**HOMI BHABHA CENTRE FOR SCIENCE EDUCATION**
**Tata Institute of Fundamental Research**

*National Centre of the Government of India for Nuclear Science and Mathematics*
(Deemed to be University)

*V. N. Purav Marg, Mankhurd, Mumbai – 400 088.*
*Telephone: 22-6310 2300/2305/2555*
*E-mail: purchase@hbcse.tifr.res.in*
*Website: www.hbcse.tifr.res.in*

# NIT cum Tender Document (Two Part Public Tender) for

# Design, Supply, Installation, Testing and Commissioning of 177kWp On-grid rooftop Solar Power Plant at the main building terrace, Homi Bhabha Centre for Science Education - TIFR, Mankhurd, Mumbai – 400088.

**Date: January 20, 2026**
**(TENDER NO: HBC/PUR/PUBLIC TENDER 36/2025-26)**



**Seal and Signature of the Bidder**

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**Seal and Signature of the Bidder**

## SECTION 1: NOTICE INVITING TENDER

Ref: HBC/PUR/PUBLIC TENDER 36/2025-26 Date: January 20, 2026

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| **Design, Supply, installation, testing and commissioning of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education - TIFR, Mankhurd, Mumbai – 400088.** | **Estimated Cost = Rs. 70,78,500 (Incl. GST 8.9%)** |
| **Earnest Money Deposit (EMD): Rs. 1,41,570/-** (Rupees One Lakh Forty-One Thousand Five Hundred Seventy only) by way of Demand Draft in favour of "HBCSE" payable at Mumbai. Alternatively, this amount can be remitted by bank transfer. The details are as follows: HBCSE-TIFR Non Plan A/C, Account No.:1038019943 Bank Address: Central Bank of India Jigna Apartment, Sion-Trombay Road, Mankhurd, Mumbai – 400 088 IFSC Code: CBIN 0282523. | |

**Tender documents can be downloaded from HBCSE website: *www.hbcse.tifr.res.in/tenders* or Central Public Procurement Portal: https://eprocure.gov.in/epublish/app**

**All interested bidders are requested to attend the Pre-Bid Meeting at 11:00 AM on January 27, 2026 at Homi Bhabha Centre for Science Education, V. N. Purav Marg, Near Anushakti Nagar Bus Depot, Mumbai – 400 088. Contact person is Shri. Srikanth Banda (Tel No. 25072121, Email: banda@hbcse.tifr.res.in).**

Tender should reach us before or on February 09, 2026 **by 02.30 PM (BID DUE DATE)**

Tender (Technical bid only) will be opened on February 09, 2026 **at 03.30 PM.**

**The date and time of opening of financial bids will be conveyed to the Technically suitable bidders through Telephone / mail.**

Contract Period: **Six (06) Months** after the date of issue of Work Order/ LOI/ PO **or** date of completion of Handing Over taking over process whichever is latest.

Bids under **TWO Bid System** (Technical + Financial Bid) are invited on behalf of Centre Director, HBCSE Mumbai for award of contract for **Design, supply, installation, testing and commission of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education, TIFR, Mankhurd, Mumbai – 400088.** The details of the tender including the scope of work, technical specification, drawings (if applicable) etc. is given in this tender document. All the prospective bidders are requested to go through the tender document before submitting their bids.
Quotation sent by hand delivery/courier are to be deposited in the Tender Box kept at the Main Gate after obtaining stamp, date and signature of the Security Officer.

Tenders to be sent to:

**Head, Administrative Operations**

**Homi Bhabha Centre for Science Education**
**V. N. Purav Marg, Near Anushakti Nagar Bus Depot, Mumbai – 400 088.**

Bids sent by Fax/email shall be rejected straightway. The Centre reserves the right to accept/ reject the proposal either in part or in full without assigning any reasons.

Sd/-
**Head Administrative Operations**
**For and on behalf of Centre Director, HBCSE**



**Seal and Signature of the Bidder**

## SECTION 2: PRE-QUALIFICATION CRITERIA

Bidders are required to comply with the following eligibility criteria.

a. **Site Visit is Mandatory**

b. **Pre bid meeting is Mandatory**

c. Registration /empanelment /worked in past with Government organizations like CPWD, MES, Railways, State PWDs etc. /Semi Government organizations, PSUs etc. / reputed private organizations in appropriate class and having experience in execution of similar nature of works.

d. The contractor should have **zonal office** in **Mumbai, .**

e. Average annual turnover for the last 3 financial years should be at least Rs **70,78,500, /-** not having incurred any loss in more than 2 years during last 5 years ending 31st March, 2025.

f. Experience of having successfully completed the following works (during last **Five** years ending 31st March, 2025):

i. **One** similar order not less than Rs.**56,62,800**/-; Or

ii. **Two** similar works completed costing not less than Rs.**42,47,100**/- each; Or

iii. **Three** similar works completed costing not less than Rs.**28,31,400** /- each

**Similar works:** Shall means execution of **on-grid rooftop solar power plant and maintenance of solar power plant.** and misc. works of BOQ mentioned magnitude of quantities. The quality & satisfactory performance of the submitted work will be verified by HBCSE technical team if required by inspecting the said work.

➢ **Notes:**

1. The above (Pre-qualification criteria) should be supported by relevant documentary evidence like copies of work orders and completion certificates issued by clients indicating the detailed scope of work covering the above aspects, value of work, completion/commissioning dates etc., in support of meeting all the qualification criteria given as above.
2. Relaxation may be provided from the above-mentioned pre-qualification criteria (point 'c' & 'd') for the firms registered under MSME / NSIC.
3. The certificates submitted as evidence of works executed for private organization should be accompanied with TDS certificates. These certificates in addition to the certificates issued by the organization shall form the basis for considering experience of work executed for private organization.
4. The offers of the Bidders not meeting the pre-qualifying requirements and not producing supportive documents are likely to be rejected.
5. HBCSE reserves the right to verify the documents/ information submitted or inspect the installation done. The Bidder shall provide necessary facilities for this purpose.
6. Even though the Bidders meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representations in the forms, statements and attachments submitted in proof of qualification requirements; and/or record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, in case of blacklisting by any PSU/Govt. body, or financial failures etc.
7. The Contractor must confirm in writing that the spares supplied & installed by them shall be as per specification of goods and in case of any variation, the contract shall be liable to cancel immediately.
8. Competent Authority reserves right to accept or reject the offer in whole or in part after the assessment of technical bid and financial Bid.



**Seal and Signature of the Bidder**

## SECTION 3: INSTRUCTIONS TO BIDDERS

### A) General Instructions:

1. The Prospective bidder shall carefully examine and understand the specifications/conditions of the tender document/RFP and seek clarifications in writing if required, to ensure that they have understood all specifications/conditions of tender. These clarifications should be sought before submission of bids. If no such clarifications are sought in writing, it will be taken that the Bidder has read, understood and accepted all the terms, conditions and specifications in the tender document.

2. The Bidder is required to submit a copy of this tender document, with all pages signed by the authorized person, to confirm that Bidder has read and understood the conditions of this tender document and that the proposal is submitted in full understanding and agreement of the requirements of HBCSE.

3. The Bidder shall bear all costs associated with the preparation and submission of the Bid, and HBCSE will in no case be responsible for those costs, regardless of the conduct or outcome of the bidding process.

4. The complete bid will be as per the specified formats only. The bids should be without alteration or erasures, except those to accord with instructions issued by the HBCSE or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

5. The bidder shall submit only one option, which is best suitable to meet HBCSE requirements. The bids submitted with more options shall be liable to be rejected.

6. The Bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and HBCSE, shall be in English only.

7. Wherever a specific form is prescribed in the Bid document, the Bidder shall use the form to provide relevant information. If the form does not provide space for any required information, space at the end of the form or additional sheets shall be used to convey the said information. For all other cases, the Bidder shall design a form to hold the required information.

8. The Bidder shall explicitly indicate the non-compliance or deviation of the Solution offered in the Proposal to all the terms, clauses, conditions and specifications stipulated in this document. If non-compliance or deviation for any term, clause, condition or specification is not explicitly indicated, it will beconstrued as compliance and if successful in the bid, the bidder is obligated to comply with all the requirements (excluding those non compliances explicitly accepted by HBCSE in writing).

9. Successful bidder shall perform all the obligations specified in accordance with the terms and conditions laid down in the tender document. All details provided by the Bidder should be specific to the requirements specified in this tender document. Detailed clarification may be provided by Bidder, if so desired by HBCSE. The Bidder shall specify the responsibilities of HBCSE, if any, separately for the successful implementation of the project.

10. Bidder/Contractor should accept the instructions, guidelines, & clauses reinforced by HBCSE and conveyed to the vendor from time to time at any point of contract period.

11. **Bidder shall ensure that all documents are submitted with the technical bid. The bid should contain the following documents:**

i. Copy of PAN (Permanent Account Number) card.
ii. List of similar works in hand & works carried out by them for last 5 years indicating A) Agency for whom executed, B) Value of work, C) Completion time as stipulated and actual, or present position of the work
iii. Copy of Valid Electrical Contractor Licenses. Contractor should have license to carry out work in Maharashtra
iv. Experience testimonials along with work orders and completion certificates.
v. Certificate of Registration for GST, Audited Balance sheets signed by chartered accountant & Income Tax of up to date filed return.
vi. DD for EMD or in case of bank transfer the receipt for the same must be enclosed.
vii. Entire tender document (Inclusive of all Annexures), duly signed & sealed on every page by the contractor, along with technical information Annexures as per attached format and subsequent necessary supporting documents.



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viii. Shall have adequate technical manpower on its rolls in the form of skilled & unskilled staff. The details on the type of organization (i.e., sole-proprietor or partnership or company), organization matrix etc. shall be provided.

**B) Earnest Money Deposit (EMD):** An earnest money for **Rs. 1,41,570/- i.e. 2%** of the total estimated cost has to be deposited in the form of Demand Draft, Fixed Deposit Receipt, Banker's cheque or through online transfer through bank (Bank details to be provided on demand) in favour of '**Homi Bhabha Centre for Science Education' Mumbai'** and send along with the Technical Bid **(Part 'A').**After online transfer of earnest money, the vendor should intimate us by email or proof of online transfer of EMD should be part of tender. The firms registered under MSMEs can be exempted from submission of EMD as per rule 170 of GFR 2017, provided they must submit a **'Bid Securing Declaration'** in prescribed form as per **'Annexure VIII'**

EMD shall be interest free and it will be refunded to the unsuccessful bidders within 15 days after acceptance of Work Order by the awarded bidder without any interest. EMD will be forfeited if the bidder withdraws or amend impairs or derogates from the tender in any respect. **Kindly submit your bank details along with the tender like Cancelled Cheque/NEFT/Bank A/C details for ease in repayment of EMD.** For Successful tenderer the EMD shall be returned to the contractor, without any interest, after receiving of Performance Guarantee and for unsuccessful tenderers EMD will be refunded after placing the order on successful tenderer.

**C) Performance Bank Guarantee:** The tenderer, whose tender is accepted, will be required to furnish a performanceBank Guarantee of 5% of the WO value (of **'Bill of quantities**) within **7 (seven) working days** from the date of intimation. This Guarantee shall be in the form Demand Draft / Pay Order / Banker's cheque issued by a Scheduled Bank in favour of **'Homi Bhabha Centre for Science Education'**.

**The performance Bank guarantee shall be returned to the contractor, without any interest, after recording of the completion certificate for the work by the competent authority and submission of final bill by thecontractor as per the joint measurement within 60 days.**

The Engineer-in-charge shall make a claim under the Performance Bank guarantee for amounts to which the Centre Director, HBCSE entitled under the contract (notwithstanding and / or without prejudice to any other provisions in the contract agreement) in the event of: Failure by the contractor to pay Centre Director, HBCSE any amount due, either as agreed by the contractor or determined under any of the Clauses / Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in- charge. In the event of the contract being determined under provisions of any of the relevant clauses of the agreement, the performance bank guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Centre Director, HBCSE.

**D) Security Deposit:** The tenderer, whose tender is accepted, will also be required to furnish by way of Security Deposit for fulfillment of his contract, an amount equal to **2.5%** of the value of the work. The successful tenderer shall permit HBCSE at the time of making any payment to him for work done under the contract to deduct a sum at the rate of **2.5%** of the gross amount of each running bill. The Security Deposit shall be released after the successful completion of Defect Liability Period reckoned from the date of completion as certified by Engineer.

**E) Defect Liability period: Twelve (12) Months** from the satisfactory completion of entire tendered work.

**F) Acceptance of Tender:** The competent authority, on behalf of Centre Director, HBCSE, Mumbai, does not bind himself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all the tenders received, without assignment of any reason. All tenders, in which any of the prescribed condition is not fulfilled or any condition, including that of conditional rebates is put forth by the tenderer, shall be summarily rejected. The Competent Authority, on behalf of HBCSE, Mumbai reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest tender or any other tender. HBCSE is competent to reject any or all offers without assigning any reason whatsoever or to split the contract or to eliminate the portion of contract during the progress of work due to unsatisfactory work. HBCSE will not entertain any claim from the contractor as a result of such action on the part of the owner.

**G) Validity of Tender:** The tender for the work shall remain open for acceptance for a period of 180 days from the last date of submission of tenders. If any tenderer withdraws his/her tender before the said period, or before issue of Letter of Intent, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Department, then HBCSE, TIFR, Mumbai shall, without prejudice to any other right or remedy, the tenderer shall not be allowed to participate in the retendering process of the work.



**Seal and Signature of the Bidder**

**H) Levy / Taxes payable by contractor:** GST @8.9 % on materials and services in respect of this contract shall be payable by the contractor.

**I) Deduction of Income Tax:** Income Tax will be deducted as per Section 194-C of Income Tax Act 1961 and a certificate for the amount so recovered will be issued by the HBCSE Centre.

**J) Site visit by the bidder before tendering:** Bidders are required to inspect and examine the site and its surroundings during working hours and satisfy themselves before submitting their tenders, the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. The Bidder shall be deemed to have full knowledge of the site whether he/she inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

**K) Tenderer's responsibilities:** The tenderer shall be responsible for arranging and maintaining at his/her own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he/she has read this notice & all other contract documents and has made himself aware of the scope & specifications of the work to be done and local conditions and factors having a bearing on the execution of the work. Water and electricity shall be provided for the work by HBCSE-TIFR free of charge.

**L) Notification of amendments to the tender document:** If the technical specification requires any modification, suitable amendment to this tender document will be issued and the same will form part of the tender document. Prospective bidders are advised to regularly visit the HBCSE web site or the CPP portal. Corrigendum/amendments etc., if any, will be notified only on the HBCSE web site/CPP portal and no separate advertisement will be made for this.

HBCSE reserves its rights to amend any of the terms and conditions of the tender document. All such changes can be made up to one week before the last date of submission of bid. The notice of such amendment will be published on HBCSE website only. No separate advertisement will be issued in the newspapers for such changes/Corrigenda. All the prospective bidders are therefore requested to regularly visit HBCSE website for any such updates.

In case Bidder finds discrepancies or omissions from the specifications or other documents or has any doubt as to their meaning, he/she shall at once request in writing to the Head, Administrative Operations (HBCSE) who will issue interpretation and clarifications as he/she may consider necessary in writing as an addendum. Copies of such addenda, if issued, shall be signed by the Bidder and shall form a part of his bid. Verbal clarifications given shall not be binding on HBCSE.

**M) Signing of contract:** The Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his/her tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of: The Notice Inviting Tender, all the documents including all conditions, specifications and drawings, if any, forms the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

The successful tenderer / contractor, on acceptance of his/her tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of complete tender document including conditions, bill of quantities, drawings, if any, and acceptance thereof together with any correspondence leading thereto No payment for the work done will be made unless contract is signed by the contractor.

**N) Canvassing:** Canvassing either directly or indirectly, in connection with the tenders is strictly prohibited and the tenderssubmitted by the contractors who resort to canvassing will be liable to rejection and may be barred from the future participation in HBCSE- TIFR works.

**O) Contract Period: Six (06) Months after the date of issue of Work Order.**

**P) The terms** 'Municipal Corporation', 'Electricity Boards' etc. indicated in this tender shall also represent the 'Local statutory authority'/ 'State Govt.'/ 'Union Territory' etc., for works at different station.



**Seal and Signature of the Bidder**

## SECTION 4: GENERAL RULES AND DIRECTIONS

1. **NIT & its contents:** All works proposed for execution by contractor will be notified in a form of invitation to tender on HBCSE Website/CPP Portal. This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited, and the amount of the security deposit and Performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from the bills. Copies of the specifications, designs and drawings, schedule of quantities of the various descriptions of work and any other documents required in connection with the work signed for the purpose of identifications by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.

2. **Signing of Tender and receipts for payments:** In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-of-attorney authorising him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act 1952. Receipts for payments made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.

3. **Filling-up of tender:** Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other condition of any sort, including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tenders shall have the name and number of the works to which they refer, written on the envelopes. It will be obligatory on the part of the tenderer to sign all the pages of tender documents affixing his/her stamp. All rates shall be quoted on the proper form of the tender alone. All corrections shall be attested by the dated initials of the tenderer. Use of correcting fluid, anywhere in tender document is not permitted. Such tender is liable for rejection. If it is found that the tender is not submitted in proper manner or contains too much corrections and/or absurd rates or amount, it would be open for theCentre to take suitable disciplinary action against the Contractor. Bids prepared by the tenderer shall contain all requisite information along with self-attested supporting documents as per details in Technical Bid–Part I

   The Tender is consisting of two parts: **PART I- TECHNICAL BID & PART II- FINANCIAL BID**

   The bigger envelope must be super scribed **Tender for Design, Supply, installation, testing and commissioning of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education - TIFR, Mankhurd, Mumbai – 400088.**

   The two envelopes inside the bigger envelope & must be super scribed as:

   **i. Outer Envelope: Name of the Work, Tenderer's name & address with signature & seal**

   **ii. Envelope No-1:** The said envelope is for technical bid & shall contain annexure and relevant technical documents **- Technical Bid'.**

   **iii. Envelope No-2:** The said envelope is for Financial bid & shall contain BOQ only **- Financial Bid'**

   The tender must be placed in a properly sealed bigger envelope addressed to the **'Head Administrative Operations, Homi Bhabha Centre for Science Education, V. N. Purav Marg, Mankhurd, Mumbai – 400088'** and the said bigger envelope shall contain two sealed envelopes containing Technical & Financial bids.

4. **Opening of tenders:** The officer inviting tender or his/her duly authorised assistant will open the Technical bids first. In selecting technically suitable parties, the decision of HBCSE Scrutiny Committee will be final and binding to all the contractors. Financial bids of only those tenderers who qualify in the technical bid will be

opened. Intimation will be sent to through email/telephone/letter those tenderers who qualify in the technical bid. No correspondence in this regard will be entertained. Further the Financial bids may be opened in the presence of any intending tenderers who may be present at the time, and will enter the amount of the several tenders in a Comparative Statement in a suitable form.

The firms whose bids meet all the technical & financial conditions will be deemed eligible for being awarded a contract. A Committee will shortlist the eligible bidders and determines the L1 bid. Any Financial bid which is considered highly unreasonable will be discarded and such bids will be considered deficient and rejected as ineligible.

5. **Declaration by tenderer:** The tenderers shall sign a declaration under the Official Secret Act-1923 for maintaining secrecy of the tender documents, drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.

6. **Quoted rates to include all taxes (except GST):** Sales tax, VAT, Purchase tax or any other tax on materials in respect of this contract, including state Sales tax and Turnover tax on transfer of property as per Works Contract Act etc. if any, shall be payable by the contractor and Government will not entertain any claim whatsoever in respect of the same. As per the directives of the Sales Tax Authorities, the tax due at the rates notified by the State Government from time to time, shall be deducted from the bills payable to the Contractors, for which TDS certificate shall be issued by the Department.

7. **Filling-up of Financial Bid:** Unless otherwise called for, any tender containing percentage below / above the estimated cost put to tender is liable to be rejected. All rates shall be quoted on the tender form by the tenderers in figures and words shall be accurately filled in, so that there is no discrepancy in the rates written in figures and in words. The amount for each item should be worked out and requisite totals should be given. However,

   i) The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and considering more than fifty paise as rupee one.

   ii) If, in the price structure quoted in the financial bid, there is a discrepancy between the rates and total price (which is obtained by multiplying the rates by the quantity), the rates shall prevail, and the total price shall be corrected accordingly;

   iii) If there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail, and the total shall be corrected.

   iv) If there is a discrepancy between words and figures, the amount in words shall prevail.

   v) In event no unit price has been quoted for any item(s), leaving space both in figure(s), word(s), and amount blank, it will be presumed that the contractor has included the cost of this / these item(s) in other items and unit price for such item(s) will be considered as zero.

   If such a discrepancy is found, the same will be conveyed to the bidder and the bidder will be asked to respond by a target date. If the bidder does not agree to the Centre's observation, the bid is liable to be rejected.

8. **Action in case of un realistic rates:** In the case of any tender where unit rate of any item (s) appear unrealistic, such tender will be considered as unbalanced and in case the tenderer is unable to provide satisfactory explanation, such a tender is liable to be disqualified and rejected.
9. **Witnessing of a tender:** The tender for the work shall not be witnessed by a contractor or contractors, who himself/herself / themselves has / have tendered or who may and has / have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.

10. **List of works in hand:** The contractor shall submit list of works which are in hand / in progress in the form as per Annexure IV.



**Seal and Signature of the Bidder**

## SECTION 5: CONDITIONS OF CONTRACT

**A. DEFINITIONS:**

1. The **'Contract/ Agreement'** means the documents forming the tender and acceptance thereof and the formal agreement executed between the Competent authority on behalf of the Centre Director, HBCSE and the Contractor together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.

2. In the contract the following expression shall, unless the context otherwise requires, have the meanings as-

i) The expression **'Works'** or **'Work'** shall, unless there be something either in the subject or context repugnant to such work, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.

ii) The **'Site'** shall mean the land or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.

iii) The **'Contractor/ Bidder/ Vendor'** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personnel representative of such individual or the persons composing such firm or company or the successors of such firm or company and the permitted assignees of such individual, firm or company.

iv) The **'Engineer-in-Charge'** means the Engineer / Officer, who shall supervise and be in charge of the work

v) **'Centre/ Institute/ Department/ Owner'** shall mean the HBCSE-TIFR.

vi) **'Temporary Work'** means all temporary works of every kind required in or about the execution, completion and maintenance of the works.

vii) **'Accepting authority'** shall mean the Head, Administrative Operations, HBCSE-TIFR.

viii) **Excepted Risk** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by Government of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to Government's faulty design of works.

ix) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage to cover, all overheads and profits.

x) **Tendered value** means the value of the entire work as stipulated in the letter of award.

xi) **Site Cleaning/ Debris Removal/ Disposal** means cleaning of complete site with no dust left over and disposal of complete debris/ waste/ non usable material out of the campus premises as per the guidelines of the Municipal authorities and their approvals.

**B. Works to be Carried out:** The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Bill of Quantities shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognised principles.



**Seal and Signature of the Bidder**

**C. Sufficiency of Tender:** The Contractor shall be deemed to have satisfied himself/herself before tendering as to the correctness and sufficiency of his/her tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

**a.** If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

**b.** Any error in description, quantity or rate in Bill of Quantities or any omission therefrom shall not vitiate the contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract. the works.





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## SECTION 6: GENERAL CLAUSES OF CONTRACT

1. **Determination of contract:** Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his/her any other right or remedy against the contractor in respect of any delay, inferior workmanship, any claim for damages and /or any other provisions of this contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

i. If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstructor replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman-like manner shall omit to comply with the requirements of such notice for a period of 7 days thereafter.

ii. If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he/she will be unable to secure completion of the work by the date for completion and continue to do so after a notice in writing of 7 days from the Engineer-in-Charge.

iii. If the contractor fails to complete the work within the stipulated date or items of work with individ ual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.

iv. If the contractor persistently neglects to carry out his/her obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him/her in that behalf bythe Engineer-in- Charge.

v. If the contractor shall offer or give or agree to give to any person in HBCSE- TIFR or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for HBCSE-TIFR.

vi. If the contractor shall obtain a contract elsewhere as a result of wrong tendering or other non-Bonafide methods of competitive tendering.

vii. If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer-in-Charge. When the contractor has made himself/herself liable for action under any of the cases aforesaid, the Engineer-in- Charge on behalf of the Centre Director, HBCSE shall have powers:

a. To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence) upon such determination, the Security Deposit already recovered and Performance Guarantee under the contract, shall be liable to be forfeited, and shall be absolutely at the disposal of HBCSE-TIFR.

b. After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be unexecuted out of his/her hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work

viii. In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provisions aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he/she shall only be entitled to be paid the value so certified.

2. **Contractor liable to pay compensation even if contract is not determined:** In any case in which any of the powers conferred upon the Engineer-in-Charge under the contract, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor), use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof, belonging to the contractor, or procured by the contractor and

intended to be used for the execution of the work / or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final and binding on the contractor, his/her representative of the works, foreman or other authorised agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice); in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

3. **Time Extension for delay:** The time allowed for execution of the works as stipulated in the contract or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in contract. If the Contractor commits default in commencing the execution of the work as aforesaid, HBCSE-TIFR shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely. As soon as possible after the Contract is signed, the Contractor shall submit a Time and Progress Chart for each mile stone and get it approved by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and maybe amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate program has been agreed upon) to complete the work as per the mile stones given.
   If the Contractor/Supplier is delayed in the progress of the Works due to changes ordered in the Works, or by any other cause which the Engineer-in-Charge considers sufficient to justify such delay, the time for completion shall be extended by a reasonable period. No such extension shall be granted unless a written request for extension is submitted by the Contractor/ Supplier to the Engineer-in-Charge within **15 days** from the date of occurrence of the delay.
   **If the work(s) be delayed by:**
   i. Force majeure, or
   ii. Abnormally bad weather, or
   iii. Serious loss or damage by fire, or Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
   iv. Delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
   v. Non-availability of stores, which are the responsibility of HBCSE-TIFR to supplier.
   vi. Non-availability or break down of tools and plant to be supplied or supplied by HBCSE- TIFR or
   vii. Any other cause which, in the absolute discretion of the Engineer-in-Charge is beyond the Contractor`s control, then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

4. **Payments:** The payment will be released within 10-15 working days after the submission of the Running Account/ Final bills post corrections if any received from Engineer-In-Charge.

   Unless otherwise agreed to in writing between the Purchaser and the Contractor/Supplier, payment for the delivery/commissioning of the equipment/works approved by the Inspector shall be made as follows:
   a) **65%** of the contract price of each consignment shall be released **as soon as possible after site inspection**.
   b) **25%** of the contract price shall be released **after erection and installation**.
   c) The remaining **10%** shall be released **upon commissioning and testing**.
   d) In addition to the above, and without prejudice to any other remedies available under law or under the contract conditions, the **Purchaser shall have a lien** on each consignment for which 65% payment has been made. This lien shall secure refund of the said amount if it becomes refundable under the terms of the contract or applicable law, and shall further secure payment of any other dues arising under the contract or law.
   e) From the payments mentioned in (a), (b), and (c) above, a **Security Deposit @ 2.5% of the billed value** shall be deducted.

5. **Completion Certificate:** Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in- Charge and within fifteen days of the receipt of such notice, the Engineer-

in-Charge shall inspect the work, and if there is no defect in the work, shall furnish the contractor with a certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and / or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed, all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements, required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floors or other parts the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof, and not until the work shall have been measured by the Engineer-in-Charge.

6. **Contractor to keep site clean:** When the works are carried out, the splashes and droppings from white washing, color washing, painting etc. on wall, floors, doors, windows etc. shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc. where the work is done without waiting for the actual completion of all the other items of work in contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer- in-Charge shall give **10** days' notice in writing to the contractor.

7. **Payment of Final Bill:** The final bill shall be submitted by the contractor in the same manner as specified in interim bills within two months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer- in-Charge, will, as far as possible be made within the period specified herein-under, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized representative, complete with account of materials issued by the Department and dismantled materials. Penalty for any default will be deducted from the RA bills and Final bill as well.

8. **Deviations / Variations : Extent And Pricing:** The Engineer-in-Charge shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable duringthe progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in- Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which heagreed to do the main work except as hereafter provided.

a. **Deviation and Time Extension:** The time for completion of the works shall, in the event of any deviations resulting Page 14 of 44 Seal and Signature of the Bidder in additional cost over the tendered value sum being ordered, will be extended, if requested by the contractor, as follows:
   - **i.** In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value, plus
   - **ii.** 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

b. **Extra Items and Pricing:** In the case of extra item(s) which cannot be determined under the bill of quantities, the contractor may within fifteen days of receipt of order or occurrence of the item(s), claim rates, supported by proper analysis, for the work and the engineer- in charge shall within one month of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

   In the case of substituted items, the rate for the agreement items (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para:

c. **Substituted Items and Pricing:**
   - **i.** If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

**ii.** If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted) the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

**9. Foreclosure of contract due to abandonment or reduction in scope of work:** If at any time after acceptance of the tender, HBCSE-TIFR shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer- in- charge or competent authority shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he/she might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

The contractor shall be paid at contract rates full amount for works executed at site and in addition, a reasonable amount as certified by the Engineer-in-charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure.

i. Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office, storage accommodation and water storage tanks.

ii. HBCSE-TIFR shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided however, HBCSE-TIFR shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by HBCSE-TIFR, cost of such materials as detailed by Engineer-in- charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.

iii. If any materials supplied by HBCSE-TIFR are rendered surplus, the same except normal wastage shall be returned by the contractor to HBCSE-TIFR at rates not exceeding those at which these were originally issued less allowance for any deterioration or damage which may have been caused whilst the materials were in the custody of the contractor. In addition, cost of transporting such materials from site to HBCSE-TIFR stores, if so required by HBCSE-TIFR, shall be paid.

iv. Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable.

v. Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary. The contractor shall, if required by the Engineer-in-charge furnish to him/her books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition. The reasonable amount of items on (a), (c) and (d) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor`s materials at site taken over by HBCSE-TIFR as per item (b) above `Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-charge shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by HBCSE- TIFR from the contractor under the terms of the contract.

**10. Suspension of work:**

i. The contractor shall, on receipt of the order in writing of the Engineer-in-Charge or Competent Authority, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in- Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

**a.** On account of any default on the part of the contractor or;

**b.** For proper execution of the works or part thereof for reasons other than the default of the contractor; or

**c.** For safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-in-Charge.



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ii. If the suspension is ordered for reasons sub-para (i) above:

**a.** The contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

**b.** If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in sub-para (ii) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer-in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he/she intends to treat the suspension, where it affects only a part of the works as an omission of such part by HBCSE- TIFR or where it affects whole of the works, as an abandonment of the works by HBCSE-TIFR, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by HBCSE-TIFR, he shall have no claim to payment of any compensation on account of any profit or advantage which he/she might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in- Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

**11. Action in case of work not done as per specifications:**

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in- charge, his authorised subordinates in charge of the work and all the superior officers of the Department or any organization engaged by the Department for Quality Assurance and the contractor shall, at all times, during the usual working hours and at allother times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

**Contractor to supply tools & equipment's etc.:** The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), machinery, tools & equipment's. in addition to this, appliances, implements, other accessories, ladders, cordage, tackle and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work.

**12. Recovery of compensation paid to workmen:** In every case in which by virtue of the provisions of section 12 sub-section (1) of the Workmen's Compensation Act. 1923, HBCSE- TIFR is obliged to pay compensation to a workman employed by the contractor, in execution of the works, HBCSE-TIFR will recover from the contractor the amount of the compensation so paid; and, without prejudice to the rights of HBCSE-TIFR under Section 12, sub-section (2) of the said Act, HBCSE shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by HBCSE to the contractor whether under this contract or otherwise. HBCSE shall not be bound to contest any claim made against it under section 12, sub-section (1) of the said Act, except on the written request of the contractor and upon his giving to HBCSE full security for all costs for which HBCSE might become liable in consequence of contesting such claim.

**13. Fall Clause:** At any point of time if it is observed that the vendor is providing similar services BOQ mentioned work to other any organizations in similar Regions / Zones with similar terms and conditions and status of work at a lower rate than offered to HBCSE, then the vendor shall have to compensate HBCSE by paying the difference amount and downward revise the rate of respective services with immediate effect.

**14. Termination of contract in case of death:** Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer-in-Charge on behalf of the Centre Director, HBCSE shall have the option of terminating the contract without compensation to the contractor.

15. **Labour laws to be complied by the contractor:** The contractor shall obtain a valid license under the Contract Labour (R & A) Act, 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provision of the Child Labour (Prohibition & Regulation) Act-1998. The contractor shall also comply with the provisions of the building and other Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Workers Welfare Cess Act, 1996. Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non execution of the work.

16. **Minimum wages act to be compiled with:** The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, Contract Labour (Regulation and Abolition) Act, 1970 and rules framed thereunder and other labour laws affecting contract labour thatmay be brought into force from time to time.

17. **Settlement of Disputes & Arbitration:** Aṉy dispute arising from this contract will be referred to two arbitrators one to be appointed by you and one by us. The two arbitrators, in the event of their disagreement will appoint an Umpire. The decision of the Umpire shall be final and binding. The arbitration will proceed as per Indian Arbitration Act, 1940, as amended up to date. Mumbai city will be the jurisdiction for the settlement of all court/ arbitration and related matters.

18. **Confidential Information:** The drawings, specifications, proto-type, samples and such other information furnished to the contractor relating to the supply / work, sub-systems / equipmentetc. are to be treated as confidential which shall be held by the contractor in confidence and shall not be divulged to any third party without the prior written consent of the Department. The contractor, therefore, binds himself, his successors, heirs, executors, administrators, employees and the permitted assignees or such other persons or agents directly or indirectly concerned with the work / supply to the confidential nature of the drawings, specifications, proto-type samples etc. It is a further condition of the contract that the contractor shall not, without prior written permission from the Centre, transmit, transfer, exchange, and gift or communicate any such confidential information, and also the component, sub assembly, products, by-products





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## SECTION 7: SPECIAL CLAUSES OF CONTRACT

The following Special clauses of contract shall be read in conjunction with General clauses of contract. The same shall be considered as an extension and not limitation of the obligations of the contractor. In case of any discrepancy between Special clauses of contract and the General clauses of contract, these Special clauses shall take precedence over the General clauses of the Contract.

1. **Sequence of work:** The contractor shall execute the work as per the sequence given by the Engineer-in- Charge from time to time so that all other items of the work to be executed by other agencies are completed progressively along with the main work.

2. **Co-operation and Co-ordination with other contractors**: The contractor will carry out the entire work in a planned manner by co-ordinating his work with other contractors, who will be simultaneously carrying out work in the same area and also co-ordinate in connection with the position of various fixtures, inserts, embedment and other allied work connected with the completion of the building / subject work. In case of any dispute between the contractors engaged on the same work, decision of Engineer-in-Charge shall be final and binding.

3. **Operations and storage areas:** All operations of the contractor shall be confined to areas authorised by the Engineer-in-Charge and storage of materials shall be over the areas specially indicated by the Engineer-in-Charge. The contractor shall be obliged to keep the premises in hygienic conditions by proper drainages of the area provided with suitable approaches throughout the period of contract. He/she shall rectify all damages caused to the Centres property within the areas thus allotted. He/she shall be responsible to clear all rank, vegetation at site at his own cost. **The contractor should provide Storage box for the working personal at his own cost with lock and key arrangement. The box can be placed at approved location by Engineer-In-Charge.**

4. **Tendered rates to cover overheads and profit:** The rates quoted shall also cover the cost of necessary protection including labour, materials and equipment to ensure safety and protection against risk or accident, compensation for injury to life and damage to property if any, caused by the contractor's operations connected with this work. The rates shall be firm and shall not be subject to change due to variations during the entire period of execution of the work in cost of materials, labour and conditions, or any other conditions. No separate claim on this account will be entertained by the Centre.

   Unless otherwise stated in schedule of quantities, rates for item quoted by the tenderer should be for the complete work including supply and fixing with all materials and should be for all heights and depths, lifts and leads, lengths and widths involved in the work.

   The contractor when called for by the centre should furnish detailed rate analysis in support of the rates quoted by him against each item of the tender. The Department reserves the right to utilize the analysis thus supplied in settling the rate of any deviations or claims arising in this contract.

5. **Claims against the contractor:** Whenever any claim against the contractor for the payment of a sum or money arises out of or under the contract, Department shall be entitled to recover such sum by appropriating in part or whole, the security deposit of the contractor and to sell any Government promissory notes etc. forming the whole or part of such security. In the event of the security deposit having been taken from the contractor, the balance or the total sum recoverable, as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due from the contractor, under this or any other contract with the Centre. Should this sum be not sufficient to cover the full amount recoverable, the contractor shall pay the Centre, on demand the balance remaining due.

   Centre shall have the right to cause an audit and technical examination of the work and the final bill of the contractor including all supporting vouchers, abstracts etc. to be made after payment of the final bill and if as a result of the due audit and technical examination any sum is found to have been over paid in respect of any

work done by the contractor under the contract or any work claimed by him to have been done under the contract and found not have been executed, the contractor shall be liable to refund the amount of the over payment and it shall be lawful for the Department to recover the same from him in the manner prescribed above or in any other manner legally permissible and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, amount of such under payment shall be duly paid by the Centre to the contractor.

6. **Proper drawings and instructions:** The Engineer-in-Charge shall have full powers and authority to supply to the contractor from time to time during progress of the work such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the work and the contractor shall carry out the work and be bound by the same.

7. **Medical Fitness of staff/ labour:** Staff/ Labour to be engaged in work should have medical fitness certificate if required by the centre. The contractor will also follow the guideline issued by Govt. of India/State Government during any pandemic and will follow the safety norms and be responsible for the safety of labours to be engaged in the work. No claim for any causality in this regard will be entertained.

8. **Security regulations:** The contractors have to follow strictly the regulations of the Centre at the work site regarding entry of personnel, material etc. and any other regulation that might be enforced from time to time. All materials and articles brought by the contractor to the work site shall have to be declared at the security gate. Similarly, no materials shall be taken out from the Centre premises without proper gate pass, which will be issued by the Engineer-in-Charge to the contractor on written request. It is to be noted that loading of contractor's materials in vehicles and trucks shall be done in the presence of Centre personnel.

   For working on Sundays, Holidays and late hours, even though permission will be accorded by the Engineer-in-Charge, the contractor will have to make application to the Security Department also and keep them informed well in advance. The contractor, his agents, representatives, workmen etc. and his materials, carts, trucks or other means of transport etc. will be allowed to enter through and leave from such point of entry/exit at such times, the authorities in-charge of the area, at their sole discretion, may permit. The contractor, his agents and representatives are required to be in possession of the individual identity / muster cards or passes. The muster cards or passes are examined by the security staff at the time entry / exit inside the departmental area.

   The contractor, his agents, representatives, workmen shall strictly observe the orders pertaining to prevailing fire precautions. In addition to the above, other security regulations as may be imposed by the Security authorities / Engineer-in- Charge shall be complied with / observed by the contractor and his workmen, in addition to the above. Any breach of above security regulations and rules in force from time to time will be viewed seriously. No claim whatsoever will be entertained by the Department on account of the observation of the Security regulations.

9. To take the materials out of the campus for disposal/ replacement it is the responsibility of the contractor to take prior approval and request for a valid **GATE PASS** for any such material.

10. **Special Clauses:**

**Technical Data Sheet:**

- All the tenderers are instructed to fill up the enclosed Technical Data Sheet of materials.

**Inspection & Testing of Material:**

- Contractor/Manufacturer/Supplier shall submit the lists of Type Tests and Routine Test conducted on the material in Technical Data Sheet.
- All the materials will be tested at factory as per IS Standards of material by our Engineer In charge before dispatch at the cost of Contractor/ Manufacturer/Supplier.
- Contractor/Manufacturer/Supplier shall inform the concerned Engineers for inspection and testing in accordance and fix up the suitable date for the same.



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**Test Certificates:**

- Contractor/Manufacturer/Supplier shall submit the Test Certificates of all materials in the approved proforma of supply authority and arrange necessary approval from the Supply Company and electrical inspector. No separate charges will be payable by department to this account.

**Taxes & Duty:**

- Contractor/Manufacturer/Supplier shall quote the basic price of material. GST, Delivery Charges, Transit Insurance if any must be indicated separately.

**INSURANCE**

- The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 1 year after commissioning. The insurance coverage on handing over of the system must include all conditions of Standard Fire and Special Perils Policy (Material Damage). b. The insurance premium for the 1 year of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the Engineer In charge (EIC). The annual premium payment receipt must be handed to EIC.

**Guarantee:**

- If during the 01 Years of period of guarantee any fault or defect arises, the material shall be replaced/repaired immediately free of cost, as well as any replacement of accessories required shall be done free of cost.

**Mistake in Drawing:**

- The Contractor/Supplier shall be responsible for and shall pay for any alterations in works due to any discrepancies, errors or omission the drawings or other particulars supplied by him whether such drawings or particulars have been approved by the Purchaser or not.

**Responsibility for Completeness:**

- Any fittings or accessories which may not be specifically mentioned in the specifications but which are usual or necessary are to be provided by the Contractor/Supplier without extra charge and the equipment must be complete in all details.

**Rejection of Defective Equipment:**

- If the Equipment after the acceptance thereof be discovered to be defective, notwithstanding that such defects could have been discovered at the time of inspection or found to have failed to fulfil the requirements of the contract or developed defects after the erection within a period of 12 months from the date of erection, even if such erection is done by the Purchaser, he shall be entitled to give a notice on the Contractor/Supplier setting forth details of such defects or failure and the Contractor/Supplier shall, provided such notice is given within a period of 14 months from the date of such erection or acceptance, forthwith make the defective equipment good or alter the same to make it comply with the requirements of the contract at his own cost and further if in the opinion of the Purchaser, the defects are of such a nature that the defects cannot be made good or required without impairing the efficiency or workability of the equipment or if in the opinion of the Purchaser the Equipment cannot be repaired or altered to make it comply with the requirements of the Contract, the Contractor/Supplier shall, provided a notice given by the Purchaser in this behalf within a period of 14 months from the date of erection or acceptance thereof, remove and replace the same with the equipment conforming to the stipulated particulars, in all respects at the Contractor's/Supplier's own cost. Should he fail to do so within a reasonable time, the Purchaser may reject and replace at the cost of the Contractor/Supplier shall be carried out by the Purchaser within a reasonable time with Equipment of the same particulars or if Equipment conforming to the stipulated particulars are not in the opinion of the Purchaser readily procurable, such opinion being final, then with the nearest substitutes.

In the event of such rejection the Purchaser shall be entitled to use the Equipment in a reasonable and proper manner for a time reasonably sufficient to enable him to obtain replacement equipment as herein before provided.

**Inspection and Final Tests:**

- All tests necessary to ensure that the Equipment complies with the particulars and guarantee shall be carried out at such place or places as may be determined by the Inspector. Should, however, it be necessary for the final test as to performance or guarantee to be held over until the Equipment is erected at site they shall be carried out within one month of completion of erection.



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**Delay in erection:**

- Wherever erection of an equipment or machinery is the responsibility of the Contractor/Supplier as a term of the contract and in case the Contractor fails to carry out the erection as and when called upon as to do within the period specified by the Purchaser, the Purchaser shall have right to get the erection done through any source of his choice. In such an event, the Contractor/Supplier shall be liable to bear any additional expenditure that the Purchaser may incur towards erection. The Contractor/Supplier shall, however not be entitled to any gain due to such an action by the Purchaser.

**Mandatory Pre-Approval of Materials by EIC**

- Before placing any material order for installation, prior approval must be obtained from the Engineer-in-Charge (EIC). If any item or material is found unsatisfactory by the EIC, it will be rejected outright.

**Termination of Contract by the Purchaser:**

- If the Contractor/Supplier commits any `Act of Insolvency' or shall be adjudged an Insolvent or shall have an order for compulsory winding up made against him or pass effective resolution for winding up voluntarily, or if the Contractor/Supplier shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the Contractor/

Supplier, or shall assign the Contract without the prior consent in writing of the Engineer, or shall charge or encumber this Contract or any payments due or which my become due to the Contractor there under, or if the Engineer shall certify in writing to the Purchaser that the Contractor/Supplier –

a) has abandoned the Contract,

or

b) has failed to commence the works, or has without any lawful excuse these conditions suspended the progress of the works for seven days after receiving from the Engineer written notice to proceed,

or

c) has failed to proceed with the work with such due diligence and failed to make such due progress as would enable the works to be completed in accordance with the approved programme of work,

or

d) has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the Engineer written notice that the said materials or work were condemned and rejected by the Engineer under these conditions,

or

e) has neglected or failed persistently to observe and perform all or any of the acts matters or things by this contract to be observed and performed by the Contractor for seven days after written notice shall have been given to the Contractor/ Supplier requiring the Contractor/Supplier to observe or perform the same,

or

f) has to the detriment of good workmanship or in defiance of the Engineer's instructions to the contrary sub-let any part of the contract.

Then and in any of the above said causes, the Purchaser with the written consent of the Engineer may, notwithstanding any previous waiver, after giving seven days' notice in writing under the provisions of this clause to the Contractor/Supplier, determine the contract but without prejudice to the powers of the Engineer or the obligations and liabilities of the Contract, the whole of which shall continue to be in force as if the contract has not been so determined and as if the work subsequently executed has been executed by and on behalf of the Contractor/ Supplier.

**Contractor's Representative:**

- The Contractor shall employ at least one qualified representative whose name shall have previously been communicated in writing to the Engineer and approved by him to supervise the erection. Any written order or instructions given to the representative shall be deemed to have been given to the Contractor/Supplier. The Engineer shall be at liberty to object to any particular representative/or any persons employed by the Contractor/Supplier on the work and the Contractor/Supplier shall remove the person objected to, on the receipt of the Engineer, in writing, a request requiring him to do so and shall provide in his place another competent representative acceptable to the Engineer.

  The Contractor's/Supplier's representative shall be a qualified electrical/ mechanical engineer and possessing adequate site experience in similar nature of works.



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**Completion Time:**

- Unless otherwise agreed in writing between the Purchaser and the Contractor/Supplier, the work contract shall be completed within **Six months (inclusive of holidays)** from the date of Purchase order issued to Contractor/Supplier by the Purchaser. The contractor shall furnish the completion certificate on completion and commissioning of the works as per enclosed format.

**Delivery of material at site:**

- The Contractor/Supplier/Manufacturer shall arrange for safe transit and delivery of material at site & unload the material at site.
- The quotation should be valid for 180 days after opening of the Technical Bids.

**Measurements:**

- All the measurements of quantities shall be done by the Contractor at his own cost in the presence of Engineer In-charge or any authorized person deputed by him who will certify the routes, length and quantities etc. for the purpose of determination of the amount payable.
- Manufacturer/Contractor/Supplier should submit operation, maintenance & spare part list manual for all equipment's.
- Manufacturer/Contractor/Supplier should provide training for operation and maintenance free of cost for equipment's supplied.

**Contractor:**

- The project proposal should be generated using software like Arc Helios or equivalent and respective documents shall be submitted along with the technical bid. The expected proposal contents are as below:
- It should indicate exact GPS location of site intended for solar module installation.
- The atmospheric parameters mentioned in the proposal should be generated by taking reference of Mumbai / Bombay metro weather station.
- It is advised to take account of parameters like module dirt losses, module aging, losses in AC wires, losses in DC wires etc.
- Make of grid tie inverter & solar modules. The inverter should be sourced from SMA. Solar modules should be indigenously sourced.
- The proposal should indicate estimated monthly generation and yearly generation for next 20 years.
- The project economics should reflect total investment, year per year incomes and cash flow for next 20 years.
- A detailed summary of 20 years cash flow in tabular format is highly recommended.
- 3D layout of property integrated in the proposal document. A 3D layout of property / terrace where solar modules are intended to be installed. This layout should be preferably generated in sketch up software. The layout should actual placement of solar modules.
- Various images extracted out of the 3D layout, showing the shadow patterns at varying times of the day and throughout the year.
- Technical report generated out from solar grid tie inverter company (preferable SMA).



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## SECTION 8: SCOPE OF WORK and BILL OF QUANTITIES

This specification covers the supply of material as per the enclosed details and quantities and supervision of erection and commissioning of the material. The Contractor/Manufacturer/Supplier shall quote for all the materials along with accessories as mentioned in the enquiry. All the supply shall be in accordance with relevant I.S. Specifications and recognized standards.

**Scope**: -

- The Scope of Work includes all Check Survey, detailed design & Engineering, Procurement & Supply of Equipment and Material, Testing at manufacturer's works, Inspection, Packing and Transporting, Supply, Receipt, Unloading and Storage at site, associated Civil Works, Services, Permits from MSEDCL, and other relevant permits for net meter application, Licenses, Statutory Approvals, Installation and incidentals, Insurance at all stages, Erection, Testing and commissioning of 177kWp grid connected Rooftop Mounted Solar PV Power Plants under Net-Metering including warranty and performance demonstration with associated Power evacuation system up to the designated Substations/Locations along with its route survey with material & man power in accordance with Technical Specifications.
- Study the existing power system at hbcse and space available on roof top for installation of solar PV system. Total erection works and material item supplies should be carried out as per applicable latest CE, IS, IEC & IEEE standards / codes with solar grade with appropriate Ingress protections and get it approved by the Bank before installation.
- Net Metering and Grid synchronization related approvals, Liasoning and Bidirectional meters and CT's to be provided as per MSEDCL norms are in the scope of L-1 Bidder. Also, clearance/NOC from other statutory authority like Electrical inspector and other related applicable Government authority. No extra payment shall be made by the HBCSE for liaisoning works to the vendor. However, statutory fees paid by the vendor to the Government Departments/Electricity Boards for approval of extension of load/NOC etc.

  Also, clearance from with MNRE or Central/State Government for obtaining capital subsidy, if applicable.
- Valid certificate of the licensed Agency regarding the compliance of the fire prevention and life safety measures shall be submitted.
- This specification covers the following as stipulated in Schedule of Quantities.

**General**:

- All the supply and work shall be in accordance with the relevant I.S. Specification and recognized standards and modern approved practice and shall meet the requirement of the latest issue of applicable codes, factory rates and regulations, supply codes and all standard accepted practice in locality where the installation is to be made.
- All the materials and accessories provided by Contractor under terms of this contract shall confirm to the relevant Indian Standard Specifications. Samples of all equipment, materials and accessories to be supplied by the Contractor shall be submitted for the approval of the Engineer before they are used.
- Contractor shall provide all necessary labour, tools, and other requisite work like drilling, cutting, welding etc. at his own cost.
- Good workmanship is the essence of this contract and shall be complied with at all time. The Contractor shall have the works supervised by qualified and experienced engineers. All the defects pointed out by the engineer shall be rectified immediately by the Contractor free of cost.
- The installation shall generally be carried out strictly in conformity with the requirement of latest edition of the Indian Electricity Act, 1910 as amended and the Indian Electricity Rules, 1956 framed there under and all others statutory regulations that may be relevant to the installation.
- No alteration which may affect the structures and architecture of building shall be done without the prior approval of the engineer. All work shall be carried out in such a manner that it should not cause any inconvenience to other works which are under progress. The Contractor shall cooperate with other agencies in the area for the smooth execution of all works.
- Accidental damage to any property shall be reported immediately to site engineers and letter confirmed in writing.



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**Scope of Work & Technical Specifications for 177 kWp grid connected roof top Solar Panel**

This scope shall cover design, manufacture, check test, and supply, installation, testing and commissioning of roof top solar panel as described in this specification as per drawings and schedule of quantities.

**1. Introduction**

1.1 A grid-connected solar PV system consists of the solar panels, solar Panels mounting structure, two or more solar grid inverters, circuit breakers, protection devices, meters, interconnection cables and switches.

1.2 Components and parts used in solar PV systems should conform to the BIS or IEC or other international specifications, wherever such specifications are available and applicable.

**1.3 The scope of work for the prospective Installer includes:**

a) Scope of work covers Design, Supply, and Installation & Commissioning of Grid Connected Roof top Plant under Net Metering as per the technical specification enclosed.

b) Wiring up to Metering Board (control panel) from Rooftop system will be in the scope of the successful bidder(s). The total cable length for every Solar power panel installed shall be in the scope of the bidder.

c) **Bidder must visit the site before submitting the offer for taking the measurement of site. Only those bidders will be eligible for submitting their tender for this work.**

d) Mounting Structure within the scope of this tender is for existing Main building roofs.

e) Performance testing of the complete system.

g) The successful bidder shall undertake to supply spares free of cost for the offered items during the warranty period .

h) A leaflet containing the details of the service centres shall be provided to HBCSE

i) If the operation or use of the system proves to be unsatisfactory during the warranty period, the installer shall replace the faulty ones or carryout necessary repairs as per the warranty terms and conditions.

j) **The successful bidder shall do necessary coordination with concerned agencies like TATA Power, Adani electricity, REAP, PED, MNRE and CEIG, as applicable, for procuring necessary approvals on behalf of the HBCSE. The cost of approvals and meter, CT/PT (if required) shall be borne by the successful bidder only.**

k) Contractor is responsible for obtaining the statutory clearances.

**2. SERVICE**

2.1 The Successful Bidder shall visit the site at least once in a quarter, during the warranty period. However, in case of malfunctioning of the system, the tenderer/bidder shall attend for rectification of defects within 2 working days from the date of lodging complaint.

3.0 **Quality and Workmanship**

Solar PV modules are designed to last 25 years or more. It is therefore essential that all system components and parts, including the mounting structures, cables, junction boxes, distribution boxes and other parts also have a life cycle of at least 25 years. Therefore, all works shall be undertaken with the highest levels of quality and workmanship. During inspection special attention will be paid to neatness of work execution and conformity with quality and safety norms. No waste from packaging to be left on the site after the completion of work by the prospective Installer. Non-compliant works will have to be redone at the cost of the prospective Installer.

4.0 **PV Module Specifications:** The Solar Modules should be IEC Certified and BIS Approved In addition, the modules must conform to IEC 61730 Part 1-requirements for construction & Part 2 - requirements for testing, for safety qualification. The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his project proposal submitted to HBCSE.

| | |
|---|---|
| Make | Tata power solar, Adani solar, Vikram Solar, or ALMM approved equivalent. |
| Type | TOPCON BIFACIAL |
| Origin | INDIA |
| Efficiency | 22.50% or higher |
| Manufacturing Defect Warranty | 12 years or higher |
| Performance Warranty | 25 years or higher |
| Module frame | 6005-T6 grade aluminum only. |

| | |
|---|---|
| Termination Box | IP68 rated MC4 connectors compatible |
| Peak power Output | 600 W+ or higher without bifacial gain |
| Short Circuit current (ISc) | 11.15 A |
| Open Circuit Voltage (Voc) | 52.00 V or higher |
| Optimum Operating Voltage (Vmp) | 46.00 V or higher |
| Optimum Operating Current (Imp) | 14.00 A or higher |
| Dimension in mm | As per ALMM submission by OEM. |
| Type of cell used | N- type TOPCON. |

**5.0 Solar PV Modules Mounting Structure and Civil Works.**

5.1. The PV modules shall be mounted on metal sheet roof atop existing rooftop. Designed, Affixed, to can withstand the load of the modules and high wind velocities. The array structure shall be made of aluminium and should be riveted to the rooftop using EPDM as gasket between MMS and the sheet roof.

5.2. Contractor must provide approach to location of PV Modules for easy maintenance.

5.3. Detailed specifications for the mounting structure are given below:

| | |
|---|---|
| **Wind velocity withstanding Capacity** | 160 km / hour with Solid works test reports attested by the OEM. |
| **Structure material** | Aluminum |
| **Bolts, nuts, fasteners, panel mounting clamps** | Stainless steel SS 304 |
| **Mounting arrangement for metal sheet roofs** | Mounting directly on the sheet metal, ensuring stability and wind withstanding capacity, or penetrating the sheet metal and fixing to the sub-structure, ensuring that the roof remains water proof and ensuring stability and wind withstanding capacity. EPDM, silicone and rivets shall be used whilst deploying module mounting structure to ensure ingress protection against water. |
| **Installation** | The structures shall be designed for simple mechanical on-site installation. There shall be no requirement of welding or complex machinery at the installation site. |
| **Access for panel cleaning and maintenance** | All solar panels must be accessible from the top for cleaning and from the bottom for access to the module-junction box. |
| **Panel tilt angle** | As per the affixed metal sheet roof. |

5.4 The Vendor shall specify installation details of the solar PV modules and the support structures with lay-out drawings and array connection diagrams. The work shall be carried out as per approved designs.

5.5. The Vendor will undertake any levelling and preparation work necessary to bring the site to a condition suitable for installing and operating the solar photovoltaic system. This includes and is not restricted to the following:

a. **During installations precaution should be heeded to ensure no water leakages occur. Adhesive solutions, Silicone, EPDM, rivets or tape shall be applied on the metal sheet before installation of Solar Power Module.**

b. Water pipeline for cleaning of solar panels from the source of water as indicated by the HBCSE till appropriate location in the installation site. The cost to provide for pipe line and pump, if required shall be inclusive in rate PV module.

5.6. The Vendor will install solar inverters, protection devices, monitoring device and other devices as wall mounted units. These are air breathing devices, and OEM approved spacing should be maintained to ensure equipment's have plenty space amongst them.

**6.0 Solar Array Fuses**

The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating and current rating as required. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 66 enclosures with transparent covers (see DC Combination Box)

**7. 0 Power Conditioner Unit (PCU)**

The power condition unit will convert DC power produce by SPV array into AC power. The capacity of Centralized PCU shall be aggregate capacity of 160 KVA.

**Inverter specifications**

| Inverter –Type On grid with remote sensing and monitoring built in, indication on mobile phone | |
|---|---|
| Make | Goodwe / Solis / Solax / Sungrow or approved equivalent |
| AC output Voltage | (240V / 415 V volt ) 3 phase / N / PE; 50 Hz |
| Maximum output capacity | 80 KW |

| **Input DC** | |
|---|---|
| DC rated power | 80000 W |
| MPP voltage range / rated input voltage | 160 – 1000V |
| Maximum input voltage | 1100 V |
| Rated voltage | 600 V |
| Max. input current | 3 × (40 A / 32 A) |
| Max. current per DC input | 3 × (40 A / 32 A) |
| Max. short circuit current | 6 × 50 A |
| Number of independent MPP inputs / strings per MPP input | 6 / 2 |
| AC nominal voltage | 3 / N / PE; 220 V / 400V |
| Rated power (at 230 V, 50 Hz) | 80000 W |
| Max. AC apparent power | 88000 VA |
| Max Efficiency | 98.5% or higher |
| **Output DC** | |
| Rated output power | 80 kW |
| Max. apparent output power | 88 kVA |
| Rated grid voltage | 3/N/PE, 220 V / 380 V, 230 V / 400 V |
| Rated grid frequency | 50 Hz / 60 Hz |
| Rated grid output current | 121.6 A / 115.5 A |
| Max. output current | 133.7 A |
| DC injection current | < 0.5% In |
| **Max. efficiency** | **98.5%** |
| **Protection** | |
| DC reverse-polarity protection | Yes |
| Short circuit protection | Yes |
| Output over current protection | Yes |
| Insulation resistance monitoring | Yes |
| Residual current detection | Yes |
| Surge protection | DC Type II / AC Type II |
| Grid monitoring | Yes |



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| | |
|---|---|
| Anti-islanding protection | Yes |
| Temperature protection | Yes |
| Strings monitoring | Yes |
| I/V Curve scanning | Yes |
| Night SVG function | Yes |
| **General Data** | |
| Topology | Transformer less |
| Self-consumption (night) | < 2 W |
| Operating ambient temperature range | - 30 ~ +60°C |
| Relative humidity | 0 - 100% |
| Ingress protection | IP66 |
| Noise emission (typical) | < 80dB(A) |
| Cooling concept | Intelligent fan-cooling |
| Grid connection standard | G99, IEC61727, EN50549-1/2, VDE4110 |
| Safety / EMC standard | IEC/EN 62109-1/-2, IEC/EN 61000-6-2/-4 |
| **Features** | |
| DC connection | MC4 connector |
| AC connection | OT terminal (max. 240 mm²) |
| Display | LCD |
| Communication | RS485, Optional: S3-WiFi-ST, S3-GPRS-ST, PLC |
| **Warranty** | **05 Year** |

**Construction**

The inverter shall have ingress protection rating of IP66 or higher.

**Protections:**

Following protection shall be provided.

- Short Circuit
- Over load
- Input Surge voltage
- Reverse polarity protection

a) The PCU should have a remote monitoring, sensing/fault indication using WIFI or GSM/MOBILE application to monitor power generation, outages and other failures, correction from remote device etc.

b) LED/LCD screen to display all solar parameter including energy generation.

c) Large Heat sink for heat dissipation.

d) **The inverter should NOT be able to deliver power during outages Islanding Protection should be enabled.**

**8.0 ARRAY JUNCTION BOXEXS and Fuses:**

A DC Junction/Combiner Box shall be used to combine the DC cables of the solar module arrays with DC fuse protection for the outgoing DC cable(s) to the DC Distribution Box.

i. The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/with full dust, water& vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input &output termination can be made through suitable cable glands.

ii. Suitable markings shall be provided on the busbar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

iii. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP 65 standard and IEC62208 Hinged door with EPDM rubber gasket to prevent water entry, Single/ double compression cable glands, Provision of earthing's. It should be placed at a height suitable for ease of accessibility.

iv. Each combiner box/ junction box will have suitable Reverse Blocking Diodes of maximum DC blocking voltage of 1100 V with suitable arrangement for its connecting.

v. Junction boxes should be equipped with fuses on both positive & negative input to protect the PV module from short circuits.

vi. The combiner box/ Array junction Box will also have suitable surge protection device to protect the PV modules as well as the other electrical / electronic systems from transients over voltages created due to lightning and to reduce insulation break downs due to lighting. The SPDs should be tested and approved according to IEC 61643-11 and EN 50539-1:2013-03.

**Solar Array Fuse:**

The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating and current rating as required. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers. Selection of fuses: It is important to coordinate the power dissipation of fuse-links with the acceptable power dissipation of fuse holders. Rated voltage of fuse-link and fuse 93 holder should be at least 20% higher than open circuit voltage of photovoltaic installation. Typical rated voltage of fuse-links and fuse holders is 1000 V DC. Rated current of fuse links ≥ 1.4 ISC. (ISC = short circuit current of photovoltaic modules), Utilization category g PV (protection against overload and short-circuit), Minimum interrupt rating 1.35In, Non fusing current 1.13 In.

## 9.0 CABLES

All DC cables should be as per IEC 50618 standard only. Rating: 1.8 KV DC.

ALL AC cables should be FRLS/FRLSH type only. Rating: 1.1 KV

Cable Marking: All cables/wires shall be marked with good quality ferule for cable identification.

Cable Ends: All connections shall be made through suitable cable lugs /tags crimped properly and with the use of cable glands.

**All cable shall be multi-strand, annealed high conductivity copper conductor, and shall conform to BIS standard.**

**Procedure of cable laying:**

**i)** Procedure of cable laying: i. Cable terminations shall be made with suitable cable lugs & sockets etc, crimped properly and cables shall be provided with dry type compression glands wherever they enter junction boxes/ panels/ enclosures at the entry & exit point of the cubicles. The panels bottoms should be properly sealed to prevent entry of snakes/lizard etc. inside the panel. All cables shall be adequately supported. Outside of the terminals / 102 panels / enclosures, shall be protected by conduits. Cables and wire connections shall be soldered, crimp-on type or thimble or bottle type.

**ii)** Only terminal cable joints shall be accepted. Cable joint to join two cable ends shall not be accepted.

**iii)** All cable/wires/control cable shall be marked with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.

**iv)** All fasteners will be made of Stainless steel or Aluminum or UV Protected PVC.

**v)** All power, control, communication cables running from buildings shall be routed from one building to another building through underground cable trench (direct burying) as per IS: 1255.

**vi)** The DC cables from the SPV module array shall run through a UV stabilised PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm. The conduits shall not run across the path way of the terrace. Flexible corrugated PVC conduits shall not be used.

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

**viii)** All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm. The minimum DC cable size shall be 6.0 mm2 copper. The minimum AC cable size shall be 4.0 mm2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

The following colour coding shall be used for cable wires:

- DC positive: red (the outer PVC sheath can be black with a red line marking)
- DC negative: black
- AC single phase: Phase: red; neutral: black

-AC three phases: Phases: red, yellow, blue; neutral: black -Earth wires: green

**ix)** Cables and conduits that have to pass through walls or ceilings shall be taken through a PVC pipe sleeve. x. Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and

breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

**x)** The total voltage drop on the DC cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%. Conductor size of less than 6 sq. mm shall not be accepted.

**xi)** Cable/wire connections shall be soldered, crimp-on type or split bolt type. Wire nut connections shall not be used.

**xii)** The wiring must be carried out in pvc precession make conduit only.

**xiii)** Cable Routing/ Marking: All cable/wires are to be routed in a GI/PVC cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified use

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

**Civil Work**

Civil work shall include work related with foundation for installation of module mounting structure and other accessories. However, the HBCSE shall provide space for installation of SPV array and the control room for installation PCU, if required.

**DANGER BOARDS AND SIGNALS**

Danger boards should be provided as and where necessary.

## 10.0 PROTECTIONS

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

### i. LIGHTNING PROTECTION:

The SPV power plants shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 /IS 2309 standard. The protection against induced high-voltages shall be provided by 105 the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth. ESE Lightning and surge protection for the SPV plant shall be provided using adequate number of earthing kits but not less than two independent earthing stations. It shall be ensured that all the earth are bonded together to bring them to the same potential. Earth resistance shall not be more than 5 ohms with earthing Strip of 25x6mm GI.

a) Lightning Arrester is composed of one main striking point, emission device, fixing element, and a connection to the down conductor.

b) The area protected by LA is determined using the early streamer emission test method as per NFC 17 102 Standard and it is preferred to have LA installed on the highest part of the structure.

c) Lightning arrester is advanced ESE type and provides protection radius of 107m in Level IV. d) Our ESE lightning arrester is testable from external tester for internal configuration as well as magnetic field test. Carries 30 years warranty. Tested as per NFC 17-102 standard for:

- Short circuit test of 115KA
- Advance triggering time of 63 microseconds.
- Temperature withstands test of -50 to +120 degree Centigrade
- Salt mist and humid Sulphur test
- CE marking
- Internal test report available for each unique serial numbered rod provided with each lightning rod.

### ii. SURGE PROTECTION:

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

### iii. EARTHING PROTECTION:

Body and lightning protection system earthing shall be of provided with maintenance free earthing (MFE) system comprising of 17mm (3M length) dia copper bonded stainless/ nickel steel alloy rods suitably joined together with thread less/compression couplers made of copper alloy including supply of copper rods and all other accessories required for the total erection of the earthing system. The rod shall be driven in earth with augured hole dia of 75- 100 mm in ground filled with conductivity/earth enhancement

compound. Earth pit chamber with RCC cover as per standards shall be constructed for each maintenance free earth rod. Earthing conductor of size not less than 25x3mm GI strip on roof/wall mounting for body Earthing system shall be provided with proper clamping arrangement using GI spacer and saddles over a suitable concrete block on roof and with necessary fixing materials with a spacing of not less than 600mm. Earth resistance shall not be more than 5 ohms. All metal casing/shielding of the plant shall be thoroughly grounded to ensure safety of the solar power plant

EARTHING SPECIFICATIONS:

- Electrode: Material - Cu. Bonded
- Diameter - Ø17 mm.
- Length - 2 m. long
- Earthing Chemical / Enhancement compound: 15- 25 kg.

Minimum 04/06 numbers of interconnected earth pit need to be provided in each location. Minimum required gap shall be provided in between earth pits as per relevant standard. Body earthing shall be provided in inverter, each panel, module mounting structure, kiosk and in any other item as required. Separate dedicated earthing for LA &SPD.

Installation shall be carried out in neat workman like manner by skilled, experienced and competent workmen in accordance with standard practice.

**Copper strip shall be laid in one-piece length.**

Method of installation, routing of copper strip etc. shall in every case be as per schedule and subject to approval of Engineer-In-Charge.

Care shall be exercised by providing suitable props for supporting other service lines in ground at the time of excavation where cutting of road/lawn becomes necessary it should be done with the approval of Engineer-In-Charge.

Excavation of the trenches shall be executed and the vertical side of the trenches are kept as straight as possible. The exact location of the trench shall be settled by the Engineer-In-Charge on the site, when contractor is in the position to commence the work.

After the Copper strip is laid the trench shall be filled in layer, the earth in each layer shall be well rammed by spraying water and sufficient allowance made for settlement.

The interval between the supports shall not exceed 400 mm for horizontal, 625 mm for vertical run.

Wherever Copper strip joint is necessary it should be done with 6" overlap, proper soldering and bolting.

Proper tapping holes should be provided on the Copper strip at an interval of 300 mm. while laying inside the room.

## 11. FIRE EXTINGUISHERS:

The firefighting system for the proposed power plant for fire protection shall be consisting of: Portable fire extinguishers in the control room for fire caused by electrical short circuits.

The fire extinguishers shall be provided in the control room housing the PCU.

## 12.0 Walkway Specification for solar plant

## Solar walkway FRP Moded Grating

| Sr. No. | Component | Specifications |
|---|---|---|
| 1.0 | Material | Fiberglass roving, resin, calcium powder. |
| 2.0 | Colour | Black or as per direction of EIC. |
| 3.0 | Technique | Molded |
| 4.0 | Feature | Aging-resistant, Insulation, corrosion resistance |
| 5.0 | Self-tapping screws | As per site conditions. |
| 6.0 | Hardware | As per site conditions. |
| 7.0 | Safety Cable | As per site conditions. |
| 8.0 | Full size | As per site conditions. |
| 9.0 | Height | As per site conditions. |

| | | |
|---|---|---|
| 10.0 | Accessories and surface type | As per site conditions. |

**13.0 Washer machine Specifications:**

a) Make: Bosch
b) Model: AQT 35-12
c) 1500 Watts

14.0 **Operation & Maintenance Cover of Solar Photovoltaic Power Plant (Mandatory):**

During the defect liability period of 1 year the Contractor shall clean the modules every fortnight and maintain the schedule in its records for the cleaning cycle. Deployment of Engineering Personnel, Technicians, and helpers for cleaning modules and their upkeep, as and when required. The contractor shall be responsible for all the required activities for the successful running, optimum energy generation & maintenance of the Solar Photovoltaic Power Plant covering:

i. Logging of DC, AC, and grid parameters (current, voltage, power, energy etc) at string inverters/ ACDB/ metering panels, equipment tripping/ breakdown, grid outage etc.
ii. Inspection of fire extinguishers (weight, pressure indication, physical status etc.) followed by refilling actions, if necessary, based on indications. Report to be submitted to concerned officer.
iii. Earthing resistance measurements for solar array structures, various equipment and lightning arrestors: measured values shall be recorded in registers and reported to concerned officer.
iv. Energy generation / meter reading report to be prepared and submitted to the concerned department.
v. Cleaning of string inverters, ACDB, LT panels etc. to remove accumulated dust.

Monitoring and status review, followed by rectification/ calibration/ replenishment/ replacement actions as necessary and applicable for following: (a) Spare items of all electrical equipment (b) First aid box items - medicines and accessories (c) Safety gadgets (d) Tool kits and measuring instruments (e) Pumps, starters

**15.0 Assembly of solar structure on steel substructure:**

Structures are intended for attachment of metal sheet roof. In this process, the module mounting structure is riveted to the metal sheet roof.

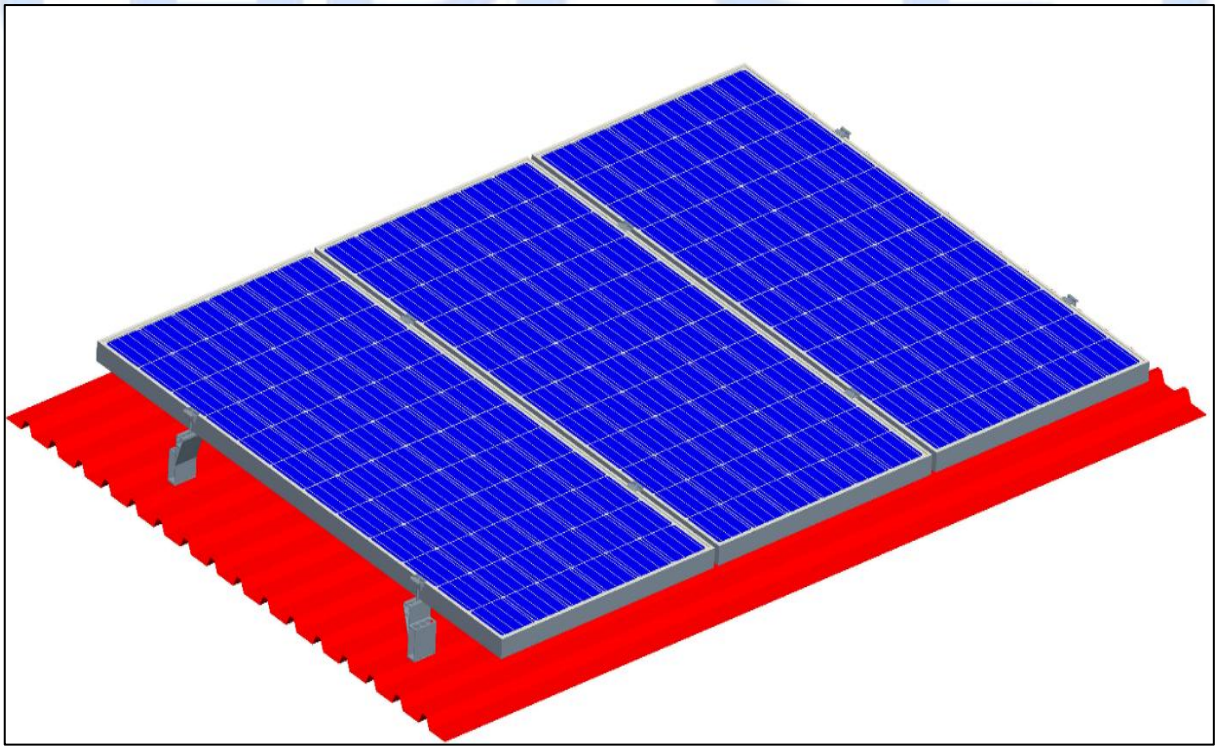

**Figure 1: Typical Solar Panel Affixed to the Metal Sheet roof.**

**Proceed as follows during mounting:**



**Seal and Signature of the Bidder**

- Inspect roof condition (ensure it's strong, rust-free, and clean).
- Arrange all mounting accessories:
  a) Roof clamps (L-feet or standing seam clamps)
  b) Aluminum mounting rails
  c) Mid-clamps and end-clamps
  d) Stainless steel nuts & bolts
  e) EPDM rubber washers for sealing
- Mark the panel layout as per design (orientation, spacing, and number of panels).
- Ensure panels are oriented **south-facing** (in India) with a suitable tilt angle (typically 10–25°).
- Mark clamp fixing points on the roof sheet in line with roof purlins for maximum strength.
- Fix **roof clamps** on the marked points:
  a) Drill pilot holes if required (depending on roof type).
  b) Use stainless-steel bolts with **EPDM washers** to prevent water leakage.
  c) Tighten all clamps securely but avoid over-tightening.
- Ensure all clamps are aligned in a straight line and at equal height.
- Place **aluminum rails** over the fixed clamps.
- Connect rails to clamps using **T-bolts and nuts**.
- Ensure rails are properly aligned and leveled.
- If multiple rails are joined, use **rail connectors** to extend length.
- Maintain spacing according to module dimensions.
- Place the solar panels on the mounting rails.
- Align panels neatly with equal spacing between them (10–20 mm).
- Use **mid-clamps** between two adjacent panels and **end-clamps** on the outer sides.
- Tighten clamps uniformly to secure the panels in place.
- Check that panels are firmly fixed and not under stress.
- Do not drill into the water bearing depressions, but into the protruding parts.
- Depending on the thickness of the steel, drill into the metal substructure accordingly to fasten the solar fasteners.
- steel substructure to safeguard it demonstrates secure static properties.
- Tighten the lower nut on the machine thread to press the rubber seal against the outer roofing, thus sealing the hole.
- For stress reasons, the universal connector must always be mounted in the direction of the roof ridge.
- Adapt the required length of the solar fastener to the height of the roof structure.

**16.0 Metering & Grid Connectivity**

16.1 Metering and grid connectivity of the roof top solar PV system under this scheme shall be the responsibility of the bidder in accordance with the prevailing guidelines of the concerned DISCOM and / or CEA (if available by the time of implementation) the entire responsibility lies with bidder only.

**17.0 Cable Trays:**

**Cable trays should be overhead. It should be avoided at ground installation**

The perforated cable trays with Tray cover shall be manufactured from good commercia l, high grade strength sheet steel having minimum thickness of 1.6mm for Tray and 1m m for Tray Cover. The perforated cable trays shall be hot dip galvanized according to IS 92 -2629, BS729-1971 OR Equivalent standard suitable for indoor/outdoor use having moderate humidity and air pollution. The zinc coating thickness shall work out by applying a 610 gm of zinc per square meter surface with an approximate thickness of 80 microns.

| Sr No | Size of Tray Size | Size of Tray Cover | Approx. Quantity |
|---|---|---|---|
| 1.0 | 250mm X 100mm X 1.6mm | 250mm X 15mm X 1mm | As required |
| 2.0 | 100mm X 50mm X 1.6mm | 100mm X 15mm X 1mm | As required |
| 3.0 | 50mm X 25mm X 1.6mm | 50mm X 15mm X 1mm | As required |

**18. 0 DC Distribution Board:**

A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations: Incoming positive and negative DC cables from the DC Combiner Box- DC circuit breaker, 2 pole & DC surge protection device (SPD), class 2 as per IEC 60364-5-53; Outgoing positive and negative DC cables to the solar grid inverter.

**19.0 AC Distribution Board (ACDB):** i.
AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode. ACDB shall be installed on roof-top. ii.
All switches and the circuit breakers, connectors should conform to IEC 60947, part I,II and III/ IS60947 part I, II and III. iii.
The changeover switches, cabling work should be undertaken by the bidder as part of the project. iv.
All the Panels shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, 100 cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz and designed for minimum expected ambient temperature of 45degree Celsius, 80 percent humidity and dusty weather. v.
All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
vi. Should conform to Indian Electricity Act and rules (till last amendment). vii.
ACDB shall be 3-phase, 50Hz, 415VAC, 1.1kV system voltage, outdoor, with canopy, IP55, neoprene gasket for doors/ frame joints, CRCA sheets 2mm (frame)/ 1.6mm (door)/ 3mm (removable gland plate bottom side), painting seven tank process, colour RAL 7032, base frame with section 75mm min/ black painted, panel lifting hooks, Al bus bars as per SLD, RYB colour coded heat-shrinkable sleeves for bus bars, SMC/DMC insulator supports, Al earth bus, accessible live parts shrouded with FRP/polycarbonate sheets, MCBs for i/c feeders, 25mm min phase to phase clearance, LED indicators for RYB at o/g, colour coded Cu-cable AC/DC wiring (1.5/2.5 mm2 as applicable) etc. For the incoming and outgoing power cables, nickel plated brass double compression glands, Al cable lugs, SS304 plain/ spring washers shall be provided.
**Viii. Modifications/ addition if any, in existing L T panel of HBCSE shall be done at site and covered in scope of Bidder. Also required size cable and other equipment between existing panel to solar AC distribution panel is covered in scope of Bidder.**
ix. An AC distribution box shall be mounted close to the solar grid inverter
x. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the following components and cable terminations: • Incoming 3-core / 5-core (single-phase/three-phase) cable from the solar grid inverter • AC circuit breaker, 2-pole / 4-pole • AC surge protection device (SPD), class 2 as per IEC 60364-5-53 • Outgoing cable to the grid interconnection point
xi. Extra feeders (including two spare feeders) shall be provided to meet the various auxiliary supply requirements at the roof-top such as module washing pumps, data loggers etc.
xii. MCCB, MCB shall be L&T/C&S/Siemens/ABB/ Schneider or reputed equivalent subject HBCSE approval.

**20.0 Penalty for Non-Observation of Safety Norms:**

Penalty for Non-Observation of Safety Norms The penalty for breach of safety during execution of works shall be levied by the Corporation as below: • Violation of applicable safety, health and environment related norm, a penalty of Rs. 5000/- per occasion. • Violation as above resulting in
1) Any physical injury, a penalty of 0.5% of the contract value (max. of Rs. 2 lacs) per injury in addition to Rs. 5000/- as mentioned above.
2) Fatal accident, a penalty of 1% of the contract value (max. of Rs. 10 lacs) per fatality in addition to Rs. 5000/- as mentioned above.
3) **The tenderer shall guarantee a minimum energy generation of 3.6 kWh per day per kWp of the total installed plant capacity. Considering the site conditions at HBCSE, a majority of the modules shall be installed on the north-facing side, duly accounting for shadow analysis and prevailing weather conditions, and the energy generation shall be measured at the power grid synchronization point during operation.**
**In the event of failure to achieve the guaranteed energy generation, a penalty at the rate of Rs. 12/- per kWh of shortfall per annum shall be recovered from the Security Deposit (SD) and shall be applicable up to the Defect Liability Period.**

| Bill Of Quantities | | |
|---|---|---|
| **Sr.no** | **Description of Items** | **Quantity** |
| 1.0 | Design, supply, installation, testing and commissioning (SITC) of 177 kWp Solar PV Modules set with net metering.<br>**The cost shall be inclusive of all hardware, liaison, net metering equipment, MC4 male, female connectors, statutory fees and all other accessories. Solar Modules 295(Approximate) Nos. of 600 or above 600 Wp Solar Panels.**<br><br>**Solar Panel specifications:**<br>**Type:** Topcon Bifacial<br>**Origin:** India<br>**Efficiency:** 22.50% or higher<br>**Manufacturing Defect Warranty**: 12 years or higher<br>**Performance Warranty:** 25 years or higher<br>**Module frame:** 6005-T6 grade aluminum only.<br>**Termination Box:** IP68 rated<br>**Peak power Output:** 600 W+ or higher without bifacial gain<br>**Short Circuit current (ISc):** 11.15 A<br>**Open Circuit Voltage (Voc):** 52.00 V or higher<br>**Optimum Operating Voltage (Vmp):** 46.00 V or higher<br>**Optimum Operating Current (Imp):** 14.00 A or higher<br>**Dimension in mm:** As per Tata/Adani/ Vikram Solar submission by OEM.<br>**Type of cell used:** N- type TOPCON.<br><br>**Make:** Tata power/Adani/Vikram solar or approved equivalent | Job (As per site requirement) |
| 2.0 | Fabrication, assembling, supply and fixing of Mechanical structure (Module mounting structure) suitable to install 177 Kwp Solar PV modules set on existing metal sheet roof top as per the technical Specification (All incidentals civil work including waterproofing as mentioned in the Technical Specification, raising foundation as per the requirement for installation, termination of earthing strip and other related work shall be included in Vendor's Scope). | JOB |
| 3.0 | SITC of 80kwp on-grid IP 66 or higher-grade inverter with following protections:<br>• Short Circuit<br>• Over load<br>• Input Surge voltage<br>• Reverse polarity protection<br><br>**Technical specifications:**<br>**Type:** On grid with remote sensing and monitoring built in, indication on mobile phone<br>**AC output Voltage:** 240/415 Volts, 3 Phase neutral, 50Hz<br>**DC rated power:** 80000 W<br>**MPP voltage range / rated input voltage:** 160 – 1000V<br>**Number of independent MPP inputs / strings per MPP input** : 6 / 2<br>**AC nominal voltage:** 3 / N / PE; 220 V / 400V<br>**Rated power (at 230/415 V, 50 Hz):** 80000 W<br>**Max. AC apparent power :** 88000 VA<br>**Max Efficiency:** 98.5% or higher<br>**Safety / EMC standard:** IEC/EN 62109-1/-2, IEC/EN 61000-6-2/-4<br>**Warranty:** 05 Years.<br><br>**Make:** Goodwe / Solis / Solax / Sungrow or approved equivalent. | 2 Nos |



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| | | |
|---|---|---|
| 4.0 | **Supply, installation, and testing of Remote Monitoring System:** A remote monitoring system shall be included with each photovoltaic system. Usually, such monitoring systems are connected and synchronized with the two inverters. The monitoring system should transmit the following data in real-time to a central server and store it:<br>• DC currents, voltages and power.<br>• AC currents, voltages and power.<br>• Irradiation, ambient temperature, module temperature and wind speed.<br>• Error logs<br>This data may be transmitted either using the available LAN or Ethernet RJ45. - This data shall be accessible by DDU through a secure login account. - The stored data should be represented through hourly, daily, monthly, etc. graphs and easily downloadable in .csv or .xls format. | Job |
| 5.0 | Installation, Testing and commissioning of On Grid Power Conditioning Unit with all features as stated in Technical Specification. The cost of inverter shall be inclusive with fire extinguisher) | Job |
| 6.0 | Manufacture, Supply, installation, testing and commissioning of ACDB Panel, IP 65 cubicle type, totally enclosed, free standing type/Wall mounted, with suitable back frame, dust, damp and vermin proof Panel made up of 2/3mm thickness CRCA sheet steel, pretreated with 9 tank process and painting with Epoxy Powder Coated of approved shade, complete with suitable capacity tinned copper busbars, danger notice plate, interconnections with suitable capacity copper leads/solid copper strips/rods, powder coat painted and having incoming switchgear and outgoing mccbs as per site requirements. The size of cable chambers shall be sufficient enough to accommodate the cable sizes as mentioned in the SLD/ specifications/ drawings etc. The panel shall comply with IEC 61439 standard and amendments till date.<br>All Incoming and outgoing MCCB/MCBs as per OEM Design, Digital Multifunction Meters with RS-485 …….1No<br>Suitable CTs for MCCBs (Metering as per the Specifications) Standard R, Y, B indication lamps for the above feeders, and incomers. Standard On, Off, Trip indications, suitable selector switch for Auto/Manual mode with interlocking mechanism and all as per direction of EIC. Outgoings Mccb/MCB are as per site requirements in the vendor scope.<br>**MCCB/MCB Make:** Siemens, L&t and Legrand or approved equivalent. | Job |
| 7.0 | **DCDB Panel:** DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors. | As per required, vendor scope |
| 8.0 | Supply, laying and terminating of 4.0 Sq. mm Black EN50618 compatible solar DC cables shall be deployed. These shall be rated up to 1.8 KVDC. Flexible single-core power cable intended for use on the direct current (DC) side of photovoltaic (PV) systems, Flexible single-core power cable intended for use on the direct current (DC) side of photovoltaic (PV) systems, The cable should be TUV approved and carry the H1Z2Z2-K marking to indicate compliance with the standard, A minimum of 25 years under normal operating conditions.<br>**Make:** Lapp, Polycab, Finolex or approved equivalent. | As per required, vendor scope |
| 9.0 | Fabrication Supply, installation, Testing Commissioning of Array Junction Boxes, if required by the OEM or as per OEM SLD. | Job |
| 10.0 | Supply, laying and termination of 3.5 core, 300/240 Sqmm Al/Cu. armoured cable, 1100V grade XLPE/PVC insulated PVC sheathed armoured heavy duty Al/cu. Cables as per the SLD approved by the OEM conforming to IS-7098 (Part-I) / IS-1554 (Part-I) 1976 specifications inside the building through embedded conduit | Job(As per site requirement) |



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| | | |
|---|---|---|
| | pipe on wall / floor / beam/ in trenches from ACDB to LT Panel including supply of all required fasteners and civil works etc., complete. Supply and laying of the PVC insulated Cable in PVC conduit or on wall fixing with suitable clamping and termination used for AC supply heavy duty stranded copper cable or aluminum cables as per the SLD approved by the OEM.<br><br>**Make:** Polycab, Finolex , Havells or approved equivalent. | |
| 11.0 | Supply of Bosch make high pressure washer Machine for maintenance of solar Plant: Bosch Universal Aquatak 125 Bar pressure 1500W Green High-Pressure Washer, 0600 8A7 AF0 | 1 Nos |
| 12.0 | Operation & Maintenance Cover to provide for 177 Kwp as mentioned in specifications for one-year during the guarantee & defects liability period. | Job |
| 13.0 | Supply, installation, testing and commissioning (SITC) of water less maintenance free earthing system based on pre casted conductive earthing electrode. Dimensions Length X Dia (MM) : 2000 X 100 with 15 MM Solid conductor (Copper) Conduction: Non iconic movement of IONS multi point dissipation Contacts exceed grade 25 Concrete Environment: PH neutral Internal Material 'Relative Density : 890-990 KG / M3 3000 times more effective then Bentonite Electrolytic corrosion Resistance : 86 % reduction in corrosion short Circuit Current (tested) : Peak 40 KA RMS : 22 kilo AMPS for 1 sec. Mechanical strength: Grade 25 Concrete High Fault Current Test withstand: 1686 V for 500 ms Standards : IEEE 80: 2000 & BS 7430 Warranty : 10 years full replacement Life of earthing : 25 years respectively **Make:** KRATONITE / MARCONITE / KARANITE (Include chamber for earthing, painting and Copper Earh strip earthing certification to be submitted). | 06 Nos or as per requirement |
| 14.0 | Supply, installation, testing and commissioning (SITC) of complete all earthing system including **ESE type lightning arrester** with necessary mounting arrangements on the building top. Providing and laying 32/25 mm × 3 mm Copper/GI earth strip from earth pit to equipment body/LA down conductor with proper supports, clamps, connections, civil work, excavation welding/bolting, and anticorrosive treatment as required. The work shall be completed as per IS standards and directions of Engineer-in-Charge. | As per requirement |
| 15.0 | Providing labor, material, Equipment's for structural steel work at all level including supplying cutting, fabricating welding, erecting and fixing in position on existing roof including painting with primer of approved steel primer also includes cutting edge concrete grounding MS angle fastening. | Job |
| 16.0 | Providing labor, material, Equipment's for fixing **FRP walk way structural** work at all level including supplying cutting, fabricating welding, erecting and fixing in position on existing roof as mention in the technical specifications. The cost shall be inclusive of all necessary accessories tapping screws, walkway coupler etc. | Job |

**Note:**

1. **Do not make any changes in the Schedule of Quantities.**
2. **Do not add or delete any items/quantities.**
3. **Submit quote strictly as per the Schedule of Quantities.**
4. **Bidders are advised to visit and inspect the work-site to make themselves fully conversant with the site conditions and nature of work**



**Seal and Signature of the Bidder**

**ANNEXURE I**

**APPLICATION FORM**
**(On Company's Letterhead)**

Date: _____

To,
The Centre Director,
Homi Bhabha Centre for Science Education, TIFR,
V. N. Purav Road Mankhurd, Mumbai – 400088.

Sir,
Being duly authorized to represent and act on behalf of ..... ..... (hereinafter referred to as "the Applicant") and having reviewed and fully understood all the pre-qualification information provided, the undersigned hereby applies to be pre-qualified by yourselves as a tenderer for award of work(s) for **Design, supply, installation, testing and commission of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education, TIFR, Mankhurd, Mumbai – 400088** as per specification attached.

1. Attached to this letter are copies or original documents defining:
(a) the applicant's legal status
(b) the principal place of business
(c) the place of incorporation (for applicants who are corporations) or the place of registration and thenationality of the owners (for applicants who are partnerships or individually owned firms)
(d) Annexure no. II to VIII

2. Your department and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this application, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This letter of application will also serve as authorization to any individual or authorized representative or any institution referred to in the supporting information, to provide such information deemed necessary and requested by you to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.

3. Your department and its authorized representatives may contact the following persons for further information on general, personnel, technical and financial enquiries.

| Details | Contact 1 | Contact 2 |
|---|---|---|
| Name | | |
| Contact No. | | |
| E-mail | | |

4. This application is made with the full understanding that:
(a) Bids submitted by applicants will be subject to verification of all information submitted at the timeof bidding
(b) I have checked all terms & Conditions and all the clauses included in this contract document, I accept to abide and follow to conditions. I also understand that failing to satisfy the above the contract may lead to the cancellation of this contract and forfeiture of the Performance Guarantee with Security Deposit.
(c) Your department reserves the right to:
i. Amend the scope and value of the contract / bid under this project; in such event, bids will only be called from pre-qualified bidders who meet the revised requirements; and
ii. Reject or accept any application, cancel the pre-qualification process, and reject all applications without assigning reasons or incurring any liability thereof; and
(d) Your department shall not be liable for any such actions and shall be under no obligation to inform the applicant.

5. The undersigned declares that statements made and the information provided in the duly completedapplication are true and correct in every detail.

Signed and sealed, Name …….

For and on behalf of ……..



**Seal and Signature of the Bidder**

**ANNEXURE – II**

**TECHNICAL BID**
**COMPANY PROFILE**
BASIC TECHNICAL DETAILS OF THE BIDDER

| Sr. No | Description | Remarks | Page no. |
|---|---|---|---|
| 1. | Name of business | | |
| 2. | **Type of firm:** Proprietary / Partnership / Pvt. Ltd. / Ltd./ Single Person Company / LLP<br>**Incorporation date:** | | |
| 3. | Name of Directors/ Partners | | |
| 4. | Full particulars of office | | |
| (a) | Registered/ Head Office address | | |
| (b) | Telephone no. | | |
| (c) | E-mail address | | |
| 5. | Bank details | | |
| | (a) Bank name and Address: | | |
| | (b) Account type: | | |
| | (c) Account no: | | |
| | (d) IFSC code: | | |
| 6. | Registration details : | | |
| | (a) PAN no. **(attach copy of proof)** | | |
| | (b) GST registration no.**(attach copy of proof)** | | |
| 7. | Details of Bid Security Declaration/ Earnest Money Deposit | | |
| (a) | Amount (Rs.) | | |
| (b) | Demand Draft No. and Date | | |
| (c) | Drawn on bank | | |
| 8. | **The tenderer should have the Zonal office in Mumbai/ Navi Mumbai/ Thane and nearby areas. (attach copy of proof)** | | |
| 9. | **Name & Designation of the Officer of the Contractor/ Bidder to whom all the reference shall be made for expeditious technical co-ordination** | | |
| 10. | Any other information | | |

**Company Seal**
**Date:**

**(Signature of the bidder)**
**Name and Designation**

**ANNEXURE –III**

**EXPERIENCE OF COMPLETION OF PROJECTS OF SIMILAR NATURE & COMPLEXITY**

(During last **Five** years ending last day of month previous to the one in which applications are invited)

| Sl. No. | Name of work / Project and location | Owner or sponsoring organization | Cost in Lakhs | Date of commencement and Completion | Name and address/ Telephone number of officer to whom reference may be made | Remarks |
|---|---|---|---|---|---|---|
| | | | | | | |
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**NOTE**: Please attach supporting documents (completion certificates along with order copies) for the above information.

Signature and seal of the Authorized Signatory of the bidder



**Seal and Signature of the Bidder**

**ANNEXURE - IV**

**LIST OF WORKS IN HAND**

| Name of work | Name & address of the establishment under whom the work is being executed | Value of the work in Lakhs | Completion time as per the contract | Position of the works in progress | Remarks |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Signature and seal of Authorized Signatory of bidder

**ANNEXURE – V**

**FINANCIAL CAPABILITIES**

(On the Letterhead of CA)

Financial Analysis – Details to be furnished duly supported by figures in balance sheet/ profit & loss account for the last Three years duly certified by the Chartered Accountant, copies to be attached.

| **Financial Year** | **Annual Turn Over in Indian Rupees (or equivalent to IndianRupees) as per Audited Balance Sheet** |
|---|---|
| 2022-23 | Rs. |
| 2023-24 | Rs. |
| 2024-25 | Rs. |

**NOTE:** The above data is to be supported by audited balance sheets.
Attach copies of audited balance sheets duly certified by the chartered accountant for all three years. Audited Balance sheet should mention the membership number of chartered accountant issued by ICAI along with full address.

For _____

Chartered Accountants

Name & Signature :

Company Seal & Phone No. :

Date :



**Seal and Signature of the Bidder**

**ANNEXURE - VI**

**LITIGATION DETAILS (COURT CASES/ARBITRATION)**

| Year | Name of the work | Name of the Client, with Address | Title of the court Case/Arbitration | Detail of the Court/ Arbitrator | Status Pending/ Decided | Disputed Amount (Current Value, the equivalent) in case of Court Cases/ arbitration | Actual Awarded Amount (Rs) in decided Court Cases/ arbitration |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Signature and seal of Authorized Signatory of bidder



**Seal and Signature of the Bidder**

**ANNEXURE –VII**

**CERTIFICATE FOR SITE INSPECTION**
**(To be submitted on Company's Letter Head)**

Certified that we…….……. (Name of bidder) from M/s……(name of Bidder firm) have visited the site on dated ……. and assessed the nature and amount of work involved before submitting our offer. We will be able to complete the works within the stipulated time and also certified that we will be able to supply the material/executing the work as per specification to suit the site conditions.

Signature of bidder with Seal &Date



**Seal and Signature of the Bidder**

**ANNEXURE -VIII**

**BID SECURITY DECLARATION (EMD)**
(To be submitted on Company's Letterhead)

Date:

To,
Centre Director,
Homi Bhabha Centre for Science Education – TIFR,
V. N. Purav Marg,
Mankhurd, Mumbai - 400088.

Tender No. _____

I/we have gone through the tendering conditions pertaining to the Notice Inviting Tender, Pre-qualification Criteria, Instruction to Bidders, General Rules & Directions, Conditions of Contract, General Clauses of Contract, Special Clauses of Contract, Scope of Work & Bills of Quantities, Corrigendum, if any.

We, the undersigned, declare that:

I / We understand that, as per terms and conditions of tender, bids must be supported by a Bid Security Declaration In lieu of Earnest Money Deposit.

I / We hereby accept that I / We may be disqualified from bidding for any contract with you for a period of (03) Three years from the date of disqualification as may be notified by you if,

I. I am /We are in a breach of any of the obligations under the bid conditions, or
II. I/We have withdrawn or unilaterally modified/amended/revised, my/our Bid during the bid validity period specified in the form of Bid or extended period, if any.
III. If I am/we are awarded the contract, and I/ We fail to sign the contract,
IV. On acceptance of our bid by HBCSE, I/we failed to deposit the prescribed Performance Bank Guarantee or fails to execute the agreement or fails to commence the execution of the work in accordance with the terms and conditions and within the specified time.

_____
Signature of bidder with Seal &Date

Name of the authorized person signing: _____

Designation of the authorized person signing: _____

Duly authorized to sign the bid for and on behalf of: _____

Dated on _____ day of_____ month, _____ year.


**Seal and Signature of the Bidder**

**ANNEXURE-IX**

**FORM OF AGREEMENT**
**(To be submitted after issue of WO on Rs.100 Stamp paper)**

This Agreement is made on the__day of__2026___between Homi Bhabha Centre for Science Education- Tata Institute of Fundamental Research (HBCSE-TIFR), Mumbai for the entering into work(s) for **Design, supply, installation, testing and commission of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education, TIFR, Mankhurd, Mumbai – 400088.** as per the document (hereinafter called "The Employer") who enters into this Agreement of the one part and M/s__(herein after called "The Contractor") of the other part..

Whereas the Employer is desirous that certain works should be executed by the Contractor, viz. _____ ("the Works") and has accepted a Bid by the Contractor for the execution and completion of the works and the remedying of any defects therein.

Now this Agreement witnessed as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned tothem in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement,viz:

(a) The Letter of Award;
(b) The said Bid;
(c) The General and Special Conditions of Contract;
(d) Prequalification document
(e) Instructions to Bidders and Specific Conditions of Contract;
(f) The Specification;
(g) Scope of Work
(h) The Price Bid
(i) Annexures
(j) Any other relevant documents referred to in this Agreement or in the aforementioned documents

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of this work.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or only such other sums as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and yearfirst before written. Signed, Sealed, and Delivered by the Said.

Binding Signature for and on behalf of HBCSE-TIFR-Mumbai

Binding Signature of Contractor_____

In the presence of
Witness (1):

(Name & Signature)

Witness (2):

(Name & Signature)



**Seal and Signature of the Bidder**

**ANNEXURE -X**

**PROFORMA FOR PERFORMANCE BANK GURANTEE**

(On a stamp paper of appropriate value from any Nationalized Bank or Scheduled Bank)

**(To be submitted after issue of WO)**

In consideration of the HOMI BHABHA CENTRE FOR SCIENCE EDUCATION- TATA INSTITUTE OF FUNDAMENTAL RESEARCH (hereinafter called "The HBCSE- TIFR") having agreed under the terms and conditions of Work Order No .....dated made between HBCSE-TIFR and M/s ……..…….(hereinafter called "the said Contractor{s}") for the work ……..... .....(hereinafter called " the said Work Order") 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 Work Order, we .....(Indicate the name of the Bank) (hereinafter referred to as "the Bank") hereby undertake to pay to the HBCSE-TIFR an amount not exceeding Rs. …… (Rs……only) on demand by the HBCSE-TIFR.

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

3. We, the said bank, further undertake to pay to the HBCSE-TIFR any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We ..... (indicate the name of 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 Work Order and that it shall continue to be enforceable till all the dues of the HBCSE-TIFR under or by virtue of the Work order have been fully paid and its claims satisfied or discharged or Purchase Officer on behalf of the HBCSE-TIFR certifies that the terms and conditions of the said Work Order have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We…….. (indicate the name of Bank) further agree with the HBCSE-TIFR that the HBCSE-TIFR shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Work Order 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 HBCSE-TIFR against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Work Order 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 HBCSE-TIFR or any indulgence by the HBCSE-TIFR 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 Bank) lastly undertake not to revoke this guarantee except with the previous consent of the HBCSE-TIFR in writing.

8. This guarantee shall be valid up to ....., unless extended on demand by HBCSE-TIFR. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupees only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liability under this guarantee shall stand discharged.

*Signed and sealed*

*Dated the ……. day of ……2026 for …….. (indicate the name of Bank)*

* * (Note: The Letter of Intent shall form part of the Agreement)



**Seal and Signature of the Bidder**

## ANNEXURE XI

## TECHNICAL EVALUATION CRITERIA WITH MARKS

The following Parameters of Technical Bid will be taken into account for Shortlisting the Technically Qualified Bidders:

**I. Mandatory requirements**

1. The bidder should have a legal status such as that of a Proprietary concern, Partnership firm, Company etc. A proof of Registration should be attached.
2. The Bidder should have zonal office in Mumbai.
3. It is mandatory for the bidder to visit the site to understand the exact requirements of the work.
4. The Bidder should have experience (before the date of submission of Tender) of at least **five** years in executing contracts for similar services in CPWD, MES, Railways, State PWDs etc. / Semi Government organizations, PSUs etc.
5. The bidder should have at least one working site in Mumbai Metropolitan Region (MMR), Maharashtra.
6. The Bidder must have an average annual turnover of at least **Rs.70,78,500/-** and should be profit-making during the last three financial years 2023-24, 2024-25 and 2025-26.
7. During the last Three financial years (2023-24, 2024-25 and 2025-26.),the bidder should have at least;
   a. **One** similar completed work order of **Rs.56,62,800/-** or more; OR
   b. **Two** similar completed work orders of **Rs.42,47,100/-** or more; OR
   c. **Three** similar completed work orders of **Rs.28,31,400/-** or More.

   **Note**: Shall means execution of on-grid rooftop solar power plant and maintenance of solar power plant. and misc. works of BOQ mentioned magnitude of quantities. The quality & satisfactory performance of the submitted work will be verified by HBCSE technical team if required by inspecting the said work.
8. Certificates of satisfactory performance from these minimum 3 clients are also to be submitted along with the tender issued after January 2024.
8. Presently blacklisted or debarred firms are not eligible to participate in the tender.

**List of Mandatory Documents to be enclosed with the Technical Bid:**

i. Copy of PAN (Permanent Account Number) card.
ii. List of similar works in hand & works carried out by them for last 5 years indicating A) Agency for whom executed, B) Value of work, C) Completion time as stipulated and actual, or present position of the work
iii. Copy of Valid Electrical Contractor Licenses. Contractor should have license to carry out work in Maharashtra
iv. Experience testimonials along with work orders and completion certificates.
v. Certificate of Registration for GST, Audited Balance sheets signed by chartered accountant & Income Tax of up to date filed return.
vi. DD for EMD or in case of bank transfer the receipt for the same must be enclosed.
vii. Entire tender document (Inclusive of all Annexures), duly signed & sealed on every page by the contractor, along with technical information Annexures as per attached format and subsequent necessary supporting documents.
viii. Shall have adequate technical manpower on its rolls in the form of skilled & unskilled staff. The details on the type of organization (i.e., sole-proprietor or partnership or company), organization matrix etc. shall be provided.

**Note:**

- The entire tender document duly countersigned (as a token of acceptance of all terms and conditions indicated in the documents)

- All the mandatory requirements have to be fulfilled by the bidder to go to the next stage of Technical Evaluation criteria with marks. **The bidders who are not meeting the mandatory requirements, their offer will be summarily rejected.**



**Seal and Signature of the Bidder**

**Technical Evaluation Criteria:**

| TECHNICAL EVALUATION CRITERIA WITH MARKS | | | |
|---|---|---|---|
| **Sr. No** | **Technical Requirement** | | **Max Mark** |
| 1.0 | Copy of Work Orders/Work completion of Similar nature during the last three financial years (2022-2023, 2023-2024 and 2024-2025): | | 15.0 |
| | One (1) Work Order worth Rs. 56,62,800 and above | 15.0 marks each | |
| | Two (2) Work Order worth Rs. 42,47,100 and above | 7.5 marks each | |
| | Three (3) Work Order worth Rs. 28,31,400 and above | 5 marks each | |
| 2.0 | The bidder shall have a minimum average annual turnover of ₹71 lakh for the last three financial years, duly certified by a Chartered Accountant (CA). | | 10.0 |
| 3.0 | The agency shall submit a detailed proposal indicating the estimated monthly energy generation and the projected annual energy generation for a period of the next 25 years, based on the proposed system configuration and site conditions. | | 10.0 |
| 4.0 | The agency with requisite any of the certificate from any of the following authorised institutes/ departments/ bodies.<br><br>1. International Electrotechnical Commission (IEC) Photo voltaic (PV) module qualification certificate.<br>2. Bureau of Indian Standards (BIS) for PV module; NABL accredited lab report for Inverter and Battery.<br>3. ISO 9001:2015 for quality management systems on solar installations | | 10.0 |
| 5.0 | The agency shall arrange site visits for the work orders submitted as part of the eligibility criteria.<br>The Technical Evaluation Committee will assess the bidder based on submitted documents, onsite verification/ client telephonic feedback. The evaluation will focus on the bidder's technical capability, experience, compliance with statutory requirements, and quality of service. | | 20.0 |
| 6.0 | Suitability of Proposed Design<br>a) Concept Design – Electrical works (10 pts)<br>b) Technical /Single Line Drawings (5 pts)<br>c) Proposed equipment based on design (5 pts) | | 20.0 |
| 7.0 | Attendance of the pre-bid meeting | | 05.0 |
| 8.0 | The vendor must submit details of their technical and administrative setup, including offices, workshops, key personnel, and resources relevant to the scope of work.<br>Incomplete or insufficient submission: 0–5 Marks<br>Complete and adequate submission demonstrating capability to execute and maintain the system: 6–10 Marks | | 10.0 |

The proposals shall be evaluated in two stages: (1) Technical and (2) Price/Financial. A minimum qualifying mark is set and only those Contractors who score 70% and above in technical evaluation shall be considered for Financial Evaluation. Thereafter, Financial proposal shall be evaluated. The Commercial Lowest Bidder shall be the first preferred Contractor for the award of Work. When there is a situation of more than one Commercial Lowest Bidder at the same rate, then the highest scorer in technical bid shall be considered to award the contract.



**Seal and Signature of the Bidder**

**ANNEXURE -XII**

## Financial Bid

(TENDER NO: HBC/PUR/PUBLIC TENDER 36/2025-26)

Name of Bidder: _____

| Sr.no | Description of Items | Quantity | Unit | Rate | Amount |
|---|---|---|---|---|---|
| **1.0** | Design, supply, installation, testing and commission of **177kWp on-grid** rooftop solar power plant under net metering policy at the main building terrace, Homi Bhabha Centre for Science Education, TIFR, Mankhurd, Mumbai – 400088. | **1.0** | **Job** | | |
| | | | | **Total** | |
| | | | | **GST@8.9%** | |
| | | | | **Grand Total** | |

**Amount (in words) – Rupees** _____

_____ **only.**

**NOTE:** Any other material makes to be used will require a prior approval of Engineer-In-Charge. In case the material delivered on site, gets rejected in terms of non-approved make and quality, no any payment will be made for the same.
will be made for the same.

Description of Work:
Design, supply, installation, testing and commission of 177kWp on-grid rooftop solar power plant at the main building terrace, Homi Bhabha Centre for Science Education, TIFR, Mankhurd, Mumbai – 400088.
The rate shall include for all the material required including required quantities of SPV modules formed into arrays, their mounting arrangement ,structure, power conditioning units, required DC & AC distribution panels with surge protection units, copper plate earthing stations with copper strip/cabling, data loggers for system performance monitoring through licensed software, metering safety arrangements, civil works, training etc. as defined in the tender to provide a composite operational system. The rate shall also include Warranty/Guarantee, Insurance and Including standard set of tools and spares (to be supplied free of cost).

NOTE:

1. Total project works should strictly carry out complete as described in detailed technical specification. Prices quoted must be for Turnkey project and should be firm for the period of contract. No escalation shall be admissible in respect of any item of the contract.
2. The system shall have guaranteed annualized ac energy output of 2,23,020 kilo watt hour (kwh) per year during the first five years of operation.
3. Prices Quoted should be Inclusive all Taxes, Transportation, Insurance, Loading & unloading, Installation & commissioning, Net Metering PPA and Grid synchronization related approvals and Bi-directional meters and CT's to be provided as MSEDCL norms & modifications in existing LT Panels including supply of LT modules. Also, the Licensing with MSEDCL, TATA and Adani power will be in the scope of bidder only



**Seal and Signature of the Bidder**