

**GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT
OFFICE OF THE EXECUTIVE ENGINEER (E)
CHENNAI CENTRAL ELECTRICAL DIVISION-III
CENTRAL P.W.D, CHENNAI-600 040**

NOTICE INVITING e-TENDER

NIT No: 92/EE(E)/CCED-III/2020-21/CPWD/CHN

Name of work :- Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

Estimated cost: - **Rs. 18,31,800/-**

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Note: Schedule of Quantities enclosed separately.

Certified that this e - NIT contains 1 to 66 Pages only.

**Executive Engineer (E)
Chennai Central Electrical Division-III,
Central P.W.D., Chennai-600 040.**

**INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING
PART OF BID DOCUMENT AND TO BE POSTED ON WEBSITE
(Applicable for inviting open bids)**

The Executive Engineer (E), CCED-III, CPWD, Thirumanglam, Chennai-40 on behalf of President of India invites **online percentage rate tender from approved and eligible contractors of CPWD Enlisted in Composite Category having work experience as stipulated / specialized agencies in Two bid system (Eligibility & Cost Bids)** for execution of the following **works**:

1	NIT No.	92/EE(E)/CCED-III/2020-21/CPWD/CHN
2	Name of work & Location	Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.
3	Estimated cost put to bid (in Rs.)	Rs. 18,31,800/-
4	Earnest Money (in Rs.)	Rs. 37,000/-
5	Period of Completion	3 (Three) Months
6	Last date and time of online submission of bid, Original EMD, copy of receipt for deposition of Original EMD , should be deposited either in the office of Executive Engineer inviting bids of Division office of any Executive Engineer, CPWD with in the period of bid submission. (Format of receipt of deposition of Original EMD is enclosed herewith for contractor use)	25-11-2020 up to 15.00 Hrs.
7	Time & date of opening of Eligibility bid.	25-11-2020 15.30 Hrs.

I. ELIGIBILITY CRITERIA: For Specialized firms

To become eligible for participating in the bid process the bidders shall satisfy the following Eligibility Criteria. (Applicable both for Enlisted Composite Category Contractor & Specialized Agencies)

- a) **Joint ventures / Consortium and Special Purpose Vehicles are not accepted.**
- b) Experience of having successfully completed works **(with in India)** during last 7 years up to previous day of last date of submission of tender, as given below
 - (i) One similar work of value not less than **Rs.14,65,440/-**.
(80% of ECPT)
 - OR
 - (ii) Two similar works each of value not less than **Rs.10,99,080/-** **(60% of ECPT)**
 - OR
 - (iii) Three similar works each of value not less than **Rs.7,32,720/-**. **(40% of ECPT)**

(Attach Purchase Order and Completion certificate)

C) Should have a solvency of Rs. 8,00,000/- (Scanned copy of original solvency to be uploaded) solvency not required if the agencies class –I (composite) registered contractor of CPWD.

Note: Experience of Joint ventures / Consortium and Special purpose vehicles are not accepted. Experience of subsidiary Companies is also not accepted. Experience (Both purchase order and completion certificate) in the name of the company applying for tender alone will be accepted (Except name changes).

“Similar work shall mean Supply, installation, testing and commissioning of Roof top Solar plants with or without allied works.”

Components of work executed other than those included in definition of similar work shall be deducted while calculating cost of similar work. The values of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of interest of 7% per annum, calculated from the date of completion to the last date of submission of Bid.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple interest rate of 7% per annum, calculated from the date of completion to the last date of submission of bid. For the purpose, “value of work” shall mean gross value of the completed work including the cost of materials supplied by the Government/Client, but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer or equivalent.

Bidders are required to submit TDS Certificates in Form 16-A & Form 26A in case the similar works are executed for a private body which shall form basis for establishing the completion cost of similar work executed by the bidder.

1. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
2. Information and Instructions for bidders posted on website shall form part of bid document.
3. The bid document consisting of 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 or www.cpwd.gov.in or www.eprocure.gov.in. **Free of cost.**
4. But the bid can only be submitted after uploading the mandatory scanned documents such as Processing Fee in favour of ITI Limited through their e-gateway by credit/debit card/internet banking or RTGS/NEFT Facility, **Modified: e-Tender Processing Fee Rs.100/- if registration with tender processing fee is continued,** shall be payable to M/s."ITI Limited" through their e-gateway by credit/debit card, internet banking or RTGS/NEFT facility and other documents as specified in **CPWD Form 6 failing which your tender will not be considered / opened.**

5. Those contractors not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website.
6. The intending bidder must have valid class-III digital signature to submit the bid.
7. Contractor can upload documents in the form of JPG format and PDF Format.
8. **The eligibility bid shall be opened first on due date and time as mentioned above. The time and date of opening of the Financial bid of contractors qualifying in the eligibility and submitted satisfactory particulars shall be communicated to them at a later date.**
- ~~9. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. if not submitted then the bid submitted earlier shall become invalid.~~
10. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion.
11. The Contractor shall submit any additional document / clarification sought after open of eligibility cum Technical bid, if so requested. Non submission of the additional documents so requested if any, itself will be a valid reason for rejection of eligibility cum technical documents.

12. A. List of documents to be scanned and uploaded within the period of bid submission:-

- a) **Documents in support of other eligibility criteria mentioned (Work experience).**
- b) **Certificate of Registration for GST and acknowledgement with up to date filed return.**
- c) **Notarized Affidavit of 'Non-black listing' by CPWD/State/ Central Department/PSU/Autonomous bodies as per Affidavit-I on Rs 100/- Stamp paper (Not earlier than six months from the date of opening of Notice Inviting Tender).**
- d) **Scanned copy of EMD documents and receipt for deposition of Original EMD**
- e) **Bank solvency certificate.**

B. Documents to be submitted by the successful tender on issue of LOI.

(These documents can be uploaded with the tender also)

1. Licenses/Registrations or proof of applying for labour licenses, registration with EPFO, ESIC.
2. Undertaking from original equipment manufacturer (OEM) in respect of warranty conditions mentioned under special condition for E&M works.
3. Undertaking for OEM in respect of technical support/AMC for items as mentioned under special conditions for E&M works.

The bid submitted shall become invalid if:

- i) The bidders is found ineligible.
- ii) The bidders does not deposit original EMD with Division office of any Executive Engineer, CPWD.
- iii) The bidders does not upload all the documents (as per Sl.No: 12a to 12e) as stipulated in the bid document.

GOVERNMENT OF INDIA
CENTRAL PUBLIC WORKS DEPARTMENT

No. 24(2)/CCED-III/2020-21/1145-48(H)

Dated:16/11/2020

To:-

www.tenderwizard.com/CPWD (Uploaded Schedule-A & relevant files on-line)

**Executive Engineer (E),
CCED-III, CPWD,
Chennai**

Copies to:-

1. Notice Board.
2. All EEs, CPWD, chennai
2. [www.tender](http://www.tenderwizard.com)wizard.com

Executive Engineer (E)

CPWD-6 FOR e-Tendering

Percentage rate bids are invited on behalf of President of India **from approved and eligible contractors of CPWD Enlisted in Composite Category having work experience as stipulated / specialized agencies in Two bids system** for execution of the following works:

Name of work :- Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

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

1.1 The work is estimated to cost **Rs. 18,31,800/-** This estimate, however, is given merely as a rough guide.

~~1.1.1 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids. For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.~~

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

Criteria of eligibility for submission of bid documents

~~1.2.1 Conditions for Non CPWD contractors only, if bids are also open to non-CPWD contractors. For works estimated cost up to Rs. 15 Crore (the figure of Rs. 15 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). Three similar works each of value not less than Rs. or two similar work each of value not less than Rs. or one similar work of value not less than Rs. (all figures rounded to nearest Rs.10 lac) in last 7 years ending last day of the month previous to the one in which the bids are invited.~~

Note :-

~~For works costing above Rs. 3 Crore but up to Rs. 15 Crore, (the figure of Rs. 3 Crore and Rs. 15 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.~~

~~1.2.2 Criteria of eligibility for CPWD as well as non-CPWD contractors.~~

~~For works estimated to cost above Rs. 15 Crore. (the figure of Rs. 15 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)~~

1.2.3 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.

2. Agreement shall be drawn with the successful bidders on prescribed Form No. CPWD 7/8 (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 **03 (Three) Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.
4. The site for the work is available.
5. The bid document consisting of ~~plans~~, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website www.tenderwizard.com/CPWD or www.cpwd.gov.in free of cost.
6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.
7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified.

7.A. No running account bill shall be Paid for the work till the applicable Labour license, registration with EPFO, ESIC and BOCW welfare board, whatever applicable are submitted by the contractor To the Engineer-in-charge. Registration with GST, TN is also mandatory. If the bidder has not obtained GST registration in TN state in which the work is to be taken up, **or as required by GST authorities** then in such a case the bidder shall **scan and upload** following undertaking along with **other** bid documents. "If work is awarded to me, I/we shall obtain GST registration Certificate **of the state, in which work is to be taken up** within one month from the date of receipt of award letter or before **release of any payment by CPWD, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on a/c of the work executed and / or for any action taken by CPWD or GST department in this regard**".

8. 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 (E), CCED-III, CPWD, Chennai-40 shall be scanned and uploaded to the e-tendering website with in the period of bid submission. **The original EMD should be deposited either in the office of Executive Engineer, CCED-III or division office of any Executive Engineer, CPWD with in the period of bid submission.**

The EMD receiving Executive Engineer shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format(enclosed) uploaded by tender inviting EE in the NIT. This receipt shall also be uploaded to the e-tendering website by the intending bidder up to the specified bid submission date and time.

A part of earnest money is acceptable in the form of bank guarantee also. In such case, 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 6 months or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

~~The physical EMD of the scanned copy of EMD uploaded shall be deposited by the lowest tenderer before the due date and time stipulated for opening of eligibility bid, failing which the tender shall be rejected forthwith.~~

~~The following undertaking in this regard shall also be uploaded by the intending bidders.~~

~~"The physical EMD shall be deposited by me/us with the EE calling the tender in case i/we become the lowest tenderer with in a week of the opening of financial bid otherwise department may reject the tender and also take action to withdraw my/our enlistment.~~

~~The intending bidder has to fill all the details such as Banker's name, Demand Draft/Fixed Deposit Receipt /Pay Order/ Banker's Cheque/Bank Guarantee number, amount and date.~~

~~The amount of EMD can be paid by multiple Demand Draft / Pay Order / Banker's Cheque / Deposit at call receipt / Fixed Deposit Receipts along with multiple Bank Guarantee of any Scheduled Bank if EMD is also acceptable in the form of Bank Guarantee.~~

(i) **Modified:** e-Tender Processing Fee – **As applicable** (including **12.0%** GST) **if registration with tender processing fee is continued**, shall be payable to M/s."ITI Limited" through their e-gateway by credit/debit card, internet banking or RTGS/NEFT facility.

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.

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

The bid submitted shall be opened at **15:30 Hrs** on **25-11-2020**.

9. The bid submitted shall become invalid if:

- i) The bidders is found ineligible.
- ii) The bidders does not deposit original EMD with Division office of any Executive Engineer, CPWD
- iii) The bidders does not upload all the documents (as per Sl.No:12a to 12f) as stipulated in the bid document.
- iv) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest tenderer in the office of tender opening authority.

10. **List of documents to be scanned and uploaded with in the period of bid submission:-**

- a) **Documents in support of other eligibility criteria mentioned (Work experience).**
- b) **Certificate of Registration for GST and acknowledgement with up to date filed return.**

- c) **Notarized Affidavit of 'Non-black listing' by CPWD/State/ Central Department/PSU/Autonomous bodies as per Affidavit-I on Rs 100/- Stamp paper (Not earlier than six months from the date of opening of Notice Inviting Tender).**
- d) **Scanned copy of EMD documents and receipt for deposition of Original EMD**
- e) **Bank solvency certificate.**

1. The contractor whose bid is accepted will be required to furnish performance guarantee of 5% (Five Percent) of the bid amount within the period specified in Schedule F. This guarantee shall be in the form of cash (in case guarantee amount is less than 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 Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving aforesaid performance guarantee.

The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/registrations or proof of applying for obtaining labour license, registration with EPFO, ESIC and BOCW welfare board and programme chart (time and progress) within the period specified in Schedule-F. The applicable and eligible amount of EPF & ESI shall be reimbursed on submission of documentary proof of payment provided same are in order.

11. Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
12. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including

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

13. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.
14. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
15. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/Nursery category) responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of 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.
16. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.
17. The bid for the works shall remain open for acceptance for a period of sixty (60) days from the date of opening of bids from the date of opening of financial bid (strike out as the case may be) if any bidders withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidders shall not be allowed to participate in the rebidding process of the work.
18. This notice inviting Bid shall form a part of the contract document. The successful bidders/contractor, on acceptance of his bid by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of:
 - a) The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
 - b) Standard C.P.W.D. Form 7/8 or other Standard C.P.W.D. Form as applicable. For composite Tender-**Not Applicable**

CPWD-7/8

CPWD

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

Tender for the work of:-

Name of work:- Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

Estimated cost: - **Rs. 18,31,800/-**

- i)** To be submitted online by the Contractor up to **15.00** hours on **25-11-2020** to the Executive Engineer (Elect), CCED-III, CPWD, Chennai-40
- ii)** To be opened in presence of tenderers who may be present at **15.30** hours on **25-11-2020** in the office of the Executive Engineer(Elect), CCED-III, CPWD, Chennai

Issued to

Signature of officer issuing the documents

Designation: **Executive Engineer (Elect), CCED-III, CPWD, Chennai-40**

Date of Issue - **11-2020**

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.

We agree to keep the tender open for (60) sixty days from the date of opening of financial bid ~~in case tenders are invited on 3 envelop system~~ and not to make any modification in its terms and conditions.

A sum of **Rs. 37,000/-** 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. If I/We, fail to furnish the prescribed performance guarantee within prescribed period. I/We agree that the said President of India or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/We agree that President of India or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of

that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form. Further, I/We agree that in case of forfeiture of Earnest Money & Performance Guarantee as aforesaid. I/We shall be debarred for participation in the re-tendering process of the work.

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

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

Dated:

Signature of Contractor

Witness:

Postal Address:

Address:

Occupation:

ACCEPTANCE

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

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

(a)

(b)

(c)

For & on behalf of President of India

Signature.....

Dated:

Designation.....

PROFORMA OF SCHEDULES**CPWD****PROFORMA OF SCHEDULES**

(Separate Performa for Civil, Elect. & Hort. Works in case of Composite Tenders)
(Operative Schedules to be supplied separately to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities (as per PWD-3) (attached separately)

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

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

SCHEDULE 'C'

Tools and plants to be hired to the contractor

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

SCHEDULE 'D'

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

COMMERCIAL AND ADDITIONAL CONDITIONS & TECHNICAL SPECIFICATIONS as per NIT

SCHEDULE 'E'

Reference to General Conditions of contract.

Name of work :- Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

- i) Estimated cost of work : **Rs. 18,31,800/-**
- ii) Earnest Money : **Rs. 37,000/-**
- iii) Performance Guarantee : 5% of tendered value
- iv) Security Deposit : 2.5% of tendered value.

SCHEDULE 'F'

GENERAL RULES & DIRECTIONS: Officer inviting tender : The Executive Engineer (Elect), CCED-III, CPWD, Chennai -40

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: The Executive Engineer(Elect), CCED-III, CPWD, Chennai.

2(viii) Accepting Authority: The Executive Engineer(Elect), CCED-III, CPWD, Chennai.

2(x) % on cost of materials and Labour to cover all overheads and profits: **15%**

2(xi) Standard Schedule of Rates: DSR (Electrical Part-1 – Internal & External) -**2018**

2(xii) Department : CPWD

9(ii) Standard CPWD Contract Form GCC 2014, CPWD Form 7/8 modified & Corrected up to the previous day of last date of online submission of tender.

Clause 1

(i) Time allowed for submission of Performance Guarantee, Programme chart (Time and progress) Applicable Labour license, Certificate of Registration EPFO, ESIC, if Proof of application for the same uploaded: **7 days**

(ii) Maximum allowable extension **with late fee 0.1% Per day of performance guarantee amount the Period provided in (i) above : 5 days**

Clause 2

Authority for fixing compensation under clause 2 : CE (Chennai Region)

Clause 2A

Whether Clause 2A shall be applicable: No

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start : **5 days**

Mile stone(s) as per table given below:

S.No.	Description of Milestone (Physical)	Time allowed in days(from date of start)	Amount to be with-held in case of non achievement of mile stone
		NIL	

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

Authority to decide:

(i) Extension of time : The Executive Engineer(E), CCED-III, CPWD, Chennai-40

(ii) Rescheduling of mile stones : The Executive Engineer(E), CCED-III, CPWD, Chennai

Clause 6, 6A

Clause applicable – **6A**

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:

Clause 7A: Whether clause 7A shall be applicable : Yes.

Clause 10A: List of testing equipment to be provided by the contractor at site lab.: Nil

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 10CA : Not Applicable

S.No.	Material covered under this clause	Nearest Materials (other than cement, reinforcement bars and the structural steel) for which All India Wholesale Price Index to be followed	Base Price of all Materials covered under clause 10 CA

* Base price of all the materials covered under clause 10 CA is to be mentioned at the time of approval of NIT.

Clause 10CC:

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

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 percent of total value of Work : Xm%

Component of Labour expressed as percent of total value of work : Y%

Component of P.O.L. expressed as percent of total value of work

Clause 11

Specifications to be followed : for execution of work:

- (i) CPWD General Specifications for Electrical works Part I Internal - 2013, as amended upto date.
- (ii) CPWD General Specifications for Electrical works Part II External - 1994, as amended upto date.

12.2. & 12.3 Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for building work : **30%**

12.5 Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for foundation work : Not applicable

Type of work: Original Work

Clause 16

Competent Authority for deciding reduced rates : **CE (Chennai Region)**

Clause 18

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

CLAUSE 25

CONSTITUTION OF DISPUTE REDRESSAL COMMITTEE: As approved by the competent authority and as available at the time

B. FOR TOTAL CLAIMS MORE THAN Rs.25 LAKHS

As approved by the competent authority and as available at the time

Clause 36 (I) Requirement of Technical Representative (S) and recovery Rate

Sl No	Requirement of Technical Staff- Qualification.	Designation of Technical Staff	Minimum Experience (Years)	Nos. (of Major+Minor component)	Rate at which recovery shall be made from the contractor in the event of not fulfilling provisions of Clause 36(i)	
					Figures	Words
1	Graduate Engineer or Diploma Engineer	Project Manager cum planning/quality /site/billing Engineer	2 or 5 respectively	1 of major comp	Rs 15000/- per month per person	Fifteen thousand and only

Clause 42 : Not applicable

- (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) Variations permissible on theoretical quantities:
- Cement
 - For works with estimated cost put to tender not more than Rs. 5 lakh. 3% plus/minus.
 - For works with estimated cost put to tender more than Rs.5 lakh. 2% plus/minus.
 - Bitumen All Works 2.5% plus & only & nil on minus side.
 - Steel Reinforcement and structural steel sections for each diameter, section and category 2% plus/minus All other materials. Nil

RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION : Not applicable

S.No.	Description of Item	Rates in figures and words at which recovery shall be
-------	---------------------	---

		made from the Contractor	
		Excess beyond permissible variation	Less use beyond permissible variation
1	Cement		
2	Steel Reinforcement		
3	Structural Sections		
4	Bitumen issued free		
5	Bitumen issued at stipulated fixed price		

Form of Performance Security (Guarantee)

Bank Guarantee Bond

In consideration of the President of India (hereinafter called "The Government") having offered to accept the terms and conditions of the proposed agreement between **Executive Engineer, Chennai Electrical Division, CPWD, Chennai-600040** and(hereinafter called "the said Contractor(s)") for the work..... (hereinafter called "the said agreement")having agreed to production of an irrevocable Bank Guarantee for Rs. (Rupees..... only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We, (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.
2. We,(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupeesonly)
3. We, the said bank further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.
4. We, (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in- Charge on behalf of the Government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We, (indicate the name of the Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
7. We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.
8. This guarantee shall be valid up tounless extended on demand by the Government Not withstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupees) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged. Dated theday offor.....(indicate the name of the Bank)

GUIDELINES REGARDING SIGNING OF INTEGRITY PACT BY THE BIDDER AT THE TIME OF SUBMISSION OF BID**Sub: Clarification regarding Introduction of Integrity Pact introduced vide OM No. CON 255 dated 23.05.2011**

A new provision of Integrity Pact (IP) was introduced in GCC-2020. It is mentioned that at the time of submission of bid, it shall be mandatory to sign the pact by the bidder failing which the bidder will stand disqualified from the tendering process and such bid would be summarily rejected.

Some field Units have raised their doubts regarding submission of duly signed Integrity Pact by the bidder at the time of submission of bid. In this regard it is clarified that :-

1. Submission of duly signed Integrity Pact by the bidder is applicable in case of manual tendering where e-tendering is not followed.
2. In case of manual tendering Executive Engineer should sign the first page addressed to the intending bidder at the time of issue of tender form and before submission of the bid, each bidder shall sign IP at respective places and submit the bid. If duly signed IP is not submitted by the bidder, such bid shall not be considered.
3. In case of e-tendering, Integrity Pact shall be treated in the same manner as other components of the bid document. In e-tendering, the intending bidder does not sign any document physically and entire bid document is submitted through digital signature. Since IP is a part of bid document no separate physical submission is required with other documents to be submitted in the office of tender opening authority. In addition to other component of bid document, the Integrity Pact shall also be signed between Executive Engineer and successful bidder after acceptance of bid. However in this case Integrity PACT required to be uploaded as per NIT eligibility.

Integrity Pacts

To.

.....
.....
.....
.....

Sub : NIT No. **92/EE(E)/CCED-III/2020-21/CPWD/CHN** for the work: **Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.**

Dear Sir,

It is here by declared that CPWD is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The Subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the integrity Agreement, which is an integral part of tender/bid documents, failing which the bidder/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

The declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity Agreement on behalf of the CPWD.

Yours faithfully,

Executive Engineer

Integrity Pacts

To.

Executive Engineer

.....

.....

.....

Sub : Submission of Tender Fee for the work of **Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.**

Dear Sir,

I/We acknowledge that CPWD is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed Integrity Agreement, which is an integral part of tender documents, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that **THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE** of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by CPWD. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, CPWD shall have unqualified absolute and unfettered right to disqualify the bidder/bidder and reject the tender/bid in accordance with terms and conditions of the tender/bid.

Yours faithfully,

(Duly authorized signatory of the Bidder)

To be signed by the bidder and same signatory competent / authorized to sign the relevant contract on behalf of Firm / Company.

INTEGRITY AGREEMENT

To be signed by the bidder and same signatory competent/authorized to sign the relevant contract on behalf of CPWD

This Integrity Agreement is made aton thisday of20.....

BETWEEN

President of India represented through Executive Engineer ,CHENNAI ELECTRICAL DIVISION , CPWD, CHENNAI-40 (Hereinafter referred as the '**Principal/Owner**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

And

.....

(Name and Address of the Individual/firm/Company)

through(Hereinafter referred to as the

(Details of duly authorized signatory)

"Bidder/Contractor" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

Preamble

WHEREAS the Principle / Owner has floated the Tender (NIT No)(hereinafter referred to as **"Tender/Bid"**) and intends to award, under laid down organizational procedure, contract for

.....

Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

hereinafter referred to as the **"Contract"**

AND WHEREAS the Principle/Owner values full compliance with all relevant laws of the land, rules, regulations, economics use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid boat the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as **"Integrity Pact"** or **"Pact"**). The terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under :-

Article 1 : Commitment of the Principal/Owner

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the Principal/Owner, personally or through any of his or her family members, will in connection with the Tender, or the execution of the Contract, demand , take a promise for or accept, for self or third person, any material or immaterial benefit which, the person is not legally entitled to.
 - (b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s)

confidential /additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.

- (c) The Principal/Owner shall endeavor to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) The Principal /Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2 : Commitment of the Bidder(s)/Contractor(s)

- 1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards and report to the Government /Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
- 2) The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution. :
- 3)
 - a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
 - b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - c) The Bidder(s)/Contractors will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, (For the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further in cases where an agent participate in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

- e) The Bidder(s)/Contractor(s) will, when presenting the bid, disclose(with each tender as per proforma enclosed) any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 4) The Bidder(s)/Contractor(s) will not instigate third person to commit offences outlined above or be an accessory to such offences.
- 5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice **means a willfull misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government Interests.**
- 6) The Bidder(s) /Contractors will not, directly or through any other person or firm use coercive practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/her reputation or property to influence their participation in the tendering process.)

Article 3 : Consequences of Breach

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) accepts and undertakes to respect and uphold the Principal/Owner's absolute right.

- 1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days notice to the contractor shall have power to disqualify the Bidder(s)/Contractor(S) from the Tender process or terminate/determine the contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the severity of transgression and determined by the Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) **Forfeiture of EMD/Performance Guarantee/Security Deposit:** If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated /determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3 (1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.
- 3) **Criminal Liability:** If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act or if the Principal/Owner has substantive suspicion in this regard, the Principal /Owner will inform the same to law enforcing agencies for further investigation.

Article 4 : Previous Transgression

The Bidder declares that no previous transgressions occurred in the last 5 years

with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.

- 1) If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings /holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.
- 2) If the Bidder/Contractor can prove that he has resorted/recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, its own discretion, revoke the exclusion prematurely.

Article 5 : Equal Treatment of all Bidders/Contractors/Sub Contractors

- 1) The Bidder(s) /Contractor(s) undertake to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Sub-contractors/Sub-vendors.
- 2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6 – Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period. Whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority, CPWD.

Article 7 – Other Provisions

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is the **Head quarters of the Division** of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this **Integrity Agreement/ Pact or Interpretation thereof shall not be subject to arbitration.**

Article 8 – LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the parties agree that this Integrity Pact will have precedence over the Tender/Contract documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....
(For and on behalf of Principal/Owner)

.....
(For and on behalf of Bidder/Contractor)

WITNESSES: \

1
(Signature, name and address)

2
(Signature, name and address)

Place :

Dated :

AFFIDAVIT-I

we undertake and confirm that our firm has not been blacklisted by any State/Central Departments/PSUs/ Autonomous bodies **during the last 7 years** of its operations. Further that, if such an information comes to the notice of the Department, then we shall be debarred for bidding in CPWD in future forever. Also, if such an information comes to the notice of department on any day before date of start of work the Engineer in charge shall be free to cancel the agreement and to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

**Signature of Notary with Seal
With Stamp and date**

**Signature of Bidder(s) or and
authorized Officer of the Firm.**

Receipt of deposition of Original EMD

Receipt No. Dt.		
1.	Name of Work*	Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.
2.	NIT No.*	<u>92/EE(E)/CCED-III/2020-21/CPWD/CHENNAI</u>
3.	Estimated Cost*	Rs. 18,31,800/-
4.	Amount of Earnest Money Deposit*	Rs. 37,000/-
5.	Last date of submission of Bid*	Upto 15.00 hrs on 25/11/2020
(* To be filled by NIT approving authority / EE at the time of issue of NIT and uploaded along with NIT)		
1.	Name of Contractor#	
2.	Form of EMD#	
3.	Amount of Earnest Money Deposit#	
4.	Date of Submission of EMD#	
Signature, Name and Designation of EMD receiving Officer (EE/AE(P)/AE/AAO)		

- i) The Authority receiving EMD in original form examines the EMD deposited by the bidder and issues receipt of deposition of earnest money to the agency in a given format uploaded by tender inviting authority. The receipt can also be issued by any subordinate gazetted authority as authorized by the EE/Engineer in Charge/DDH.
- ii) The authority receiving original EMD also intimates tender inviting authority about deposition of EMD by the agency by email/fax/telephonically.
- iii) The original EMD receiving authority releases the EMD to unsuccessful bidders after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier, 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 bidder and work is awarded.
- iv) The tender inviting authority calls for original EMD of the L1 bidder from EMD receiving authority immediately.

GENERAL, COMMERCIAL AND ADDITIONAL CONDITIONS

1.1 General

- 1.1 This specification covers manufacture, testing as may be necessary before dispatch, delivery at site, all preparatory work, assembly and installation, commissioning putting into operation of E & M installations.

1.2 Location: Work shall be carried out at CIBA, Muttukadu, Chennai.

The work shall be executed as per CPWD General Specifications for Electrical Works Part-I (internal) 2013, Part-II (external) 1994, and Part-IV (sub-station) 2013 as amended upto date, relevant I.E. Rules, BIS/IES and as per directions of Engineer- in-charge. These additional specifications/conditions are to be read in conjunction with above and in case of variations; specifications given in these additional conditions shall apply. However, nothing extra shall be paid on account of these additional specifications and conditions, as the same are to be read along with schedule of quantities for the work.

- 1.3 The tenderer should in his own interest visit the site and get familiarize with the site conditions be for e-tendering.
- 1.4 No T&P shall be issued by the Department and nothing extra shall be paid on account of this.
- 1.5 The makes/models and Cat. No. etc. mentioned in NIT are indicative only. The firms shall be responsible for providing the system fulfilling the specifications, capacity and all other related requirement of system ensuring compatibility between different items of work.
- 1.6 The firm shall be required to supply all the items of same make (among the list of approved makes) wherever available to ensure compatibility, proper matching and ease of maintenance.
- 1.7 Department reserves the right to accept the upgraded version of various items, if there is technological advancement with reference to these makes/models. The decision of department in this reference shall be final and binding on the firms.
- 1.8 The contractor shall discuss with EE(E) or his authorized representative / visit the site before placing the supply order / delivery of materials at site as per actual requirement as the actual Quantity of materials required may deviate (+/-) from the quantity taken in the schedule of Work/inventory**

of the agreement.

2.0 Commercial conditions

2.1 Type of contract

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

2.2 Submission of Tenders:-

- 2.2.1 Percentage rate tender in Two bid system.
- 2.2.2 Submission and opening of e-tender will be as per details given in the information and instructions for contractors for e-tendering posted in the website and CPWD-form 6 for e-tendering forming part of the NIT.
- 2.2.3 The tenderers are advised not to deviate from the technical specification/ items, commercial terms & Conditions of NIT like terms of payment, guarantee, arbitration clause, escalation etc.
- 2.2.4 In the price bid, there shall be no conditions whatsoever. In case any tenderer mentions any condition i/c conditional rebates in their price part, tender shall be rejected forthwith.
- 2.2.5 The department reserves the right to reject any or all the price bids and call for fresh prices/ tenders as the case may be without assigning any reason.
- 2.2.6 First the eligibility documents will be opened and evaluated and successful bidders shall be approved and price bids of only eligible bidders qualified in eligibility bid will be opened on the specified date.

- 3.1 Scrutiny/ evaluation of the Tenders (Price Bid) shall be done by the department. In case it is found that the Tenders (Price Bid) of a tenderer is not in line with NIT specifications/requirements, the department reserves the right to reject the price bid of such firm(s)

Terms of payment

- 3.2 Payment shall be made on the basis of running account bill as per progress of execution of work. **Stages of payment shall be as per followingg** on prorata basis:-
 - i) Against supply of material received at site in good condition-70%
 - ii) On completion of pro-rata installation-15%

- iii) On commissioning and completion of work-10%
- iv) After handing over along with Net Metering arrangement-5%

4.0 Security Deposit

- i) The security deposit shall be collected by deductions from the running bills of the contractor at the rate mentioned below.
- ii) A sum @ 2.5% of the gross amount of the each running & final bill shall be deducted till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions shall be made and held by government by way of Security Deposit unless the contractor has deposited the amount of security at the rate mentioned in cash or in the form of Government securities or Fixed Deposit Receipts. This is in addition to the performance guarantee that the contractor is required to deposit.
- iii) The security deposit shall be released after 12 months from the date of handing over of the Solar PV system in complete shape along with net metering arrangement.

5.0 Performance Guarantee

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

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

5.2 The contractor whose bid is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the bid amount within the period specified in Schedule F. This guarantee shall be in the form of cash (in case guarantee amount is less than 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 Earnest

Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee.

5.3 **Refund of Performance Guarantee:**

1% of the Performance Guarantee shall be refunded after successful completion of each year of DLP for a period of 5 years.

5.4 Income Tax, GST, labour cess& other statutory deductions etc. shall be made at source as per the prevalent laws. The deductions of Security Deposit, Income-Tax, GST etc. shall be done after calculation of the above due payments and net payment shall be arrived at accordingly.

6.0 Rates

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

6.1 No payment will be made to the contractor for any damage caused by rain, snow fall, floods, dampness, fire, sun or any other natural cause whatsoever during execution of work. The damage to the work due to above reasons, if any shall be made good by the contractor at own cost and no claim on this account shall be entertained.

6.2 Some restrictions may be imposed by the Client on the working and/ or movement of labour, materials etc. on account of security reasons. The contractor shall be bound to follow such restrictions/ instructions and nothing extra shall be payable on this account. No claim for idle labour shall be entertained.

6.3 The department will not issue Octroi exemption certificate.

6.4 The contractor has to carry out Operation & Routine maintenance of the Solar Photovoltaic power generation system by deputing man power for cleaning of solar PV module, checking & routine maintenance the system for satisfactorily operation as per manufacturer's standards, recording the various electrical parameters in log book, watch & ward for the system for a period of 60 months from the date of handing over i/c fortnightly visit by Engineer for

checking the healthiness of the system i/c repair/replacement of the defective part or to attend the major complaint whenever informed by the Department as per terms & condition attached. (Supply of spare parts shall be included in the scope of the work under guarantee period) from the date of handing over.

7.0 Completeness of Tender

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

8.0 Storage and Custody of Materials

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

9.0 Care of the Building

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

10.0 Completion Period

10.1 The completion period of **three months** indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc. i/c arrangement of materials & equipments, delivery at site including transportation, installation, testing, commissioning and handing over the entire system to the satisfaction of the Engineer-in-charge.

10.2 The Contractor shall be responsible for handing over the Inventory of entire system in operational to the Client/Department to the satisfaction of the Engineer-in-Charge before recording of completion Certificate & making the

final payment.

11.0 Guarantee

- 11.1 All equipment shall be guaranteed for a period of 60 months, from the date of taking over the installation by the department, against unsatisfactory performance and /or break down due to defective design, workmanship or material. The contractor shall stand performance guarantee of solar PV system supplied and installed by them for a period of 60 months from the date of the handing over of the installation. Hence, the performance guarantee deposited at the time of award of work will be released on pro-rata basis (1 % after completion of each year) after successful completion of performance guarantee period of **60 months**. The equipment or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. If the performance of Solar PV system found unsatisfactory during the guarantee period or contractor repeatedly fails to replace/repair the defective solar PV system within 15 days time after written complaint in this regard, the amount of performance guarantee shall be forfeited absolutely. The decision of the Engineer-in-charge in this regard shall be final & binding on the contractor.
- 11.2 The tenderer shall guarantee among other things the following:
- a) Quality, strength and performance of the materials used as per manufacturers standards.
 - b) Safe mechanical and electrical stress on all parts under all specified conditions of operation.

12.0 Power Supply

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

13.0 Acceptable Makes of Various Equipments

- 13.1 The acceptable makes of various equipments/components/accessories have been indicated in “List of Preferred Makes”. The tenderer shall work out the

cost of the offer on this basis. Alternate makes are not acceptable.

- 13.2 The firm will be required to procure material directly from the manufacturer/authorized dealers to ensure genuineness & quality and as per the approved makes only. Proof in this regard shall be submitted by the contractor.

14.0 The successful tenderer should furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipments regarding installation, adjustments operation and maintenance including preventive maintenance trouble shooting together with all the relevant data sheets, spare parts catalogue etc. all in triplicate.

15.0 **Extent of work**

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

- 15.2 In addition to supply, installation, testing and commissioning of complete installation, following works shall be deemed to be included within the scope of work to be executed by the tenderer as this is a turnkey job.

- a) Minor building works necessary for installation of equipments, foundation, making of opening in walls or in floors and restoring them to their original condition / finish and necessary grouting etc as required.
- b) The contractor shall not damage the existing water proofing while working on the terrace floor. Any damage caused to the water proofing/terrace flooring shall be made good at no extra cost.
- c) All supports for cables and MS channels for erection of panels etc as are necessary.
- d) Getting Local Body inspection done & obtaining approval for energizing the installation if required. However, necessary fees for inspection shall be borne by the Department.
- e) Small wiring, inter-connection etc. inclusive of all materials and

accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.

- f) Closing of the cable entry points in sub-station/D.G Set room/buildings to arrest seepage of water, rodents etc.
- g) Tools and tackles required for handling and installation.
- h) Necessary testing equipments for commissioning.
- i) Watch and Ward of materials and/or installation and equipments till their handling over to the department.
- j) Provision of supports/clamps for equipments, cables etc. wherever required.
- k) Arrangement of networking on requirement.

16.0 Inspection and Testing

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

17.0 Compliance with Regulations and Indian Standards

- 17.1 All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian standards related to the works covered by this specification. In particular, the equipment and installation will comply with the following:
 - i) Factories Act
 - ii) Indian Electricity Rules
 - iii) BIS & other standards as applicable
 - iv) Workmen's compensation Act
 - v) Statutory norms prescribed by local bodies, Power supply co., etc
- 17.2 Nothing in this specification shall be construed to relieve the successful tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with currently applicable

statutory regulations and safety codes.

- 17.3 Successful tenderer shall arrange for compliance with statutory provisions of safety regulations and departmental requirements of safety codes in respect of labour employed on the work by the tenderer. Failure to provide such safety requirement would make the tenderer liable for penalty of Rs. 500/- for each default. In addition, the department will be at liberty to make arrangement for the safety requirements at the cost of tenderer and recover the cost thereof from him.

18.0 Indemnity

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including their party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

19.0 Erection Tools

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

20.0 Cooperation with Client/Occupants

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

21.0 Painting

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

22.0 Maintenance

- 22.1 Sufficient trained and experienced staff shall be deputed to meet any exigencies of work during the guarantee period of Five year from the handing over of the installation.

23.0 Interpreting specifications

In interpreting the specifications, the following order of decreasing importance shall be followed in case of contradictions:

- a) Schedule of quantities
- b) Technical specifications
- c) General, Commercial and Additional Conditions
- d) Drawing (if any)
- e) MNRE Guidelines
- f) CPWD General specifications
- g) Relevant BIS codes or other international code in case BIS code is not available.

24.0 Warranty:

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

25.0 The scope of work for the bidder include obtaining No Objection Certificate (NOC) from Distribution Company (TANGEDCO) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing and commissioning of the grid connected rooftop Solar PV project

26.0 The support mounting structure / elevated structure & foundation of solar PV modules shall be so designed to withstand a wind speed 150 km/hr. The contractor shall arrange vetting/approval of the Structural drawing of mounting Structure/elevated structure for solar PV modules from Qualified structural Consultant/ IIT / NIT . He shall also arrange the visit of structural Engineer to ascertain that existing R.C.C slab is strong enough to take this additional load of mounting structure along with solar PV modules. All co-ordination and necessary fees for approval of drawings shall be paid by the Firm. Nothing extra shall be paid on account on this account.

SPECIAL CONDITIONS

1. The Contractor shall guarantee minimum generation of 1400 kWh per annum per kWp of commissioned generation capacity of Solar Power Plant. This shall be subject to the annual de-generation acceptable as per norms / Schedule of work failing which the recovery at Rs. 15/- per kWh of less generation shall be effected from the bills payable / Performance Guarantee / Security Deposit of the agency.
2. The trial run of electrical work / equipments shall be carried out by the firm in the presence of Engineer-in-charge or his representative at the site as per requirement of department.
3. The Power Purchase Agreement shall be taken up by Client / Engineer-in-charge or his representative (As per case may be) separately with **TANGEDCO**. The Contractor shall liaison with the **TANGEDC** for the approval and finalization of the PPA. The necessary documentation shall be done by the contractor.
4. The application for Net Metering / bidirectional meters shall be furnished by the client / department and necessary fees also shall also be paid by the Department. The Contractor shall liaison with the **TANGEDCO** for the necessary documentation and obtaining the Net metering arrangement. The agency has to liaison for obtaining the HT Net metering for **CIBA, Muttukadu, Chennai**.
5. **All equipments and materials to be used in work shall be manufactured in factories of good repute having excellent track record of quality manufacturing, performance and proper after sales service. The Department reserves right to inspect Solar PV Panels at factory/Manufacturers premises during the course of manufacturing at any stage and the department shall be provided with the proof of using the approved make of PV Cells in the manufacturing of solar PV Modules. The Contractor shall intimate the schedule of manufacturing of modules at factory prior to taking up in the production.**

TECHNICAL SPECIFICATIONS

SCOPE OF WORK

1. The scope of work involves design, supply, installation, testing and commissioning of complete Solar PV system as per BOQ and these specifications. The drawings along with detailed design and equipment datasheet shall be submitted for approval before starting the work. The work shall be carried out as per designs approved by the Department. The contractor shall submit the design of SOLAR PV system for each building immediately after the award of work.
2. The tentative capacity of Solar PV system is given below for guidance. **The power generated is intended to be used in the same building or nearby building or for the entire campus.** The LT Power Cabling shall be laid accordingly.

S. No.	Name of Building	Proposed Approx. Solar Power plant Capacity
1	Admin Block	15 kWp
2	Feed mill	15 kWp
	Total proposed Capacity	30 kWp

NOTE: ~~The Quantities given might increase or decrease as per the actual layout and design. The Capacity of each building may vary and shall be on actual basis. The inverter capacity and other accessories shall be decided upon final approval of the layout and capacities by the Engineer in charge.~~

3. The Solar PV module shall be installed on the existing roof / and elevated structure as per the site conditions and as per the drawing approved by the Engineer-in-charge.
4. The agency shall connect the output of the SPV module with 6 sq.mm SLPO copper cable to the inverter through the junction boxes. From the inverter, 4 x 16 sq.mm copper cable shall be connected to the AC DB / Panel as approved by the Engineer-in-charge. From the AC DB / Panel, the required size of LT cabling shall be provided as per the requirement and approval of Engineer-in-charge.
5. ~~The required LT cubicle Panel at Substation shall have to be provided by~~

~~the agency with suitable capacity of incomers and outgoings shall be planned and provided. The agency shall include the cost of the panel in the item itself and nothing extra shall be paid on this account. From the LT panel, Solar power will be fed to the main LT Panel of the Substation.~~

6. The Agency shall liaison and obtain HT Net metering at CIBA, Muttukadu, Chennai, Substation from the Electricity department. Required statutory charge will be paid by the department.
7. The agency shall provide 2 Nos. GI plate earthing for each building and to be connected to the Solar PV Panel, duly laid as per the CPWD Specifications and drawings shall be got approved from the department.
8. The agency shall provide required No. of GI plate earthing for each building for lightning protection with required number of G.I. finials, duly laid as per the CPWD Specifications and drawings shall be got approved from the department.

TECHNICAL SPECIFICATIONS: -

1. AMBIENT CONDITION & SOLAR INSOLATION

LOCATION / SITE DETAILS FOR THE SPV POWER PROJECT

- Address of site : CIBA, Muttukadu, Chennai
- Location : Tamilnadu
- Ambient temperature : 45°C max., 12°C min, 75% Humidity

CONTRACTORS ARE ADVISED TO VISIT THE SITE BEFORE QUOTING THE RATES. OTHERWISE IT WILL BE ASSUMED THAT THE PARTY HAS ALREADY VISITED THE SITE BEFORE QUOTING THE TENDER.

Bidders shall seek from relevant database / source, all the data pertaining to the ambient conditions like temperature, humidity, wind load, rain, weather condition and historical solar radiation etc., pertaining to the site location and optimize the design accordingly. All design calculations and installation details shall be submitted after the award of work.

2. EQUIPMENT SPECIFICATION

2.1 Solar PV Module (Electrical Features)

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

- | | | |
|--|---|--------|
| <input type="checkbox"/> Efficiency of cell, $E_{f,c}$ | - | >18% |
| <input type="checkbox"/> Efficiency of module, $E_{f,m}$ | - | >16.5% |

SPV module conversion efficiency should be equal to or greater than 18.0% (cell) under STC of 1000w/m² and cell operating temp of 250 C and AM 1.5 radiation. Modules must qualify to relevant IEC standards Part I and II for safety qualification testing.

Note: I-V curve of each PV module with Sl. Nos. should be submitted along with modules. Solar PV modules shall conform to IEC-61215 standards. Documentary evidence towards IEC- 61215 certification shall be submitted after award of work. Minimum following parameters should be provided:

- ☐ Maximum Power, P_{max}
- ☐ Minimum Power, P_{min}
- ☐ Open Circuit Voltage, V_{oc}
- ☐ Short Circuit Current, I_{sc}
- ☐ Voltage at Max Power V_{mp}
- ☐ Current at Max power I_{mp}
- ☐ Fill Factor, FF
- ☐ Efficiency of cell, $E_{f,c}$
- ☐ Efficiency of module, $E_{f,m}$

Necessary I-V curves at 25c, 45c, 60c and at NOCT are required to be furnished after award of work. Offers to provide PV module warranty of 20 years with no more than 10% degradation in performance/output over 20 years (0.5% every year).

The rated output power of any supplied module shall not have negative tolerance.

2.2 Solar PV Module (Mechanical Features)

Solar PV Module design will conform to following Mechanical requirement

- Toughened, anti reflective, low iron content, high transmissivity front glass.
- Anodized Aluminium Frame
- Ethyl Vinyl Acetate (EVA) encapsulate
- Silicon edge sealant around laminate
- Tedlar / Polyester trilaminate back surface
- ABS plastic terminal box for the module output termination with gasket to prevent water moisture.
- Resistant to water, abrasion, hail impact, humidity & other environment factor for the worst situation at site.
- By pass diode.
- Except where specified, the front module surface shall consist of impact resistant, low-iron and high-transmission toughened glass.
- The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytically compatible with the structural material used for mounting the modules.
- 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

2.3 Module mounting structure

Wherever required, suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design either I or L sections.

Structural material shall be corrosion resistant and electrolytic ally compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 80-100 microns on steel as per IS5905, if steel frame is used. Aluminum frame structures with adequate strength and in accordance with relevant BIS/international standards can also be used.

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

The structures shall be designed to allow easy replacement of any module & can be either designed to transfer point loads on the ground as per site conditions and design to be approved by CPWD.

Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions by way of Manual operation.

Each panel frame structure be so fabricated as to be fixed on the ground. The structure should be capable of withstanding a wind load of Min. 150 km/hr after grouting & installation. The front end of the solar array must be one meter above the ground. Grouting material for SPV structure shall be as per M 15(1:2:4) concrete specification.

The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the Contractor shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods.

The Contractor shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;

- a) Determination of true south at the site;
- b) Array tilt angle to the horizontal, with permitted tolerance;
- c) Details with drawings for fixing the modules;
- d) Details with drawings of fixing the junction/terminal boxes;
- e) Interconnection details inside the junction/terminal boxes;
- f) Structure installation details and drawings;
- g) electrical grounding (earthing);
- h) Inter-panel/Inter-row distances with allowed tolerances; and
- i) Safety precautions to be taken.

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

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

The array structure shall be made of hot dip galvanized MS angles of size not less than 50mm x 50mm x 6mm size. The minimum thickness of galvanization shall be at least 70 microns. All nuts & bolts shall be made of good quality steel.

The work should be completed with supply, fitting fixing of clamps, saddles, nut & bolts etc. While quoting the rate, the bidder may mention the design & type of structure offered. All nuts & bolts shall be made of very good quality steel.

The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements.

The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.

The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels & shall withstand heavy winds.

The supplier / manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.

The agency shall provide an elevated structure, wherever required as per site conditions, with G.I. pipe as per the drawing duly approved by the department. The agency shall also obtain the certification from the structural Engineer for withstanding a wind speed of 150 KMPH.

2.4 Junction Boxes

The junction boxes shall be dust, vermin and waterproof and made of FRP / Thermo Plastic. The terminals shall be connected to copper bus bar arrangement of proper size. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable marking shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. The junction boxes shall have suitable arrangement for the following:

- Combine groups of modules into independent charging sub-arrays that shall be wired to the controller.
- Provide arrangement for disconnection for each of the groups.
- Provide a test point for each sub-group for quick fault location.
- To provide group array isolation.
- The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.
- Metal oxide varistors shall be provided inside the Array Junction Boxes.

2.5 Power Conditioning Unit(PCU):

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

PCU shall include self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure.

Power conditioning unit will comply the following requirements.

- 415V AC \pm 5% 50Hz, 3Phase
- Overload capacity – 150% for 60sec.
- Output wave shape: sine wave with <3% total harmonic distortion (THD).
- Adjust the Voltage and Frequency Levels to suit the MAIN LT panel/feeder pillar BUS near the individual building.

2.6 MODES OF PCU

2.6.1 STAND BY MODE:

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

2.6.2 BASIC SYSTEM OPERATION (FULL AUTOMODE):

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

2.6.3 SLEEP MODE:

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

2.6.4 INVERTER

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

The typical specification of PCU is listed below:

a.	AC side	As per Tender design
i	Nominal AC Power	15 kWp
ii	Output AC Voltage (as per manufacturer practice)	415 V+/- 10%
iii	Frequency	50 Hz
iv	Total harmonic distortion	< 3% at nominal power
v	AC over / under voltage over voltage / under frequency	Yes
vi	Phase Shift (COS Phi)	1
b.	DC Side	
i	PV Power	Min 240 WP
ii	Maximum DC Voltage	800 V
iii	MPPT Voltage range	350 V - 800 V
iv	Maximum DC Current *	
v	DC voltage ripple	<3%
vi	DC over voltage protection	Yes
c.	Other Parameters	
i	Minimum efficiency (CE)	>97%

ii	Ambient temperature	0-50° C
iii	Humidity (Non Condensing)	95%
iv	Degree of protection for enclosure	IP 54
v	Dimension / Weight	As per Manufacture
vi	Noise level	< 65 dBA
vii	Cooling	Natural Air
viii	Input Range	420-850 V DC
ix	Power Factor	0.99
x	Input / Output cable Termination	Top

Other important Features/Protections required in the INVERTER

- Automatic morning wake-up and night shutdown
- PCU must have the feature to work in tandem with other similar PCUs and be able to be successively switched ON and OFF automatically based on solar radiation variations during the day.
- Mains (Grid) over-under voltage and frequency protection
- **Fool proof protection against ISLANDING.**
- Included authentic tracking of the solar array's maximum power operation voltage (MPPT).
- Array ground fault detection.
- LCD and piezoelectric keypad operator interface Menu driven Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.
- MOV type surge arresters on AC and DC terminals for over voltage protection from lightning-induced surges.
- INVERTER should be rated to operate at 0–55 deg. Centigrade unless provision for air conditioning is included in INVERTER
- All parameters should be accessible through an industry standard communication link.

Protection against lightning

Surge voltage induced at output due to external source Set point pre-selection for VAR control Remote control via telephone modem or mini web server Integrated protection in the DC and three phase system Insulation monitoring of the PV array Ground fault detector – which is essential for large PV generators in view of appreciable discharge current with respect to ground.

Over voltage protection against atmospheric lightning discharge to the PV array is required.

The power conditioner must be entirely self-managing and stable in operation. A self-diagnostic system check should occur on startup. Functions should include test of key parameters on startup.

2.6.5 DC distribution board/Array Junction Box

DC distribution board shall be provided in between solar array and PCU. The junction boxes shall be made of FRP / Thermo Plastic with impact resistant transparent cover, waterproof, dust free, vermin with IP65 protection. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. Array junction box shall have suitable reverse blocking diodes of minimum DC blocking voltage of 800 V with suitable arrangement for its connecting. The array box shall also have suitable surge protection.

The junction boxes shall have suitable arrangement for the following: Combine groups of modules into independent charging sub-arrays that shall be wired to the controller. Provide arrangement for disconnection for each of the groups.

Provide a test point for each sub-group for quick fault location. To provide group array isolation. The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.

By pass Diode

Fuses of suitable rating for Overloading protection of array section.

2.6.6 Surge protection system

The DIN channel mountable pluggable surge protection shall be installed in a network configuration, consisting of a single block MOV (Metal Oxide Varistor) based surge arrester having nominal surge handling capacity of 15 KA 8/20 μ s & maximum surge handling capacity of 30 KA 8/20 μ s to provide protection between (L+, L-, earth). All surge arresters in these network configurations shall be of same manufacturer. The Protection unit shall be based on Single block High Capacity Metal Oxide Varistors (MOV), capable of handling 15 KA 8/20 μ s surges and shall be able to give an indication in the event module

failure and shall be pluggable to facilitate the on-site replacement without disturbing the lines. One extra set of replacement protective device shall be furnished to the job site. Protection shall be manufactured to withstand a maximum continuous operating voltage of not less than 115% of normal RMS system voltage

2.6.7 AC Distribution Board (ACDB)

AC DB shall be provided in between PCU and loads.

3. APPROVAL & CLEARANCE

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

4. EARTHING AND PROTECTION

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

5. Cable and accessories

All the cables shall be supplied conforming to IS 694 & shall be of 650 V/ 1.1 kV grade as per requirement. Only FRLS PVC copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction boxes to DCDB, DCDB to PCU and PCU to main grid (TANGEDCO) etc. shall be so selected to keep the voltage drop and losses to the minimum and all cables are included in the scope of work. For DC connections, the cable shall be of XLPO type Solar cables.

Bidders are required to mention each size of cables used and should consider their resistance / impedance in the design optimization. Such calculation should be submitted along with the bid. The contractor shall supply all cables, installation accessories, which are required to install and successfully commission the power plant.

6. Space for Solar Array and Control room

The bidder shall give the details of array layout before execution for approval.

Bidders are advised to visit the site and conduct a survey for deciding the most suitable layout from the installation & maintenance point of view.

7. Type tests

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

8. Installation and commissioning

Detailed project execution program shall be submitted along with the offer. The contractor will be responsible for arranging all tools & plants for installation and commissioning the complete system.

The contractor shall also submit the erection, testing & commissioning procedure for approval to the owner. These procedures will form integral part of the acceptance report for successful erection and commissioning the system. These reports will be prepared and signed by contractor's representative & representative of Client/CPWD.

9. Packing, shipping and marking

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

10. Insurance

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

11. Inspection

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

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

12. Training & after sales service

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

13. Documentation

Three sets of installation manual / user manual shall be supplied along with each power plant. The manual shall include complete system details such as array layout, schematic of the system, inverter details, working principle etc.

Step by step maintenance and troubleshooting procedures shall be given in the manuals. The contractor shall supply three sets of soft copies (in CD form) of all documents including drawings and user manual and three sets in hard copy.

14. Standard to be followed:

PV Modules IEC 61215/ IEC61730

Power Conditioners IEC 61683/ IEC60068-2

Charge Controller/MPPT Units: IEC 62093/ IEC 60068-2

Cables IEC 60189/ IS 694/ IS7098

15. SPECIFICATIONS FOR PV PANEL SUPPORT/MODULE

MOUNTINGSTRUCTURE

Sl. No	Description	Specification Requirement
1	Material	Hot dip galvanized steel with min. 70 micron galvanizing Or as per manufacturer Standard Capable of with stand wind pressure
2	Thickness of member	Suitable wind Speed of 150 kmph. STAAD analysis to be submitted. (4mm minimum)
3	Over all dimensions	As per manufacturer standard
4	Wind rating	150 Km / hour
5	Tilt angle and adjustment	Tilt angle shall be calculated to provide the maximum annual energy output to take maximum insolation. This shall be decided based on the location of array installation.
6	Pitch of structure	Max. 7 Mtr or as per manufacturer standard
7	Hardware& fastener	SS 304
8	Foundation	The foundation of the array mounting structure / elevated structure shall be provided with 1:2:4 CC design as certified by

		the Structural consultant and approved by the department.
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16. PLANT METERING / DATA LOGGING

- a) PV array energy production: Digital Meters to log the actual value of AC/ DC Voltage, Current **One-way LT energy meter (Export metering) Class 0.2S ABT Compliant shall be incorporated in the system on the main AC Grid supply complete with electrical switchgear in the main plant.**
- b) Solar Irradiance: An integrating Pyrano meter should be provided, with the sensor mounted in the plane of the array. Readout should be integrated with data logging system.
- c) Wind Speed: An integrated wind speed measurement unit to be provided.
- d) Temperature Sensor: Integrated temperature sensors for measuring the module surface temperature, inverter inside enclosure temperature and ambient temperature to be provided complete with readouts integrated with the data logging system.
- e) A data logging system (Hardware and software) for plant control and monitoring shall be provided with the following features :
 - 1 No. suitable Computers (HP / DELL) : 3 GHz Pentium i7 latest with 1.0 TB HDD, 3GB RD RAM, 2 Parallel & 2 Serial Port, Wi-Fi Lan Card, DVD RW Drive , 20" LED display, USB Scroll Mouse, along with one All in one (HP) professional series 600dpi / 20ppm Desktop LaserJet printer along with one 0.6 KVA on-line ups with 12 V, 7 AH battery backup.

All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values. The following parameters should be accessible via the operating interface display.

AC Voltage

AC Output current

Output Power

DC Input Voltage

DC Input

Current Time

Active Time

Disabled Time

Idle

Temperatures

Inverter Status

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

17. DANGER NOTICE BOARDS

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

SCHEDULE - A**TECHNICAL PARTICULARS**

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

Name of work: Installation of Roof top solar plants over the Feed
mill and Conference hall at MES of CIBA,
Muttukadu, Chennai.

NIT No.:

Name of Contractor:

S.No.	Details of Particulars	To be filled by tenderer
(A) Solar PV Module		
1	Rated power range output at STC	
2	No. of solar cells in each solar PV module	
3	Voc/Isc	
4	MPP Voltage (Vmpp) V	
5	MPP current (imp) A	
6	Normal operating cell temperature	
7	Operating Temperature range	
8	Module dimensions (LxWxH) Appx.	
9	PV Module type	
10.	Min. efficiency of solar cell	
11.	Solar module frame material	
12.	Weather resistant junction	
13.	Front Glass	
14.	Glass iron content	
15.	glass transmissivity	
16.	Frame	
17.	Encapsulation	
18.	Trilaminate back surface	
19.	By-pass diode	
20.	Standard	
(B) Solar Inverter		
1	Type	

2	Max. DC Array Input Voltage	
3	DC voltage tolerance	
4	Type of solar charge controller	
5	Switching Device	
6	Continuous inverter output rating	
7	Output wave form	
8	total harmonic distortion	
9	Nominal AC output voltage and frequency	
10.	Output frequency	
11.	Grid frequency tolerance	
12.	Grid frequency synchronization range	
13.	No-Load losses	
14.	Power factor	
15.	PCU efficiency	
16.	Noise level	
17.	Certifications	
18.	Idle current	
19.	Regulation	
20.	Over load features	
21.	Cooling	
22.	Operating Temperature	
23.	Relative Humidity	
24.	LED/LCD display	
25.	Data Monitor and display controls	
26.	Protections	
27.	Enclosure Protection Safety	
28.	Warranty	
(C) Array Junction Box (DCDB)		
1	No. of module in series	
2	No. of module in parallel	
3	Switch gears	
4	Connectors	
5	Wiring	
6	Enclosure Protection	

7	Enclosure	
8	Size	
9	Capacity of each SPV panel and nos.	
	<u>(D) PANEL SUPPORT/MODULE MOUNTING STRUCTURE</u>	
1	Material	
2	Thickness of member	
3	Over all dimensions	
4	Wind rating	
5	Tilt angle and adjustment	
6	Peach of structure	
7	Hard wears & fastener	
8	Foundation	

(Signature of the Contractor)

ANNEXURE-A
LIST OF APPROVED MAKE OF MATERIALS FOR USE

- a) Approved makes **as approved by SDG (PR) vide Lr. No. 32/2/2019-NP/SDG(PR)/1046-56(H) dated 13.03.2020 (List under Annexure B).**
- b) **Materials shall satisfy the revised preference to make in India order issued vide Order No. P45021/2/2017-PP (BE-II) dated 04.06.2020 of the Ministry of Commerce and Industry, Government of India.**
- c) **Makes of Special Items in respect of this work**

S. No.	Component	Preferred make
1.	SPV Modules	HHV/ Panasonic/Emvee/ Renewsys / Waree
2.	Power Conditioning Unit	SMA (America)/Kaco/Ingeteam/ Delta/ Siemens/ABB
3.	SPV Cells	Q Cell Germany/Motech /Solar Tech/ Eton
4.	Accessories/Connecters	MC/ Tyco/ Solarlok
5.	Data logger/System performance	ABB/KACO /Energy Recommerce /Energy Tracking Ilc/SMA America/Schlumberger
6.	Grid Tied Inverter	Refusol / Schneider-Xentrex/ ABB /Kaco
7.	Indicating Lamps LED type and Push Buttons	Schneider / L&T/Siemens/Vaishno
8.	Digital Meters	Conzerv / L&T / AE / MECO
9.	LT Jointing Kit / Termination	Raychem /Mahindra/ M – Seal /3M
10.	Cable Glands Double compression with earthing links	COMET/DOWELLS / JAINSONS
11.	Bimetallic /Copper/ AluminiumCableLug	Comet/ Dowell's/ Jainsons

12.	MCB DBs/ MCB.s / MCCBs	Siemens/ Legrand / Schneider / Hager / ABB / L & T
13	UTP Data Cable	Legrand / Systimax/Commscope
14	GI pipes	SAIL / Jindal-Hissar/ TATA
15	Phenolic laminated sheet	Hylam/ Greenlam
16	XLPE aluminum / copper conductor cables	Universal / Finolex/ CCI/ Gloster/Havells/KEI /RR KABEL
17	Solar Cables(XLPO)	SICHEM / Havells / KEI

Note: 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.

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

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

Central Public Works Department
Standard Operating Procedures (SOPs) and
Guidelines for Construction Sites for
COVID-19 Outbreak

The following standard operating procedures and guidelines shall be followed:

A. General Guidelines:

1. Thermal Scanning of everyone entering and exiting a construction site will be done for fever with thermal scanners. If anyone leaves and re-enters the site during the shift, re-screening of the individual will be done prior to re-entry into the work site.
2. PPE and Other material requirement shall be provided as per requirement.
3. Provision for hand wash & sanitizer (touch free recommended) will be made at all entry and exit points and common areas (including at distant locations like higher floors). Everyone will be required to wash & sanitize his/her hands before entering the site and using PPEs. Same procedure to be followed after removing PPEs and exiting the premise. Sufficient quantities of all the items should be available at the site.
4. All Protocol including Emergency Response will be laid out. Periodic tailgate sessions will be arranged to review site protocols in view of highly dynamic scenario ensuring social distancing norms. During these sessions, everyone including workers will be informed about the safety guidelines and important updates. Necessary arrangements for announcements shall be made at every site.
5. Mandatory use of PPEs (face mask, hand gloves and other as applicable) by everyone entering the premise. Re-usable PPEs should be thoroughly cleaned and should not be shared with others.
6. Entire construction site including site office, labour camp, canteens, pathways, toilets, and entry / exit gates will be disinfected on daily basis. Housekeeping team should be provided with necessary PPEs.
7. There will be total Ban on non-essential visitors at sites (including from Head office staff, consultants etc.).

8. There will be strict ban on Gutka, Tambaku, Paan etc. on site and spitting shall be strictly prohibited.
9. Food should be consumed at designated areas only ensuring social distancing.
10. Common sitting arrangements should be removed.
11. Post lunch, waste should be disposed by individual in designated bins and area should remain clean.
12. Areas with a probability of bigger gathering, for eg. cleaning area, toilets etc. should be identified and all arrangements should be made to ensure social distancing.
13. A doctor will be present periodically (at least once a week) at site on allotted time for any medical assistance.
14. Appropriate signage at construction site spelling out safety practices in the language which is understood by all.
15. Hospital/clinics in the nearby area, which are authorized to treat COVID- '19 patients, should be identified and list should be available at Site all the time.
16. For any confusion, clarification and update, everyone should approach designated authority or rely on authentic source.
17. Rumours shall be discouraged and offenders be warned.
18. An isolation room shall be created at site.

B. Guidelines for Workers:

1. On day 0, before resuming the work on site post lockdown period, mandatory medical check-up will be arranged for all workers. The workers coming from outside will be quarantined for a period of at least 15 days. Only medically fit workers will be deployed at site and medical assistance will be arranged for unfit workers. Medical check-up camp should be arranged every month.
2. The labours staying at site will not be allowed to go outside. All the essential items will be made available to labours at site only. If necessary, the workers can go out wearing PPEs, after informing supervisor. Similarly, no outside labour will be allowed at site without following proper procedure and instructions.
3. Start time on site will be staggered to avoid congestion at the entry gates. Number of workers working at a particular time / place will be reduced by making arrangements for different shifts / areas. Accordingly, additional staff such as security guards, supervisors etc. will be deployed.

4. As in most cases, workers reside at the Sites, hence there is no need for any travel. For Workers staying outside, (which are always nearby) special transportation facility will be arranged without any dependency on the public transport system.
5. During attendance, training and other sessions, social distancing guidelines will be followed along with provision of no-touch attendance.
6. Workers should not shake hands when greeting others and while working on the site.
7. Workers shall avoid contact with sick people and avoid going to site if they are feeling sick, have fever, cough or shortness of breath. In such case, supervisor should be informed immediately.
8. Workers with such symptoms should not come to site and should be placed in isolation and medical assistance will be provided on immediate basis.
9. Mandatorily wear face masks while working on site. While not wearing masks, worker shall cover his mouth and nose with tissues.
10. Cough/sneeze should be done in the crook of one's arm and your elbow.
11. Avoid large gatherings or meetings of 10 people or more. Stay at least 6 feet away from others on job sites and in gatherings, meetings, and training sessions.
12. Not more than 2 persons (depending on size) will be allowed to travel in lifts or hoists. Use of staircase for climbing should be encouraged.
13. Workers should clean hands frequently by washing them with soap and water for at least 20 seconds. When hand washing isn't possible, alcohol based hand sanitizer with greater than 60% ethanol or 70% isopropanol should be used.
14. Workers should not share their belongings like food, water bottles, utensils, mobile phones etc. with others.
15. The utensils should be washed properly post use at designated place.
16. Post work, workers should change their clothes before leaving the site and clothing should not be shook out.
17. Avoid touching eyes, nose, or mouth with unwashed hands.

C. Guidelines for Material, Tools, Machinery, Vehicles etc:-

1. Wipe down interiors and door handle of machines or construction vehicles, the handles of equipment and tools that are shared, with disinfectant prior to using.

2. Non-touch waste bin with disposable garbage bag should be installed for waste collection at all common access areas.
3. Proper disposal of garbage should be ensured.
4. At all point of time, easy access to parking should be ensured since public transit is limited.
5. All construction material arriving at site should be left idle for 3 days before use to ensure safe usage.
6. All vehicles and machinery entering the premise should be disinfected by spray mandatorily.

D. Emergency protocol in case of detection of symptoms of COVID 19 to be observed by Project Manager of Contractor:-

1. Immediate shifting of worker to isolation room, inform the Engineer-in- charge CPWD or his Nodal officer.
2. Call for a doctor.
3. Keep worker under observation for a few days in isolation room, in case of doubt act per advice of local doctor.
4. COVID testing shall be arranged as per instruction of Doctor and if so advised by Doctor, move worker to Hospital.
5. Prevent rumours and take strict action against those who spread it.

**Executive Engineer(E),
CCED-III,CPWD,Chennai - 40**

CENTRAL PUBLIC WORKS DEPARTMENT
CHENNAI CENTRAL ELECTRICAL DIVISION-III

NIT No: 92/EE(E)/ CCED-III / 2020-21/ CPWD / CHENNAI -40

Name of work: Installation of Roof top solar plants over the Feed mill and Conference hall at MES of CIBA, Muttukadu, Chennai.

Schedule of Work

Name of Contractor					
Registration No. (Enlistment in CPWD)					
Validity - Period					
S.No	Description of Item	Qty	Unit	Rate in Figures	Amount
1	<u>Solar Photovoltaic Power Plant</u>				
	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 Aluminium/GI structure of suitable strength with following components complete as required:- a) Solar Photovoltaic Module of capacity 330Wp 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	30	kWp	61060.00	1831800.00

	<p>watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.</p> <p>b) Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 400 V AC, three phase, 4wire, 50 Hz +/- 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.</p> <p>c) Data Monitoring System complete with accessories.</p> <p>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.</p> <p>e) Lightning and surge voltage protection.</p> <p>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.</p>				
	Grand Total Rs.				1831800.00

**Executive Engineer (E),
CCED-III, CPWD,
Chennai-40.**