing extra shall be paid for the same.

c) All tools required for installation shall be supplied by the contractor.

d) Test and measuring equipment required for carrying out the hardware tests during stage wise installation shall be supplied by the bidder whenever required.

e) The bidder shall supply all the software required for the purpose of performing installation tests. He shall indicate the details of the tests carried out by these programs on various parts of the proposed Solar system-Panels, inverter etc.

f) The Inspection and tests shall be carried out to ensure that the proposed Solar PV System performs as per the specifications laid out in this document. Testing and commissioning trials shall be given from all the parameters and features lay out above.

g) The following shall be submitted after commissioning of the system and during hand-over:

- Operation and Maintenance Manuals giving detailed procedure for Safe and Error free operation, basic Trouble Shooting and Emergency procedures and periodic Preventive Maintenance procedure to be adopted.
- Technical Reference Guide for the Equipment installed shall be provided.
- Reference Manuals, Installation guides and Users Manuals shall be provided for all the Software provided.
- All relevant test certificates shall be furnished by contractor . Contractor shall also furnish all such certificates issued by the original manufacturer towards guarantee of performance of all equipments supplied.

Additional Terms and Conditions and Technical Specifications

1. The Solar PV modules shall be handled with care during the course of installation work, any damage caused to the modules shall be made good by the contractor at his own cost.
2. Any damage caused to the civil structure due to installation work shall be got rectified / repaired by the agency at own cost.
3. All the safety procedures shall be followed.
4. The contactor shall ensure that

(i) System will provide daily MIS report on no. of units generated / consumed from Solar and grid sources (No manpower to be deputed)

(ii) Grid Tied system will have priority on Solar Energy Consumption.

5. The power generated shall be measured on power conditioning unit and atmospheric conditions **of** Aaykar Bhawan, Majura Gate, Surat Lat / Long 21° 17' N&72° 7" E **.**
6. The final payment shall be made after trial run of 7 days. During trial run the contractor shall log the readings of solar power generation and same shall be witnessed by the representative of department.
7. Engineering, electrical drawings and installations and O&M manuals , any other equipment required to complete the installation shall be handover after the completion to the department
8. All debris due to work shall be removed by the contractor & nothing extra shall be paid.
9. All the items to be used in the work shall be of good quality and will be got approved from the Engineer-in-Charge before usage in work.
10. The final approval of the make to be used in work shall be the discretion of Engineer-in-charge.
11. The contractor shall use any one of the makes for use in work as given in make list after getting the approval from the Engineer-in-Charge.

SCOPE OF WORK

Scope

1. Scope of supply & work includes all, design, engineering, manufacture, procurement & supply of equipment and materials, testing at manufacturers works, inspection, packing and forwarding, supply, unloading at site, associated civil works, services, permit, installation and incidentals, insurance at all stages, erection, testing and commissioning of **100 kWp Grid Interactive Solar PV power generating system** with associated equipments and materials **at Aaykar Bhawan, Majura gate, Surat**

2. Civil works shall be performed with respect to the following but not limited to:

i) Site grading, leveling, cleaning.

ii) Design and construction ofself supported module mounting structures having modules and for Inverters, panels etc.

3.Obtaining statutory approvals / clearances from Government Departments- GEB etc.

4. Submission of following documents drawings data design and engineering information to the EE (E), SCED, CPWD, Surat for review and approval in three copies.

i) Detailed technical specification of all the equipments.

ii) Design criteria.

iii) Design calculations.

iv) General arrangement an assembly drawings.

v) Contour plan for the area.

vi) Solar radiation data.

vii) Schematic diagram for entire electric system.

viii) G.A./ detailed layout drawings for all types of structures.

ix) Quality assurance plans.

x) Test report (for type, acceptance and routine tests) Module & inverter

xi) O & M instruction's manuals and its drawings.

4. All drawings shall be fully corrected to agree with the actual "as built" site conditions and submitted after commissioning of the project for record purpose.

6. VARIOUS SUPPLIES TO MEET OUT LOAD –

1. Grid supply : 3 Phase, 415 volts.

11. PRIORITY OF UTILIZATION OF SOLAR PLANT GENERATION FOR LOAD –

a) Solar plant shall be connected & synchronized to existing grid directly and generated load shall be supplied to local distribution system. Solar PV system is to be fed with in coming power.

The Grid connected Solar Photovoltaic System for the project supplied, installed and commissioned shall be guaranteed by the contractor for a minimum period of 5-

Five years from the date of successfully commissioning of the last system, in regard to quality of design, material, workmanship, quality of process/ manufacturing, performance, efficiency, installation, etc.

During this maintenance period the contractor has to repair/replace the defective part/s or the material/s or any or all Components of the System to make it in working condition

SECTION – III GENERAL SPECIFICATIONS OF EQUIPMENTS

1. GENERAL

1.1. The SPV array generally consisting of number of SPV modules that directly produces DC electricity power on receipt of solar radiation. This DC power is converted to AC power by inverter. The AC output of **100 kWp** solar plant at 415 V level will work in combination with GEB, feed existing LT system at **Aaykar Bhawan, Majura gate, Surat**. Modules may be connected in series or parallel to increase the voltage and current and to achieve the required solar array characteristics that will match the load.

1.2. The main objective is the high availability and reliability of the plant. In order to achieve the main objective, the following principles shall be adopted while designing system.

a) Solar PV Mono crystalline cells shall have high efficiency and the modules shall be of Indian origin.

b) The Stabilized output of solar Power plant shall be 100 kWp DC after One year. The bidder shall demonstrate the capacity of plant after One year from the date of commissioning of plant and shall also be part of guarantee. The security deposit shall be released only after the testing results are found satisfactory.

The bidder shall use adequate capacity of SPV module, Inverter, Junction boxes etc. to ensure generation of power as per design estimates. This is to be done by applying liberal de-rating factors for the array and recognizing the efficiency parameters of Inverter etc.

c) Contractor shall have to liaison with GEB to get the work inspected and to get net metering meter installed.

・ The output at Inverters (s) will be considered for verification purpose. Bidder shall indicate procedure and details of software or formula for demonstration of capacity of plant in tender itself. For other purpose the meter reading will be considered.

d) Selection of the equipment and adoption of a plant layout to ensure ease of maintenance.

e) Strict compliance with the approved and proven quality assurance norms and procedures.

f) Proper monitoring in the synchronizations which ensures the availability of power to the grid. Generation voltage of 415V has to fed to grid voltage at the point of interconnection.

g) Ripple content must not exceed 3% on DC side.

h) The power plant shall operate in parallel with the grid system which is infinite electrical system. Any faults not taken care will result in damage of only SPV power plant without affecting GEB grid infinite system. Thus the Solar Power Plant has to protect its equipment against any of possible fault or other disturbances from the grid.

1.3. The basic and detailed engineering of the plant will aim at achieving high standards of operational performance especially considering following:

a) Optimum availability of modules during the day time.

b) Ensuring module layout to prevent shading.

c) Selection of Inverter with high track record and readily availability of requisite spares.

d) Flat plate arrays are held fixed at a tilted angle and face towards the equator, are most common. The angle of tilt should be approximately equal to the angle of latitude for the site. A steeper angle increases the output in winter; while a shallower angle, more output in summer. It should be arranged in such a manner that optimize generation is achieved.

e) Based on the Solar insolation data, the solar PV system should be so designed that it shall take into account the mean energy output after allowing for various losses, temperature corrections, on an average day for each month of the year.

1.4. The bidders are advised to visit the site before designing the plant and offer their bid. The bidders are also required to incorporate all the system required for efficient operation of 100 kWp solar Plant in parallel with grid supply.

2 SPECIFICATIONS

2.1 The equipment and material for 100 kWp Solar Photovoltaic Power Plant with associate system (typical) shall include following but not be limited to the following: (Only The technical features of major equipment's are described here under).

Solar PV on grid System

General Description

1. In Solar PV on grid system SPV Mono crystalline modules to be supplied shall have minimum declared output of 330Watt peak or more. Number of modules to be supplied shall be worked out accordingly.
2. Stabilized output of the Solar Power Plant should not be less than 100 Kwp under Standard Test Condition after one year of operation from date of Commissioning of solar plant.
3. Each module shall have low iron tempered glass front for strength & superior light transmission. It shall also have tough multi-layered polymer back sheet for environmental protection against moisture & provide high voltage electrical insulation.
4. The module frame shall be made of hot dipped Galvanized (at least 85microns) Iron for mounting the PV modules. The thickness of section should not be less than 3 mm. The legs / columns of the structure shall be self-supported/ standing. The supports shall be design to given required orientation to take maximum ionization, absorb and transfer the mechanical loads to the ground properly.
5. SPV module shall contain Mono crystalline high power silicon solar cells. The solar cell shall have surface anti-reflective coating to help to absorb more light in all weather conditions.
6. The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement/material. The encapsulation arrangement shall ensure complete moisture proofing during entire life of the solar modules. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
7. The module frame shall be made of corrosion resistant materials having anodized aluminum or as per manufacturer standard.
8. Photo conversion efficiency of SPV Module should be greater than 16.50%. Module shall be made of high transmittance glass front surface giving high encapsulation gain.
9. Module rating is considered under standard test conditions; however Solar Modules shall be designed to operate and perform under site condition including high temperature &dust (sometimes).
10. All materials used shall be having a proven history of reliable, light weight and stable operation in external outdoor applications.
11. The PV module shall perform satisfactorily in humidity up to 100% with temperature between – 400C to + 850C. Since the modules would be used in a high voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect provided.
12. The Manufacturers / Contractors should confirm that they are supplying PV module using a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

i. Name of the manufacturer of PV Module
ii. Name of the Manufacturer of Solar cells
iii. Month and year of the manufacture (separately for solar cells and module)
iv. Country of origin (separately for solar cells and module)
v. I-V curve for the module
vi. Peak Wattage, Im, Vm and FF for the module 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
ix. Other relevant information on traceability of solar cells and module asper ISO 9000 series.

13. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP65 rated.
14. Necessary I-V curves at 25^0c, 45^0c, 60^0c and at NOCT are required to be furnished. Offers to provide PV module warranty of 10 years with no more than10%degradation in performance/output.
15. **Performance warranty of solar PV Panel should be 25 years with 90% during 1st 10 years and 80% during next 15 years.**

TECHNICAL SPECIFICATIONSFORHIGH EFFICIENCY PV MODULES

A. The Photovoltaic modules must be qualified as per IEC 61215 and in addition, the modules must conform to IEC 61730-1 and IEC 61730-2 requirements for construction & Part-2 requirements for testing, for safety qualification. The modules shall be RoHS compliant. The test certificates can be from any of the International Accredited Testing Calibration Laboratories
B. The PV Modules shall be "PID Free" and the certification of the same shall be submitted along with the modules by the supplier from a Internationally Recognized certification agency for PID testing.
C. The PV Modules shall be "LID Free" and there shall not any effect of LID on the modules in the first year of installation.
D. The PV Modules shall be Salt Mist Corrosion Tested Panels of min severity level 5 or above, since the modules may be installed very close to seashore or factories emitting pollutant gases or harsh environmental conditions.
E. The panel should have positive tolerance of Maximum output power and the maximum voltage shall not exceed 1000V. The negative temperature coefficient of power max shall be equal to or less than -0.3% per deg C temperature.
F. The PV modules shall be suitable for continuous outdoor use.
G. PV module shall be provided with frame of Anodized Aluminum (either Black or Other) channels for size and simplicity in installation offered as a single module or series parallel combination of modules. The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytic ally compatible with the structural material used for mounting the modules
H. The PV module shall use lead wire with weatherproof connector for output terminal.

TECHNICAL SPECIFICATION FOR INVERTER

1. Other important Features/Protections required in the INVERTER

SOLAR INVERTER

1. Solar inverter shall be grid interactive in nature and mainly consist of MPPT controller, inverter of rating 100 kWp each, associated control and protection devices etc., all integrated. It shall provide necessary protections for Grid Synchronization and Data Logging/Monitoring. The inverter should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of Grid.
2. The DC energy produced shall be utilized to maximum and supplied to the bus for inverting to AC voltage to extract maximum energy from solar array and provides 3-ph, 415V AC (-10% to +15%), 50+/-3% Hz. to synchronize with the grid.
3. The inverter shall be of very high quality having efficiency not less than 98% and shall be capable of running in integrated mode.
4. Degree of protection of the inverter shall be at least IP-65 for outdoor.
5. Provision for built in with data logging to remotely monitor plant performance through external PC shall be provided (only provision).
6. The inverter shall be designed for continuous, reliable power supply as per specification.
7. The inverter shall be capable of complete automatic operation, including wake-up, synchronization & shut down independently& automatically.
8. Both AC & DC lines shall have suitable fuses/MCB/MCCBs Metal Oxide Arrestors/surge arrestors and contactors to allow safe start up and shut down of the system. Fuses/MCB/MCCBs used in the DC circuit should be DC rated.
9. The inverter shall operate in sleeping mode when there will no power connected.
10. Protections:

- Over voltage both at input & output.
- Over current both at input & output.
- Over/under grid frequency.
- Heat sink over temperature.
- Short circuit.
- Protection against lightening.
- Surge arrestors to protect against Surge voltage induced at output due to external source.
- Any other protection in view of grid supply.
- Anti- Islanding Protection

11. It should have user friendly LED/LCD display for programming and view on line parameters such as:

- Inverter per phase Voltage, current, kW, kVA and frequency,
- Grid Voltage and frequency,
- Inverter (Grid) on Line status,
- PV panel voltage,
- Solar charge current and ambient temperature,
- Individual power stage heat sink and cabinet temperature,
- Solar Radiation (with external pyrometer with in scope)
- Inverter on
- Grid on
- Inverter under voltage/over voltage
- Inverter over load
- Inverter over temperature.

12. The inverter shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.
13. The inverter shall be able to withstand an unbalanced load conforming to relevant IEC standard and Indian electricity condition. The inverter shall include appropriate

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

14. The inverter shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay.

a) When the power available from the PV array is insufficient to supply the losses of the inverter, the inverter shall go to standby/shutdown mode.

b) The inverter control shall prevent excessive cycling of shut down during insufficient solar radiance.

15. Operation outside the limits of power quality should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are

i) Neutral voltage displacement

ii) Over current

iii) Earth fault

iv) Reverse power

In each of the above cases, tripping time should be very less.

16. The Bidder shall provide data sheet for inverter along with their offer as per Guaranteed Technical Particular.

17. Inverter shall be tested from the test centers / NABL / BIS / IEC accredited testing calibration laboratories.

18. Automatic morning wake-up and nightly shutdown

19. Inverter must have the feature to work in tandem with other similar inverters and be able to be successively switched ON and OFF automatically based on solar radiation variations during the day.

20. Array ground fault detection.

21. LCD and piezoelectric keypad operator interface Menu driven Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.

22. MOV type surge arresters on AC and DC terminals for over voltage protection from lightning-induced surges or else suitable arrangement shall be provided externally.

23. The inverter shall have AC /DC side dis-connector of appropriate rating or else suitable arrangement shall be provided externally Shall be provided with an isolating transformer.

24. All parameters shall be accessible through an industry standard communication link.

2. Electrical safety, Earthing and protection

2.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure is obligatory.

2.2 Galvanic Isolation: Galvanic Isolation is required to avoid any DC component being injected into the grid and the potential for AC components appearing at the array.

2.3 Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

2.4 Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

2.5 Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution. The INVERTER shall include an easily accessible emergency OFF button located at an appropriate position on the unit

2.6 The INVERTER shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with IEC 69042.

2.7 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise

3. General Features of Inverter:

3.1 Components and circuit boards mounted inside the enclosures shall also serve to identify the items on the supplied drawings

3.2 All doors, covers, panels and cable exists shall be gasket or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm. (about 3x8 inch).

4. The Solar on grid Inverter shall have a manufacturer's warranty of 7 year against manufacturing defects.

5. Operating Modes:

The following operating modes are to be made available: Night or Sleep mode: Where the inverter is almost completely turned off, with just the timer and control system still in operation, losses should not exceed 1 watts per 5 kilowatt.

a. Standby mode : Where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 10 watts)

b. Operational or MPPT tracking mode: The control system continuously adjust the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter stand-by mode when input power reduces below the standby mode threshold. Front Panel display should prove the status of the INVERTER, including AC Voltage, Current, Power output & DC Current, Voltage and Power input, pf and fault Indication (if any).

c. Drawing shall be submitted to the Engineer-in-charge for acceptance and approval before execution of work.

d. Design drawings with material selected shall be submitted for prior approval of Engineer in-charge. The bidder/manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings. The work will be carried out as per design approved by the Engineer-in-charge.

MODULE MOUNTING STRUCTURE (FIXED):

1) MS Galvanized mounting structure cold formed members 3 mm thick with galvanizing coating of 85 microns is to be used as per requirements of this project and maximum nos. of modules is to be installed in min. area.

2) The structure design shall be appropriate and innovative and corrosion resistant and electrolytic ally compatible with the materials used in the module frame, its fasteners, nut and bolts. The bidder may choose to offer module mounting structure as per their design fulfilling the detailed in NIT.

3) The module alignment & tilt angle shall be calculated to provide the maximum annual energy output to take maximum isolation. This shall be decided based on the location of array installation. Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions.

4) The Ground mounted structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the base properly. It should be less than 60 kg/m2

5) The mounting steel structure shall be as per latest BIS 2062 (amended up to date) and galvanization of mounting structure shall be in compliance of BIS 4759 (amended up to date).

6) Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

7) All fasteners, nut and bolts are made of Stainless steel - SS 304. (1 bolt+2 plain washers+1 spring washers+1 nuts all hot dipped galvanized. The structure shall be strengthened by CC foundation cubical block 400mmx400mmx400mm(nominal size)

8) PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Module fasteners/clamps shall be adequately treated to resist corrosion.

9) The array structure shall be grounded properly using as per CPWD specifications.

10) The support structure & foundation shall be so designed as to be fixed on the terrace to withstand speed 150 km/hr for wind zone of the location as given in relevant Indian wind load codes/ standards there shall be no requirement of welding or complex machinery at the installation site.

11) The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time and the minimum clearance of the structure from the roof level should be 450 to 500 mm. Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

ARRAY JUNCTION BOXES: (DCDB and associated accessories)

1. The junction box shall be dust, vermin, and waterproof for outdoor application IP 65 and made of Thermoplastic / Polycarbonate material.
2. The terminal will be connected to copper bus-bar arrangement of proper size to be provided with terminal blocks should be housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables.
3. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.
4. Each Array junction Box will have suitable Reverse Blocking Diodes of maximum DC blocking voltage of minimum 600 V with suitable arrangement for its connecting.
5. The Array junction Box will also have suitable surge protection device. Hinged door should be used with EPDM rubber gasket to prevent water entry.
6. The junction Boxes shall have suitable arrangement for the followings (typical):-

・ Combine groups of modules into independent charging sub-arrays.

・ Provide arrangement for disconnection for each of the groups.

・ Provide a test point for each sub-group for quick fault location.

・ To provide group array isolation.

7. The current carrying ratings of the junction Boxes shall be suitable with adequate safety factor, to inter connect the Solar PV system corresponding to 100 kWp.

AC DISTRIBUTION BOARD (ACDB)

1. The AC power output of the inverter shall be fed to the ACDB (metering panel & isolation panel) which also houses energy meter. The 415V AC output of the isolation panel shall be fed to the grid. AC energy is then synchronized with the grid and power is consumed by the grid.
2. ACDB shall be floor mounted panel type and shall have all the measuring instruments such as voltmeter, ammeter, frequency meter, Energy Meter {for measuring the deliverable unit {kWh}, selector switches etc as per specification mentioned in BOQ.
3. All the power cables shall be taken through top/ Bottom of the panel as per site requirement.
4. The ACDB shall fitted with suitable rating & size copper bus, MCCB, indicators for all incomer and outgoing terminals, LED, Multi-function meter to monitor & measure the power to be evacuated.
5. Nut & bolts including metallic shall have to be adequately protected against atmosphere and weather prevailing in the area.
6. Modifications/ addition if any, in existing L T panel shall be done at site for connection the supply from ACDB and covered in scope of Bidder.
7. The ACDB shall be made out of 2.00 mm thick & front cover 1.6 mm thick CRCA sheet steed.

EARTHING

a. Each array structure of the SPV shall be grounded properly. The array structure is to be connected to earth pits as per CPWD General Specifications. Junction boxes shall be connected to the main earthing conductor/ electrode.

b. Earthing system installation shall be in strict accordance with CPWD General Specifications Part-I internal 2013 as amended up to date.

c. Necessary Test Point provision shall be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.

d. Earth resistance of the earth pits shall be tested in presence of the representative of Engineer-in-charge.

LIGHTNING & OVER VOLTAGE PROTECTION

a. The SPV Power Plant should be provided with Lightning and over voltage protection connected to proper earth system. The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV or other sub-system components. The source of over voltage can be lightning or other atmospheric disturbance.
   Each array structure of the SPV shall be grounded properly. The array structure are to be connected to earth pits as per CPWD General Specifications. Junction boxes shall be connected to the main earthing conductor/ electrode.

b. Earthing system installation shall be in strict accordance with CPWD General Specifications Part-I internal 2013 as amended upto date.

BoS Item / component	**Applicable IEC/equivalent BIS standard**	
	Standard Description	**Standard Number**
Power conditioner/ Inverters	Efficiency Measurements Environmental Testing	EN61000–6-3 EN 50178
Cables	General test and measuring methods PVC insulated cables for working voltage upto and including 1100 V-Do- UV resistant for outdoor installation	IEC 60189 IS 694 / IS 1554 IS/IEC 69947

Switches/Circuit Breakers/Connectors	General Requirements Connectors - Safety	IS/IEC 60947 part I,II & III EN 50521
Junction Boxes/ Enclosures	General Requirements	IP 65 (for outdoor)/IP 21 (for indoor) IEC 62208
SPV System Design	PV Stand-alone Systems Design verification	IEC 61215 IEC 61730 IEC 61701
Installation Practices	Electrical installation of buildings requirements for SPV power supply systems	IEC 61730

GUARANTEE/WARRANTY

1. The successful firm shall submit the minimum 10(TEN) years Guarantee /Warranty against manufacturing defects of Solar module and minimum 07(SEVEN) years for inverter from OEM. All other equipment's shall be guaranteed, against unsatisfactory performance and/or break down due to defective design, workmanship or material, for a period of 12 months from the date of taking over the installation by the department. The equipment's or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in attending the defect/fault removed , the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in-charge in this regard shall be final.

2. Contractor shall warranty that all the equipment and material to be supplied under the contract are new and free from any defects and faults in material, workmanship and manufactured and are of highest grade and consistent with the established and generally excepted standards for the same type of equipment's and material and shall performing full conformity with the specifications and drawing. The contractor shall be responsible for any defect that may develop under the contract conditions and under proper use, arising from faulty material, design or workmanship such as corrosion, inadequate quality and quantity of material to meet equipment requirement, inadequate contact protection, deficiency in circuited sign and / or otherwise and shall remedy such defect sat its own cost when called upon to do so by the purchaser, who shall state in writing in what respect stores is faulty. The contractor shall warrant that if system deficiency are noticed in operation of the system for which software function are involved then the software update for correcting the deficiency shall be supplied free of cost for the purchaser. The warranty shall survive inspection or payment of complaints notified prior to such date twelve months after the stores have been taken over after successful commissioning of the entire equipment / system.

3. If it becomes necessary for the contractor to replace or renew any defective portion/portions of the equipment, so replaced or renewed or until the end of the abovementioned period of twelve month. If any defect is not remedied within a reasonable time the department may proceed to the work at the contractor's risk and expenses, after the contractor was informed by registered letter, without prejudice to any other right which purchaser may against the contractor in respect to such defect.

4. Replacement under warranty shall be made by the contractor free of all charges at site including freight, insurance incidental charges and installation.

5. With respect to parts needed to troubleshoot and maintain installation during the warranty period the contractor shall warranty the delivery of spares for at least Seven years. After this period the contractor shall inform CPWD form where the parts can be procured in case contractor is able to provide.

6. The tenderer shall Guarantee among other things, the followings :

   (a) Quality, strength and performance of the materials as per manufacturers standards.

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

   (c) Satisfactory operation during the defect liability guarantee period.

Net Meter

1. The bi-directional electronic energy meter (Net meter) will be installed for the measurement of import export of energy as per regulation of distribution company. Accuracy class of Net Meter should be minimum 0.5s.

2. The uni-directional solar meter shall be installed for the measurement of solar energy generation as per the regulation of distribution company.

3. Liasoning with local distribution authority (Torrent Power) will be the responsibility of the agency and any expenditure occurred will be reimburse by the department after producing payment receipt.

Comprehensive Maintenance

1. The system will be comprehensively maintained by the contractor with no extra cost for one year from the date of taking over by the department i.e., during warranty/guarantee period. Maintenance Schedule & Guidelines (during warranty period i.e., 12 months from the date of handing over)

The contractor has to depute experienced service engineer for checking the complete installations on regular basis or as and when required for period of one year from date of taking over of the installations by the department i.e during warranty / guaranty period, for which nothing extra shall be paid.

The following maintenance activities are to be carried out by deploying suitable staff –skilled technician and khallasi.

WEEKLY CHECK:

The contractor has to perform the weekly check at site by experienced technician including cleaning of the PV panels etc.

FORTNIGHTLY CHECK:

The contractor has to perform the fortnightly check of all installations, inverter, ACDB at site by experienced service engineer.

MONTHLY CHECK:
a) Inspect the modules /panels of the array for any damage.
b) Check the wiring for physical damage & also for any sign of excessive heating.
c) Check all the junction Boxes for covers and sealing
d) Check the nut-bolts of the mounting structure and array for proper torque & lightening
e) Inspect the modules /panels of the array for any damage.

QUARTERLY:
a. Check cells for discoloration or breakage.
b. Clean the modules/panels of the array for dust if required.
c. Check for all the connection and ensure that they are not loose.
d. Check &Verify that the array does not come under shadow during 9 to 15 hours.

23. COMPREHENSIVE MAINTENANCE DURING DEFECT LIABILITY PERIOD

1. The system will be comprehensively maintained by the contractor with no extra cost for one year from the date of taking over by the department i.e. during warranty / guaranty period.

2. Fortnightly Inspection/ Service of the equipments round the year by a service engineer covering physical examination of the equipments for healthy & smooth functioning of the equipments/system. Checking of the equipments for their satisfactory operation and performance and rectify the fault/ defects if any.

3. Preventive maintenance checks as per the standard recommendation of the preventive maintenance practice of the manufacturer and rectification/replacement of the deteriorated part are also covered.

4. Immediate fault rectification on lodging of complaint. The fault rectification shall be carried out by skilled staff. All fault rectification shall be done within reasonable time preferably within 24 hrs and all faulty equipments shall be collected from site and repaired equipments delivered at site.

5. Maintenance will also include:-
i) Providing on call services for any breakdown and rectification of fault within 24 hours of the reporting of the problem.

ii) Any delay in attending the complaints beyond 24 hours of lodging complaint will attract a penalty of Rs.1000/- per day.

iii) Travel, boarding, lodging and other incidental expenses of their staff that the successful bidder may need to incur during the course of such repair.
Note : All spare parts, tools and tackles, testing instruments, rubber parts if any etc. are deemed to be included in the scope of comprehensive maintenance contract.

6. The maintenance service provided shall ensure proper functioning of the SPV system as a whole to the extent covered in the contract. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided.
a) The bidder shall submit the preventive/Routine/breakdown maintenance schedule as per their standard practice along with the bid. However the scope shall also include activities such as regular cleaning and checking the health of the SPV system, cleaning of module surface, tightening of all electrical connection and any other activity that may require for proper functioning of the SPV system as a whole.

7. The bidder shall preserve all recorded data in either manually or through computer and shall submit to CPWD concerned office, quarterly.

8. During warranty period of 10 years for SPV modules, contractor shall check / inspect the complete system once every year in the month of March and submit the detail report of working of the system.

9. One line shall be added in terms and conditions "The manufacturing of all the equipment's shall meet the requirements as laid down in made in India policy."

The contractor shall use any one of the makes for use in work as below after getting the approval **from the Engineer-in-Charge.**

Item Description	Make and Model
PV Modules	Adani / Waaree / Panasonic / TATA
DCDB	Phoenix / Elmex / Havells/ Panasonic
Solar on grid Inverter	UTL / Luminious / Growatt/ ABB/Delta
MS / GI Channel	TATA / Jindal / Sail / Zenith
AC / DC Cable PVC / XLPE	Finolex / Polycab / RR kabel
DWC Pipe	Gemini / Rex / Supreme / Duraline
CPVC/uPVC heavy duty Pipe	Astral / Supreme / Ashirvad
String Combiner box	Hensel / Onexis
LIGHTENING ARRESTER	INDELEC / CPT / PURCELL / AIDITEC SYSTEM / TERCEL/JMV

Note:-In case make of any equipment or material is not specified in the NIT, the decision of the Engineer-in Charge in this regard will be final.

Executive Engineer (E),
O/o EE (E), Vadodara, CPWD, Vadodara 390 002

SCHEDULE OF WORK

Name of work: - Providing 100 kWp Solar Photo Voltaic Power generation system at Income Tax Office Building, Aayakar Bhavan, Majura Gate, Surat.

S. No.	Description of items	Qty.	Rate	Unit	Amount
1	Supply, Installation, Testing and Commissioning of on grid Solar Photovoltaic Power Plant conforming to MNRE specifications as amended, consisting of Mono/Poly Crystalline silicon solar cells, net metering facility, necessary protections, earthing, mounted on Aluminum/GI structure of suitable strength with following components complete as required:- a) Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730-Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 16.5%. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. b) Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 400 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 degree C. The PCU shall adjust the voltage and frequency level to suit the Grid Voltage Frequency. c) Data Monitoring System complete with accessories. d) Fixing of Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other accessories etc. as required. e) Lightning and surge voltage protection. f) Connections & Interconnections by supplying & fixing required size XLPE insulated copper conductor 1.1 kV grade armoured power and control cables between solar modules, main power cable to grid supply PCU unit along with supplying & fixing of necessary channel/conduit lugs and other accessories etc. as required.	100	61060	kWp	6106000.00
	Total Rs.				**6106000.00**

Executive Engineer (E),
O/o EE (E), Vadodara, CPWD, Vadodara 390 002