

## **NOTICE INVITING TENDER (NIT)**

Tenders are invited as under:

Sl. No.	Particulars	Details
1	Name of work	Supply, installation, testing, commissioning on grid roof top solar PV systems at Ferozpur Cantonment Area including operation and maintenance for 5 years.
2	Tender Notice Number	FCB/67/1/1549 dated 25.09.2025
3	Tender submission start date	on or after 26.09.2025
4	Tender submission closing date	17.10.2025 upto 1800 hours
5	Technical Bid opening date	21.10.2025 at 1000 hours
6	Estimated cost of work	₹14.58 Lac
7	Earnest money	₹29,160/-
8	Security deposit	₹72,900/-
9	Validity of rates of tender	upto 31.03.2026

## DETAILED NOTICE INVITING TENDER (DNIT)

The Ferozpur Cantonment Board invites online tender for the work namely “Supply, installation, testing, commissioning on grid roof top solar PV systems at Ferozpur Cantonment Area including operation and maintenance for 5 years.”, as per detail given below:

Sl. No.	Particulars	No	Unit
1	14kW Solar panels on grid inverter connected roof top solar PV system at Cantonment General Bus Stand (existing sanctioned load 19.51 kW)	01	No
2	6kW Solar panels on grid inverter connected roof top solar PV system at Sunshine Modern Cantonment Board School, Sethi Road (existing sanctioned load 9.79 kW)	01	No
3	5kW Solar panels on grid inverter connected roof top solar PV system at Skill Development Centre, Bazar No.1 (existing sanctioned load 7.58 kW)	01	No
4	4kW Solar panels on grid inverter connected roof top solar PV system at Cantonment Board High School, B.I.B. (existing sanctioned load 7.02 kW)	01	No

1. The contractor/firm/co., should not have been blacklisted by any Govt., Semi-Govt. Deptt. or any other organization. An affidavit to that effect on non-judicial stamp paper of Rs.50/-duly notarized should be uploaded with the Technical Bid. Also note that the applicant must not have formed/be part of any cartel at any time for processing any contract including the present tender.
2. The contractor must be registered with MES/CPWD/PWD/Railways/Any Govt. organization.
3. The tender consisting of two bid process including **technical bid** and **financial bid**.
4. Ferozpur Cantonment Board is not responsible for any delay due to link failure/internet problem etc. in respect of uploading of any documents or in submission of e-bid. It is the responsibility of the Bidder to make sure that the required documents/e-bid shall be uploaded in time.
5. Online technical bid shall be opened as specified in NIT. The technical bids shall be scrutinized by the committee constituted for the purpose. The Financial bids of those contractors/firms etc. whose technical bids are acceptable shall alone be opened and the decision of the C.E.O/Cantt Board in this regard is final and binding. The Financial bids may be opened either on the same day or later.
6. The contractors/firm should quote in figures as well as in the words the rates and amount tendered by them. The amount for each item should be worked out and the requisite totals given. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates, figures and words. However, if a discrepancy is found the rates which correspond with the amount worked out by the contractor shall be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rate written either in figure or in words then the rate quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in words tally but the amount is not worked out correctly the rates quoted by the contractor will be taken as correct and not the amount.
7. The proof of payment on account of Earnest Money is to be uploaded by the bidder. In case of non-receipt of payment of EMD, the bid shall be summarily rejected.  
Earnest Money Deposit (EMD) is to be made in online mode by way of self-generation of Challan from M-Collect after login at eChhawani portal, as under:

Step 1: Open <https://echhawani.gov.in/citizen/>

Step 2: Login using phone no. & OTP (If registered) If not registered, register yourself first.

Step 3: Open challan System.

- Step 4: Click on new challan (Select Cantonment Ferozepur)
- Step5: Select Creditor deposits in service category, then select Earnest Money Deposit in service type, fill details, enter amount and click on generate challan.
- Step 6: Then proceed to payment via UPI/Net Banking etc.

Note- EMD received through eChhawani portal will only be considered. In case EMD is received through any other mode, the same will be summarily rejected.

The acceptance of a tender will rest with the Competent Authority, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received, without assigning any reasons whatsoever. All tenders in which any of the prescribed conditions are not fulfilled, or are incomplete in any respect are liable to be rejected.

8. Tender containing any condition leading to unknown/indefinite liability, are liable to be summarily rejected.
9. Canvassing in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.
10. **The Contractor/firm must be registered with GST. Documents related to the statutory requirements, such as registration with PAN/TIN/TAN, GST, P. Tax & Service Tax etc alongwith proof must be uploaded with tender document.** The rate quoted by the contractor/firm should take care of all such taxes, octroi, duties as aforesaid, till the completion of work. All taxes including Sales Tax, GST, octroi, Excise duty or any other tax on material or on finished work like work's contract tax, turn over tax, Income tax, Service tax etc as applicable till completion of work in respect of this contract shall be payable by contractor and the Board will not entertain any claim whatsoever in this respect.
11. CEO/Ferozepur Cantonment Board reserve the right to postpone and/or extend the date of receipt or opening of tenders or to withdraw the tender notice, without assigning any reason thereof. In such cases, the bidders shall not be entitled to any form of compensation from the Cantonment Board.
12. If at all any rebate (s) is/are to be offered the tenderer shall first quote his rates strictly on the terms and conditions stipulated in tender document and then show separately the rebate (s) offered. The rebate (s) should be un-conditional, failure to follow this procedure will render the tender liable to summarily rejection.
13. Uploading copy of **Provident Fund Code No.** is mandatory, failing which bidder will be disqualified in technical bid.
14. It will be presumed that the tenderers have visited the site before submission of bids and no claim whatsoever shall be entertained with regard to non-visiting of the site at later stage.
15. In case the successful contractor fails to complete all the formalities with regard to submission of original documents, execution of contract agreement and commencement of work within stipulated time period, the Cantt Board may award the contract to another tenderer as it deems fit or may go for re-tendering. Such decision of Cantt Board will be final and binding.
16. In case of any contradiction in the terms and conditions of tender document, the decision of CEO/Cantt Board will be final with regard to such term and conditions.

17. In case of any clerical/typographical/grammatical mistake in the Tender Document, the decision of CEO/Cantt Board shall be final and binding in this regard.
18. The quantities of various items of work given in the schedule of quantities are approximate. The quantities of work may vary at time of allotment/execution of work. CEO/Cantt. Board reserves the right to omit/delete any items (s) of work from the schedule at the time of allotment/before the commencement of work without assigning any reason whatsoever. Contractor will be paid for the authorized actual work done at the site duly verified by the concerned officials of the Cantonment Board.
19. The Cantonment may issue amendment/errata to the tender documents before due date of submission of tender. The Contractors are required to read the tender documents in conjunction with amendments, if any, issued by the Cantt. Board.
20. The Contractor is not supposed to incorporate any amendment/errata in the body of tender documents either in ink or pencil/typing. In case the contractor on the body of tender incorporates amendments/errata, they shall not be considered and the amendment/errata issued by the Cantt. Board shall only hold good. The amendments/errata issued to these documents if any would be uploaded on web side of <http://eprocure.gov.in/eprocure/app>. The contractors shall visit said webize from time to time to see any amendments/errata's.
21. All the terms and conditions of tender document shall be the part and parcel of the agreement.
22. Manual bids will not be acceptable.
23. The contractor shall quote his rates including all the taxes, charges, cess etc.

Sd/-  
Chief Executive officer  
Ferozepur Cantonment

## TERMS & CONDITIONS

### **A. Terms & Conditions:**

Applications are invited from contractors/firms etc. for the work of “Supply, installation, testing, commissioning on grid roof top solar PV systems at Ferozpur Cantonment Area including operation and maintenance for 5 years”.

1. All the pages of the application are to be signed by the authorized signatory of the contractors. Any over-writing to be duly initialed by the contractors.
2. Online applications will be scrutinized by the committee constituted for the purpose.
3. There should not be any deviation in terms and conditions as have been stipulated.
4. Incomplete online applications will be summarily rejected. The contractors should upload relevant documents in support of the information furnished in the application.
5. The application of the contractors, whose past performance was found unsatisfactory in the projects entrusted to them by any other organizations, will not be considered. The decision of the CEO/Cantt Board in this regard is final and binding.
6. The CEO/Cantt Board reserves the right to reject any or all the bids without assigning any reasons thereof and no correspondence in this regard shall be entertained.
7. *Certificate issued by the Central/State Government departments, Central/State Autonomous bodies, Central/State Public Sector Undertakings /Public Sector organizations etc. (regarding satisfactory completion of work) shall contain details of similar nature of works.*

Sd/-  
Chief Executive officer  
Ferozpur Cantonment

**Criterion of eligibility for submission of bid documents:**

(i) The contractor/firms should have satisfactorily completed a **single** contract of similar nature costing at least 80% of the estimated cost during the last 5 years as on 31.03.2025.

Or

The contractor/firms should have satisfactorily completed **2 (two)** number of contracts of similar nature costing at least 50% of the estimated cost during the last 5 years as on 31.03.2025.

Or

The contractor/firms should have satisfactorily completed **3 (three)** number of contracts of similar nature costing at least 40% of the estimated cost during the last 5 years as on 31.03.2025.

**NOTE:**

- i. For the purpose of this clause “similar work” means, the “SITC of grid connected or off-grid solar PV system with or without battery backup”.*
  - ii. The value of all above executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum calculated from the date of completion to previous day of last date of submission of tenders.*
  - iii. Certificate of successful completion of work in respect of the experience should be issued by an officer not below the rank of Executive Engineer or equivalent. The work done certificate shall clearly indicate amount of work done, date of start, date of completion, time period (stipulated and actual). The works not completed in stipulated time where levy of compensation is imposed are not considered satisfactory for work experience.*
- (ii) The contractor should have Income Tax, PAN and GST number.
- (iii) The bidder/contractor shall be registered with Ministry of New & Renewable Energy (MNRE) /Punjab State Power Corporation Limited (PSPCL) or equivalent for regular solar work.
- (iv) Bidders shall upload all the Signed and Scanned Copies of Certificates pertaining to their Eligibility Criteria, Essential Conditional Criteria, Financial Criteria Documents, etc. No Physical Documents will be considered. All the Participants shall produce all the Original Documents for Verification whenever called for Financial Bids of Tenderers who's Technical Bids are disqualified will not be considered.
- (v) The firms shall also submit copy of Police verification from police authority of the area where the registered office of the firm is located/notarized copy of valid passport of proprietor/each partner/each Director.

Sd/-  
Chief Executive officer  
Ferozpur Cantonment

## GENERAL CONDITIONS OF CONTRACT

1. The tenderers should quote their rates in figures and words where the quantities have been indicated in the relevant items of the schedule of quantities. Failure to do so may invalidate the tender. Erasing or over writing shall not be allowed. Corrections in the tender should be avoided if this becomes unavoidable, the entire rate (and not a portion only) shall be scored out and signed and stamped (not simply initialed) by the tenderer as token of such cancellation. A fresh rate in specified manner shall then be correctly written.
2. In the event of the tender being submitted by a firm/Co., it must be signed and stamped by a member/Partner/Director or members/partners/directors of the firm/Co., having legal authority to do so, and if called for, the legal documents in support thereof must be produced for inspection and the same in the case of the firm carried out by one member of a joint family. It must Ferozpur Cantonment Board that the firm/Co., etc. is duly registered. Any tender signed and stamped by a person not holding a power of attorney shall be treated as informal.
3. BID by a partnership firm/consortium of firms must furnish names of all partners and be signed in the partnership name. The copy of partnership deed/consortium agreement should also be uploaded. The Bidder's name stated in the BID shall be exact legal name of the firm/company/corporation etc. as registered or incorporated.
4. The Proposals must be electronically submitted (online through Internet) within the Date and Time published in e – Procurement Portal including **technical bid and financial bid**.
5. The Proposals shall contain no Alterations or Additions, except those to comply with instructions issued by the Ferozpur Cantonment Board that are duly incorporated.
6. No Physical Documents shall be considered. All the Participants shall produce all the Original Documents for Verification whenever necessary.
7. The successful tenderer will have to execute agreement with Ferozpur Cantonment Board within seven days of receipt of intimation.
8. It is Cantonment Board's policy to require that contractors observe the highest standard of ethics during the execution of such contracts. In pursuance of this policy, the Cantonment Board, Ferozpur. Defines, for the purposes of this tender document, the terms set forth below as follows –Attorney of and
  - (i) "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the selection process or in contract execution; and
  - (ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a selection process or the execution of a contract to the detriment of Ferozpur Cantonment Board, and includes collusive practices among bidders (prior to or after submission of proposals) designed to establish prices at artificial, noncompetitive levels and to deprive Ferozpur Cantonment Board of the benefits of free and open competition.
  - (iii) will reject a proposal for award if it determines that the firm recommended for award has engaged in corrupt or fraudulent activities in competing for the contract in question;
  - (iv) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded Ferozpur Cantonment Board financed contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Ferozpur Cantonment Board - financed contract.
9. Tenderer shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by any Govt./Semi-Govt./PSU/Autonomous bodies etc.
10. Conditional tender will not be accepted.
11. The Chief Executive Officer shall be acting on behalf of the Ferozpur Cantonment Board for all purpose and his order and instructions shall be binding on the bidders.

12. In case, the bidder fails to complete the work, the same will be completed by the Board through other agencies at the risk and cost of the successful bidder and any loss sustained by the Board will be made good from the successful bidder and he will be held responsible for all the consequences.
13. The CEO reserves to himself the right to impose any additional conditions or to modify any condition at any time, particular to ensure better completion.
14. The bids will remain valid for a period of 90 Days after the due Date for Submission of proposal.
15. The Evaluation Committee appointed by the CEO shall as a whole and each of its Members individually evaluate the bids on the Basis of tender document.

16. **EARNEST MONEY AND SECURITY DEPOSITS**

The tenderer will have to deposit in online mode Earnest Money Deposit (EMD) for an amount as specified in NIT **The CEO/Cantt Board is not liable to pay any interest on the earnest money. The Earnest money of the unsuccessful tenderers will be refunded without any interest soon after the evaluation of financial bid or after the expiry of the validity period of the tender.**

Performance Security which is 5% of the estimated cost shall be deposited by the successful bidder through eChhawani portal and the same shall be refunded after expiry of contract. The security shall be refunded only after one year from the completion of the work and a “Satisfactory Work Completion” report is submitted by the concerned staff.

Additional security shall also be deposited in case of revision of contract amount. No interest will be paid for the additional security amount.

The initial security deposit will have to be made within 07 days from the date of acceptance of tender, failing which the CEO/ Cantt. Board at his discretion may revoke the letter of acceptance and forfeit the earnest money deposit furnished along with the tender.

It shall be refunded to the contractor after completion of the operation and Maintenance period of 60 months and handing over of sites to Ferozpur Cantonment Board, provided he has satisfactorily carried out all the works and attended to all defects in accordance with the conditions of the contract.

Apart from the initial security deposit made as above, retention money shall be deducted from progressive running bills@ 10% of the gross value of each running bill.

17. The CEO/Cantt Board shall engage Third Party Evaluator for Project. The bidder shall abide by the Instructions / Suggestions given by the Third-Party Evaluator for the successful completion of the Project.

18. **Law Governing the Contract**

This Contract, its Meaning and Interpretation, and the Relation between the Parties shall be governed by the Applicable Law.

19. **Language**

This Contract shall be executed in English Language, which shall be the Binding and Controlling Language for all Matters relating to the Meaning or Interpretation of the Contract.

20. **Effectiveness of Contract**

This Contract shall come into Effect from the Date when the Contract is signed by both the Parties.

21. **Expiration of Contract**

The Contract shall terminate at the end of operation and maintenance period of the project.

## 22. LIQUIDATED DAMAGES

Should the work be not completed to the satisfaction of the CEO/Cantt Board within the stipulated period, the contractor shall be bound to pay to the Cantt Board a sum calculated as given below by way of liquidated damages and not as penalty during which the work remains uncompleted or unfinished after the expiry of the completion date.

a)	For contracts having time for completion 6 months and less	1.00% of the tender amount per week subject to a ceiling of 10% of the accepted contracted sum.
b)	For contracts having time for completion exceeding 6 months but not exceeding 2 years (24 months)	0.50% of the tender amount per week but not exceeding the total Security deposit.
c)	For contracts having time for completion in excess of 2 years	0.25% of the tender amount per week but not exceeding the total Security deposit.

## 23. COMPLIANCE OF APPLICABLE LABOUR LAWS:

- a) The contractor shall abide by the rules & regulations of Labours Laws applicable in their case relating to weekly holidays, Minimum wages, working hours, EPF, ESI, overtime allowance, leave with wages and compensatory holidays etc.
- b) The contractor shall strictly implement all relevant provisions enumerated under Contract Labour (Regulation & Abolition) Act. 1970 and will submit all statutory documents and records as applicable to concerned authorities and shall take full responsibility for obtaining Labour license from Central/State Authority as per the Act. He/she/they will also ensure timely submission of statutory returns as applicable in their case.
- c) The Contractor should maintain all records in Hindi or English as per the provision made in the various statutes including Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour (Regulation & Abolition) Central Rules, 1971, Minimum Wages Act, 1948, Workmen Compensation Act, 1923, Employees State Insurance/Act, 1948 etc. and latest amendment thereof. Any violations of this clause shall be treated as breach of contract and action shall be taken accordingly.
- d) The contractor will strictly regulate the terms of employment of his/her/their employees and manage the discipline as per Industrial Employment (standing orders) Act. 1946.
- e) The contractor shall be solely responsible for the payment of wages, including overtime wages to the workmen and ensure its timely payment thereof through Bank.
- f) The Contractor shall abide the rules and regulations of Pradhan Mantri Suraksha Yojana.
- g) The contractor or its workmen shall not at any point of time have any claim whatsoever against the Cantt Board, Ferozpur
- h) Neither the contractor nor his workmen can be treated as employees of the Ferozpur Cantonment Board for any purposes. They are not entitled for any claim, right, preference etc. over any job/regular employment of the Cantt Board.
- i) If the contractor fails to discharge his duties or neglects to perform the work agreed to done under the agreement, the Cantt Board is entitled to terminate this agreement as per clause and get the work done by / through other means and claim reimbursement of actual expenses incurred and also damages for the loss incurred on account of failure on the part of the contractor to discharge the duties or to perform the work under the agreement.
- j) The Contractor shall in addition to any indemnity provided by the relevant clauses of the agreement or by law, indemnify and keep indemnified, the CEO/Cantt Board against all claims,

damages or compensation under the provisions of Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employer's Liability Act, 1938, Workmen's' Compensation Act, 1923, Employees provident fund, Employees State Insurance or any modification thereof or any other law relating thereto and rules made there under from time to time, as may be applicable to the contract which may arise out of or in consonance of the construction or maintenance or performance of the work under the contract and also against costs, charges and expenses of any suit, action or proceedings arising out of any accident or injury or death.

- k) The Contractor shall strictly comply with the provisions of Employees Provident Fund Act and register himself with Employer Provident Fund Commissioner (EPF) /CMPF before commencing work. The Contractor shall deposit Employees and Employers contributions to the EP, ESI etc as applicable every month. The Contractor shall furnish along with each Running bill, the challan / receipt for the payment made to the EPF, ESI etc for the preceding month.
- l) In case the EPF, ESI etc. challan / receipt, as above, is not furnished, CEO/Cantt Board shall deduct 10% (ten percent) of the payable amount from Contractor's running bill and retain the same as a deposit. Such retained amounts shall be refunded to Contractor on production of EPF, ESI etc for the period covered by the related running bill.

#### **24. CONTRACTOR'S EMPLOYEES**

The contractor shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the CEO/Engineer-in-charge. The contractor shall employ in connection with the work persons having the appropriate skill or ability to perform their job efficiently. The contractor's rate shall include wages to all supervising staffs to be employed by him.

The contractor shall employ local labourers on the work as far as possible. No labourer below the age of eighteen years and who is not an Indian National shall be employed on the work.

The contractor shall comply with the provisions of all labour legislation including the requirements of

- a) The payment of Wages Act.
- b) Employer's Liability Act
- c) Workmen's Compensation Act.
- d) Contract Labour (Regulation & Abolition) Act. 1970 and Central Rules 1971
- e) Apprentices Act. 1961
- f) Minimum Wages Act
- g) Any other Act or enactment relating thereto and rules framed there under from time to time.

The contractor shall keep the CEO/Cantt Board saved harmless and indemnified against claims if any of the workmen and all costs and expenses in connection with any claim that may be made by any workmen.

The contractor shall comply at his own cost with the order of the CEO/Cantt Board regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor to prevent nuisance of any kind on the works or the lands adjoining the same.

The contractor shall arrange to provide first aid treatment to the labourers engaged on the works. He shall within 24 hours of the occurrence of any accident at or about the site or in connection with execution of the works report such accident to the CEO/Cantt Board and also to the competent Authority where such report is required by law.

## **25. DISMISSAL OF WORKMEN**

The contractor shall on the direction of the CEO/Cantt Board immediately dismiss from works any person employed thereon by him, who may in the opinion of the CEO/Cantt Board be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the CEO/Cantt Board or any of their officer or employee.

## **26. ASSIGNMENT**

The whole of the works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor, shall take a new partner, without written consent of the CEO/Cantt Board and no subletting shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

## **27. VARIATION/ DEVIATION**

The tender rates shall be applicable for any increase in the tendered quantities up to variations of +25%. If the quantity of work to be executed varies beyond +25%, and the contractor is unwilling to supply/execute the same at the approved rate, then the rate for the quantity beyond +25% of such items will be derived as per standard method of rate analysis (coefficients will be adopted as per MES/PWD analysis of rates wherever applicable, if coefficients are not available in MES/PWD, market rate analysis approved by the CEO/Cantt Board will be final and binding on the contractor) based on prevalent fair price of labour (labour rate for various category as per minimum wages act as applicable will be adopted for the purpose of analysis irrespective of higher wages if any paid by the contractor), material and other components as required including 15% towards contractor's profit & overheads. In case the quantity decreases or item/s omitted/deleted at the time of allotment/ commencement/ execution, the contractor will be paid for the actual work done at the site duly verified by the concerned officials. Nothing extra will be paid by the CEO/Board on account of omission/deletion of items or decrease in the quantity of items. The CEO/Board shall not entertain any claim whatsoever from the contractor on this account. To execute all the works referred to in the said documents upon the terms & conditions contained or referred to therein at the item rates contained in the aforesaid Schedule 'A' or at such rates and to carry out such deviations as may be ordered under condition 7 of IAFW-2249.

The price of all additional items/ non-tendered items will be worked out on the basis of rates quoted for similar items in the contract wherever existing. If similar items are not available, the rates for such items will be derived as per standard method of rate analysis (coefficients will be adopted as per MES/PWD analysis of rates wherever applicable, if coefficients are not available in MES/PWD, market rate analysis approved by the CEO/Cantt Board will be final and binding on the contractor) based on prevalent fair price of labour (labour rate for various category as per minimum wages act as applicable will be adopted for the purpose of analysis irrespective of higher wages if any paid by the contractor), material and other components as required including 15% towards contractor's profit & overheads.

## **28. CLEARING SITE ON COMPLETION**

On completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the CEO/Cantt Board. The rate quoted by the contractor shall include all such contingencies.

## **29. DEFECTS AFTER COMPLETION**

The contractor shall make good at his own cost and to the satisfaction of the CEO/Cantt Board all defects, shrinkage, settlements or other faults which may appear within **12 months** after completion of the work. In the default, the CEO/Cantt Board may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental thereto shall be made good and borne by the contractor and such damages, loss and expenses

shall be recoverable from him by the CEO/Cantt Board or may be deducted by the CEO/Cantt Board, in lieu of such amending and making good by the contractor, deduct from any money due to the contractor a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient recover that balance from the contractor from the amount retained under together with any expenses the CEO/Cantt Board may have incurred in connection therewith.

### 30. **ESCALATION**

The rate quoted shall be applicable throughout the tenure of the contract (including extension of time, if any, granted) and will not be subject to any fluctuation due to increase in cost of materials, labour, sales tax, octroi, service tax, works contract tax, Income tax, GST, Cess and charges etc., unless specifically stated in the tender document.

### 31. **SUSPENSION**

- a) If the contractor except on account of any legal restraint upon the CEO/Cantt Board preventing the continuance of the work or in the opinion of the CEO/Cantt Board shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the CEO/Cantt Board shall have the power to give notice in writing to the contractor requiring the work to be proceeded within a reasonable manner and with reasonable dispatch, such notice purport to be a notice under this clause.

After such notice shall have been given the contractor shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant or materials to subsist from the date of such notice being given until the notice shall have been complied with. If the contractor fails to start the work within seven days after such notice has been given to proceed with the works as therein prescribed, the CEO/Cantt Board may proceed as provided in clause 32. (Termination of Contract by CEO/Cantt Board)

- b) **SUSPENSION OF WORK:**

Suspension of work - The CEO/Cantt Board shall have power to suspend the work. The contractor shall on receipt of the order in writing of CEO/Cantt Board (whose decision shall be final and binding on the contractor), suspend the progress of work or any part thereof for such time in such manner as the CEO/Cantt Board may consider necessary so as not to cause any damage, or endanger the safety thereof for any of the following reasons:

- i) on account of any default on the part of the contractor, or
- ii) for proper execution of the works, or part thereof, for reasons other than the default of the contractor or,
- iii) for safety of the works, or part thereof.

The contractor shall, during such suspension properly protect and ensure the works to the extent necessary and carry out the instruction of the CEO/Cantt Board. If the suspension is ordered for reasons (ii) & (iii), the contractor shall be entitled to an extension of time equal to the period of every such suspension plus 25%. This shall also be applicable for completion of the item or group of items of the work for which a separate period of completion as specified in the contract and of which the suspended work forms a part.

### 32. **TERMINATION OF CONTRACT BY CEO/CANTT BOARD**

If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a receiver of the contractor's firm appointed by the court shall be unable within

fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the CEO/Cantt Board that he is able to carry out and fulfil the contract, and if so required by the CEO/Cantt Board to give reasonable security therefore, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to contractor, there under, or shall neglect or fail to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the contractor to observe or perform the same or shall use improper materials of workmanship in carrying on the works, or shall in the opinion of the CEO/Cantt Board not exercise such due diligence and make such progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the CEO/Cantt Board after three clear days notice requiring the contractor so to do shall have been given to the contractor as hereinafter mentioned or shall abandon the contract, then and in any of the said cases, the CEO/Cantt Board may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the CEO/Cantt Board of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determine and as if the works subsequently executed by or on behalf of the contractor (without thereby creating any trust in favour of the contractor) further the CEO/Cantt Board or his agent, or servants, may enter upon and take possession of the work and all plants tools scaffolding sheds machinery, steam, and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be the CEO/Cantt Board shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor fails to do so within a period of 14 days after receipt by him the CEO/Cantt Board may sell the same by Public Auction and shall give credit to the contractor for the amount so realized.

Any expenses or losses incurred by the CEO/Cantt Board in getting the works carried out by other contractors shall be adjusted against the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other contractors or against the Security Deposit.

33. **TERMINATION & CANCELLATION OF CONTRACT**

The CEO/Cantt Board shall, in addition to other remedial steps to be taken as provided in the conditions of contract be entitled to cancel the contract in full or in part whether the date of completion has or has not elapsed, by notice in writing if the contractor:

makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the CEO then on the expiry of the period as specified in the notice

**Or**

commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the CEO/Cantt Board, then on the expiry of the period as may be specified by the CEO in a notice in writing.

**Or**

obtains a contract with the Cantt Board as a result of ring tendering or other non-bonfire methods of competitive tendering

**Or**

shall offer or give or agree to give any person in the service of the CEO/Cantt Board or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for his company.

**Or**

fails to complete the work or items of work with individual dates of completion, on or before the date/dates of completion or as extended by the CEO/Cantt Board, then on the expiry of the period as may be specified by the CEO in a notice in writing.

**Or**

transfers, sublets, assigns the entire work or any portion thereof without the prior approval in writing from the CEO/Cantt Board. The CEO may by giving a written notice, cancel the whole contract or portion of it in default.

34. **The contract shall also stand terminated under any of the following circumstances:**

- a) If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of Insolvency Act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any Insolvency Act.
- b) In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the contractor's company or by an order of court, not being voluntary liquidation proceedings for the purpose of amalgamation or reorganization, or a receiver or manager is appointed by the court on the application by the debenture holders of the contractor's company, if any.
- c) If the contractor shall suffer an execution being levied on his/their goods, estates and allow it to be continued for a period of 21 (twenty-one) days.
- d) On the death of the contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the CEO/Cantt Board is not satisfied that the legal representative of the deceased proprietor or the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the CEO/Cantt Board in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

35. **On cancellation of the contract or on termination of the contract, the CEO/Cantt Board shall have powers:**

- a) To take possession of the site, any materials, constructional plant, equipment, stores etc. thereon and carry out balance work through any means or through any other agency.
- b) To give the contractor or his representative of the work 7 (seven) days notice in writing for taking final measurement for the works executed till the date of cancellation or termination of the contract. CEO/Cantt Board/Engineer-in-charge shall fix the time for taking such final measurement and intimate the contractor in writing. The final measurement shall be carried out at the said appointed time notwithstanding whether the contractor is present or not. Any claim as regards measurement which the contractor is to make shall be made in writing within 7 (seven) days of taking final measurement by Engineer-In-charge as aforesaid and if no such claim is received, the contractor shall be deemed to have waived all claims regarding above measurements and any claim made thereafter shall not be entertained.

- c) 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 hands and to give it to another contractor or take up departmentally, to complete the work. The contractor whose contract is terminated shall not be allowed to participate in future bidding.

In such an event, the contractor shall be liable for loss/damage suffered by the CEO/Cantt Board because of action under this clause and to compensate for this loss or damage, the CEO/Cantt Board shall be entitled to recover higher of the following:

- i) Forfeiture of security deposit comprising of performance guarantee and retention money and additional performance security, if any, at the disposal of the CEO/Cantt Board.

**Or**

- ii) 20% of value of incomplete work. The value of the incomplete work shall be calculated for the items and quantities remaining incomplete (as per provision of agreement) at the agreement rates including price variation as applicable on the date, when notice in writing for termination of work was issued to the contractor.

The amount to be recovered from the contractor as determined above, shall, without prejudice to any other right or remedy available to the CEO/Cantt Board as per law or as per agreement, will be recovered from any money due to the contractor on any account or under any other contract and in the event of any shortfall, the contractor shall be liable to pay the same within 30 days. In case of failure to pay the same the amount shall be debt payable.

In the event of above course being adopted by the CEO/Cantt Board, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased materials, equipment or entered into agreement or made advances on any account or with a view to the execution of work or performance of the contract. And in case action is taken under any of provision aforesaid, the contractor shall not be entitled to recover or to 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 value payable in respect thereof and he shall only be entitled to be paid the value so certified.

The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor as stated earlier in the tender document.

### 36. **FORECLOSURE OF CONTRACT:**

If at any time after acceptance of the tender the Cantt Board decides to abandon or reduce the scope of work for any reason whatsoever the Cantt Board, through its CEO, shall give notice in writing to that effect to the contractor and contractor shall act accordingly in the matter. In the event of abandonment, the contractor shall have no claim to any payment of compensation or otherwise whatsoever, other than those mentioned below:-

- a) to pay reasonable amount assessed and certified by the Engineer-in-Charge of the expenditure incurred, if any, by the contractor on preliminary works at site e.g. storage of materials etc.
- b) to pay the contractor at the contract rates full amount for works executed and measured at site up to the date of such abandonment.
- c) to pay for the materials brought to site or to be delivered at site, which the contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the CEO/Cantt Board should be in good condition and the CEO/Cantt Board may allow at its discretion the contractor to retain the materials in full or in part if so desired by him and to be transported by the contractor from site to his place at his own cost with due permission of the CEO/Cantt Board.

- d) to take back the materials issued by the CEO/Cantt Board but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issue price less allowance for any deterioration or damage caused while in custody of the contractor.
- e) to pay for the transportation of tools and plants of the contractor from site to contractor's place or to any other destination, whichever is less.

The contractor shall, if required by the Engineer-in-Charge, furnish to him books of accounts, papers, relevant documents as may be necessary to enable the Engineer-in-Charge to assess the amounts payable in terms of clauses(a) (c) & (e) above. The contractor shall not have any claim for compensation for abandonment of the work, other than those as specified above.

37. **CARRYING OUT PART WORK AT RISK & COST OF CONTRACTOR.**

If the progress of the work or of any portion of the work is unsatisfactory, the CEO/Cantt Board, after giving the contractor 15 days' notice in writing, without cancelling or terminating the contract, shall be entitled to employ another Agency for executing the job or to carry out the work departmentally or contractually through tendering / limited tendering process, either wholly or partly, debiting the contractor with cost involved in engaging another Agency or with the cost of labour and the prices of materials, as the case may be. The certificate to be issued by the Engineer-in-Charge for the cost of the work so done shall be final and conclusive and the extra cost, if any, shall be borne by the contractor. However, when this clause is invoked, penalty will not be applicable other than on account of delayed completion.

The value of the work taken away shall be calculated for the items and quantities taken away at the agreement rates including price variation as applicable on the date, when notice in writing for taking away part work was issued to the contractor. The contractor, from whom part work is being taken out, shall not be allowed to participate in the tendering process if any.

If the expenses incurred by the department is less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

In the event of above course being adopted by the CEO/Cantt Board, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

38. The Bidder shall indemnify and hold harmless the Cantt Board against any and all claims demands and/or judgments of any nature brought against the Cantt Board arising out of the services by the bidder and its staff under the contract. The obligation under this clause shall survive the termination of the contract.

39. **ARBITRATION:**

Any disputes / claims and / or questions whatsoever arising out of this agreement or any dispute regarding the representations, objections between the parties or the construction interpretation of the application thereof or any clause or thing herein contained or as to any act, deed or commission or omission of any person or as to any other matter in any way relating to this agreement shall be referred to the sole arbitrator, who shall be a committee constituted as per provision of Section 327 of the Cantonment Act, 2006. The venue of such arbitration shall be at Ferozepur. The decision given by the sole arbitrator shall be final and

binding upon both the parties. The arbitrator shall have summary powers to decide the dispute and shall also have powers to dispense with the provisions of the Civil Procedure Code and the Indian Evidence Act. The Arbitration shall be fast arbitration and shall be fast track arbitration and shall be concluded within a period of three months.

Sd/-  
Chief Executive officer  
Ferozpur Cantonment

## **CONDITIONS OF CONTRACT**

### **1. SCOPE OF WORK**

1.1 The scope of work for the bidder includes complete design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the grid connected rooftop solar PV project including operation and maintenance (O&M) of the project for a period of 5 years after commissioning.

### **2. INSURANCE**

2.1 The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The owner shall take appropriate insurance after commissioning of the plant and during O&M period.

2.2 The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.

### **3 WARRANTEES AND GUARANTEES**

3.1 The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship for a period of 5 years from the date of commissioning. The successful bidder has to transfer all the Guarantees /Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be joint responsibility of the Successful bidder and the owner of the project. Spare parts shall be procured by the owner as per the recommendation of the Bidder.

### **4 TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP**

4.1 The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/Indian Standards as detailed in the Section- III (Technical specifications) of the bid document. Where appropriate Indian Standards and Codes are not available, other suitable standards and codes as approved by the MNRE shall be used.

4.2 The specifications of the components should meet the technical specifications mentioned in Section III.

4.3 Any supplies which have not been specifically mentioned in this Contract but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the Bidder without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV plant.

### **5 OPERATION & MAINTENANCE (O&M)**

The bidder shall be responsible for operation and maintenance of the Solar PV system for a period of 5 years for this model projects, during which Ferozpur Cantonment Board will monitor the project for effective performance in line with conditions specified elsewhere in

the bid document. During this period, the owner shall be responsible for supply of all spare parts as recommended by the bidder from time to time for scheduled and preventive maintenance, major overhauling of the plant, replacement of defective modules, inverters, PCU's etc and maintaining log sheets for operation detail, deployment of staff for continuous operations and qualified engineer for supervision of O&M work, complaint logging & its attending.

**6 METERING AND GRID CONNECTIVITY**

Metering and grid connectivity of the solar PV system under this scheme would be the joint responsibility of the Bidder and owner in accordance with the prevailing guidelines of the concerned DISCOM and / or CEA (if available by the time of implementation).

**7 PLANT PERFORMANCE EVALUATION**

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period.

**8 PROGRESS REPORT**

The bidder shall submit the progress report monthly to Ferozpur Cantonment Board in Prescribed Proforma. Ferozpur Cantonment Board will have the right to depute his/their representatives to ascertain the progress of contract at the premises of works of the bidder.

**9 PROJECT INSPECTION.**

The project progress will be monitored by Ferozpur Cantonment Board and the projects will be inspected for quality at any time during commissioning or after the completion of the project either by officer(s) from Ferozpur Cantonment Board or any authorized agency/ experts. Ferozpur Cantonment Board may depute a technical person(s) from its list of empanelled experts for inspection, Third party verification, monitoring of system installed to oversee, the implementation as per required standards and also to visit the manufactures facilities to check the quality of products as well as to visit the system integrators to assess their technical capabilities as and when required.

Sd/-  
Chief Executive officer  
Ferozpur Cantonment

## TECHNICAL SPECIFICATIONS

**The proposed projects shall be commissioned as per the technical specifications given below. Any shortcomings will lead to cancellation of subsidy in full or part as decided by Ferozpur Cantonment Board & Competent Authority's decision will be final and binding on the bidder.**

### **1. DEFINITION**

A Grid Tied Solar Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables and switches. PV Array is mounted on a suitable structure. Grid tied SPV system is without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

Solar PV system shall consist of following equipments/components.

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

### **2. SOLAR PHOTOVOLTAIC MODULES:**

2.1 The PV modules used should conform to standards as below.

2.2 The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-2- requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.

- a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701
- b) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of 500 Wp and above wattage. Module capacity less than minimum 500 watts should not be accepted
- c) PV modules must be tested and approved by one of the IEC authorized test centers.
- d) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- e) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid. Ferozpur Cantonment Board shall allow only minor changes at the time of execution.
- f) Other general requirement for the PV modules and subsystems shall be the Following:
  - I. The rated output power of any supplied module shall have tolerance of +/-5%.
  - II. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
  - III. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode.

The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.

IV. IV curves at STC should be provided by bidder.

2.3. Modules deployed must use identification stickers. The following information must be mentioned on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).

- a) Name of the manufacturer of the PV module
- b) Month & year of the manufacture (separate for solar cells and modules)
- c) I-V curve for the module Wattage,  $I_m$ ,  $V_m$  and FF for the module
- d) Unique Serial No and Model No of the module
- e) Date and year of obtaining IEC PV module qualification certificate.
- f) Name of the test lab issuing IEC certificate.
- g) Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

### 3. **WARRANTIES:**

a. Material Warranty:

- i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer ("Customer")
- ii. Defects and/or failures due to manufacturing
- iii. Defects and/or failures due to quality of materials
- iv. Non conformity to specifications due to faulty manufacturing and /or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole Option.

b. Performance Warranty:

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

### 4. **ARRAY STRUCTURE**

- a. Hot dip galvanized MS mounting structures along with Pre Galvanized MS mounting structures, may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
- b. The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to Ferozpur Cantonment Board. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- c. The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- d. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.

**Aluminium structures also can be used which can withstand the wind speed of respective wind zone.** Necessary protection towards rusting need to be provided either by coating or

anodization.

- e. The fasteners used should be made up of suitable grade of steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
- h) The minimum clearance of the structure from the ground level should be 200 mm.
- i) The mounting structures should have three angle seasonal tilt.

## **5. JUNCTION BOXES (JBs)**

- a. The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast Aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.
- b. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands. Provision of earthing.
- c. Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.
- d. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification

## **6. DC DISTRIBUTION BOARD:**

- a. DC Distribution panel to receive the DC output from the array field.
- b. 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.

## **7. AC DISTRIBUTION PANEL BOARD:**

- a. 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.
- b. All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- c. The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- d. All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz
- e. The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- f. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
  - g. Should conform to Indian Electricity Act and rules (till last amendment).
  - h. All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in supply voltage	+/- 10 %
Variation in supply frequency	+/- 3 Hz

**8. PCU/ARRAY SIZE RATIO:**

- a. The combined wattage of all inverters should not be less than rated capacity of power plant under STC.
- b. Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

**9. PCU/ Inverter:**

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the “Power Conditioning Unit (PCU)”. In addition, the

PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be DG set interactive. If necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

- Switching devices : IGBT/MOSFET
- Control : Microprocessor /DSP
- Nominal AC output voltage and frequency : 415V, 3 Phase, 50 Hz (In case single phase inverters are offered, suitable arrangement for balancing the phases must be made.)
- Output frequency : 50 Hz
- Grid Frequency Synchronization range : + 3 Hz or more
- Ambient temperature considered : -20° C to 50° C
- Humidity : 95 % Non-condensing
- Protection of Enclosure : IP-20(Minimum) for indoor.  
: IP-65(Minimum) for outdoor.
- Grid Frequency Tolerance range : + 3 or more
- Grid Voltage tolerance : - 20% & + 15 %
- No-load losses : Less than 1% of rated power
- Inverter efficiency(minimum) : >93% ( In case of 10kW or above )
- Inverter efficiency (minimum) : > 90% (In case of less than 10 kW)
- THD : < 3%
- PF : > 0.9

- a) Three phase PCU/ inverter shall be used for the power plant system
- b) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- c) The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- d) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- e) The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.
- f) The charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- g) The PCU/ inverters should be tested from the MNRE approved test centers / NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

**10. INTEGRATION OF PV POWER WITH GRID:**

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

**11. TRANSFORMER “IF REQUIRED” & METERING:**

- a) Dry/oil type relevant kVA, 11kV/415V, 50 Hz Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work.
- b) The bidirectional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy.
- c) The bidder must take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to Ferozpur Cantonment Board before commissioning of SPV plant.
- d) Reverse power relay shall be provided by bidder (if necessary), as per the local DISCOM requirement.

**12. POWER CONSUMPTION:**

- a. Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of Ferozpur Cantonment Board or MNRE. Decisions of appropriate authority like DISCOM, state regulator may be followed.

**13. PROTECTIONS**

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

#### **14. LIGHTNING PROTECTION**

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

#### **15. SURGE PROTECTION**

- a. Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement).

#### **16. EARTHING PROTECTION**

- a) Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lightning arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department/Ferozpur Cantonment Board as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.
- b) Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

#### **17. GRID ISLANDING:**

- a) In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "islands." Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.
- b) A manual disconnects 4 pole isolation switches beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

#### **18. CABLES**

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

- i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii. Temp. Range: -10°C to +80°C.
- iii. Voltage rating 660/1000V
- iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- v. Flexible
- vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- vii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- viii. The Cable should be so selected that it should be compatible up to the life of the solar PV

panels i.e. 25years.

- ix. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.
- x. Multi Strand, annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armored cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.
- xi. The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.
- xii. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

## 19. CONNECTIVITY

The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference of the solar suppliers.

Plant Capacity	Connecting voltage
Up to 10 kW	240V-single phase or 415V-three phase at the option of the Consumer
Above 10kW and up to 100 kW	415V – three phase At HT/EHT level
Above 100kW	(11kV/33kV/66kV) as per DISCOM rules

## 20. FIRE EXTINGUISHERS:

The firefighting system for the proposed power plant for fire protection shall be consisting of:

- a) Portable fire extinguishers in the control room for fire caused by electrical short circuits
- b) Sand buckets in the control room
- c) The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

## 21. DRAWINGS & MANUALS:

- a) Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
- b) Approved ISI and reputed makes for equipment be used.
- c) For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to Ferozpur Cantonment Board/owners before progressing with the installation work

## **22. PLANNING AND DESIGNING:**

- a) The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to Ferozpur Cantonment Board/Owner for approval.
- b) Ferozpur Cantonment Board reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/requirements.
- c) The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submits three sets and soft copy in Pen Drive of final drawing for formal approval to proceed with construction work.

## **23. DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT**

- a) The Contractor shall furnish the following drawings Award/Intent and obtain approval
- b) General arrangement and dimensioned layout
- c) Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- d) Structural drawing along with foundation details for the structure.
- e) Itemized bill of material for complete SV plant covering all the components and associated accessories.
- f) Layout of solar Power Array
- g) Shadow analysis of the roof

## **24. SAFETY MEASURES:**

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

## **25. DISPLAY BOARD**

The bidder has to display a board at the project site mentioning the following:

Plant Name, Capacity, Location, Type of Renewable Energy plant (Like solar wind etc.), Date of commissioning, details of tie-up with transmission and distribution companies, Power generation and Export FY wise.

Sd/-  
Chief Executive officer  
Ferozpur Cantonment

APPENDIX

APPLICATION OF CONTRACTORS/FIRMS/CO. ETC FOR SUPPLY, INSTALLATION, TESTING, COMMISSIONING ON GRID ROOF TOP SOLAR PV SYSTEMS AT FEROPUR CANTONMENT AREA INCLUDING OPERATION AND MAINTENANCE FOR 5 YEARS.

A). UPLOAD PARTICULARS OF THE CONTRACTOR/FIRM/CO.

1.	Name of the Contractor/Firm/Co.	
2.	Address for communication	
3.	Address of Registered Office/branch office (if other than above)	
4.	Telephone No.	
5.	Mobile No.	
6.	Fax No.	
7.	E-Mail Id	
8.	Status/Constitution of the firm/co.	
9.	Name of the Proprietor/Head of the Firm/Co.	
10.	Name of the Director/Partner and upload a copy of partners and upload a copy of partnership deed.	
11.	Year of establishment and upload proof	
12.	Registration number and date with the Register of Companies/ Registrar of Firms and upload a Copy	
13.	List of registration/empanelment with Organization/Department and upload copies of Registration Certificate.	
14.	The average Annual turnover during the last 3 years as on 31.03.2021 and upload Audited Balance sheets and profit & loss Accounts for the last three years.	
15.	Values of Solvency Certificate issued by the Bankers to the Contractor and upload a copy.	
16.	Name of the Bank and Branch, Which has issued Solvency Certificate	
17.	Income Tax Permanent Account Number and upload a copy of PAN card	
18.	GST number and date of issue and upload a copy.	

19.	Specify the name of the Organization & maximum value of contract/contracts satisfactorily completed in the last 7 years as on 31.08.2025 to anyone of the category mentioned below as per Terms & Condition.	
I	Central/State Government departments, Central/State Autonomous bodies, Central/State Public Sector undertaking/public Sector Organization etc.	
20.	Furnish the names, Destination, address, Telephone number of three responsible persons who will be in a position to certify about the quality as well as past performance of your firm/ Co./ Organization.	

**B). PARTICULARS OF SIMILAR WORKS EXECUTED DURING THE LAST 5 YEAR AS PER ELIGIBILITY CRITERIA**

(Upload additional sheets for all works completed in the Last 5 years)

SR NO.	PARTICULARS	PROJECT -I	PROJECT –II	PROJECT –III
1.	Name and Address of the client			
2.	Type of Project			
3.	Brief Description of the Project			
4.	Tendered Value of Contract			
5.	Actual date of start of work			
6.	Actual date of completion			
7.	Name, Destination and Tel. No./Mobile No. of the officer in charge of the project			
8.	Was assignment satisfactorily completed			

**C). DETAIL OF TURNOVER**

S NO.	FINANCIAL YEAR	ANNUAL TURNOVER
1.	2024-25	
2.	2023-24	
3.	2022-23	

Please upload a copy of

- Chartered Accountant's certificate for annual turnover for the last 3 years along with Form 26-A showing TDS deducted from the payment.
- Audited Balance sheet for the last 3 years.

**Important Note:** The work should have been executed by the firm/Co under the Name for which the application is submitted.

Place :

Date :

Format for Undertaking

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*(To be submitted by bidders (on company letter head duly signed with stamp & seal) online on or before last time of date of bid submission)*

To

Chief Executive officer,  
Ferozpur Cantonment.

Subject: Acceptance of terms & conditions of tender.

Name of work: Supply, installation, testing, commissioning on grid roof top solar PV systems at Ferozpur Cantonment Area including operation and maintenance for 5 years.

Dear Sir,

1. I/We hereby certify that I/we have read the entire terms and conditions of the tender document (including all annexure, schedules etc.) which form part of the contract agreement and I/we shall abide hereby by the terms/ conditions/ clauses contained therein.
2. The corrigendum(s) issued from time to time by your department/ organization too has also been taken into considerations, while submitting their acceptance letter.
3. I/We hereby unconditionally accept the terms and conditions of above-mentioned tender document and corrigendum(s) in its totality.
4. In case any provisions of this tender are found violated, then your department/organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the Earnest Money absolutely.
5. I/We undertake and confirm that eligible similar work(s) has/ have not been got executed through another contractor on back-to-back basis. Further that, if such a violation comes to the notice of department, then I/we shall be debarred for tendering in Department of Post in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer in charge shall be free to forfeit the entire amount of Earnest Money Deposit/ Performance Guarantee.

Yours faithfully,

(Signature of the bidder,  
with Official Seal)

## CHECKLIST

Sl. No.	Name of documents	To be marked by the bidder as	Enclosed at Page No.
1	Affidavit for non-Blacklisting on non-judicial stamp paper of Rs.50/- duly notarized	Annexure-A	
2	Registration with MES/CPWD/PWD/Railways/Any Govt. organization	Annexure-B	
3	Registration with Ministry of New & Renewable Energy (MNRE) / Punjab State Power Corporation Limited (PSPCL) or equivalent for regular solar work.	Annexure-C	
4	Earnest Money Deposit (EMD) is to be made in online mode by way of self-generation of Challan from M-Collect after login at eChhawani portal	Annexure-D	
5	Copy of Registration of GST	Annexure-E	
6	Copy of PAN Card	Annexure-F	
7	Copy of certificate of Registration with Commissioner, Employees' Provident Fund Organization, India	Annexure-G	
8	Experience certificate duly signed by the Competent Authority during last 5 years (SITC of grid connected or off- grid solar PV system with or without battery backup) similar work	Annexure-H	
9	Police verification or notarized copy of valid passport of proprietor/each partner/each Director	Annexure-I	
10	Copy of Income Tax Returns/Acknowledgements for last three (latest) years	Annexure-J	
11	Audited Balance sheet for the last 3 years	Annexure-K	
12	Average annual turnover for last two consecutive financial years issued by the Chartered Accountant (CA)	Annexure-L	
13	Acceptance Letter	Annexure-M	
14	Bank Solvency certificate/Financial Soundness certificate	Annexure-N	
15	Working Capital Certificate	Annexure-O	
16	The application should be accompanied by certified true copy of Power of Attorney in favour of the signatory to all documents. In case the signatory is himself the sole proprietor, an affidavit on stamp paper of appropriate value to this effect stating that he has authority to bind the firm in all matters pertaining to contract including the Arbitration Clause, shall be attached. The person signing the documents on behalf of another partner (s) or on behalf of a firm or company shall attach proper power of Attorney duly executed in his favour by all the partner(s) stating that he has authority to bind such other person(s) or the firm or the company as the case may be, in all matters pertaining to the contract including the Arbitration Clause	Annexure-P	

Signature of bidder/contractor

- Make sure that all the documents to be uploaded have been signed in ink by the authorized person and official stamp has also been affixed on all the documents.
- Mark page number on all the documents of the set.

**Note:** Please note that the documents which are not legible or are partially legible will not be considered and the bid will be rejected.