

**BABA FARID UNIVERSITY OF HEALTH SCIENCES**

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Website: [www.bfuhs.ac.in](http://www.bfuhs.ac.in)

Streo (B&R) No. 28

Name of Contractor : \_\_\_\_\_

Name of Work : **Supply, Design, Manufacture, installation, commissioning & testing of 600 KW roof top Solar PV Power Plant (Net-Metering) with 5 year AMC of various rating on different buildings of GGS Medical College, Hospital & University at Faridkot. From the approved vendors of PEDa having 500 KW or more installing capacity.**

Estimated cost : **Rs 2,67,36,600.00**

**( Form F-1 )**

**PERCENTAGE RATE E-TENDER AND CONTRACT FOR WORKS**

This agreement made this \_\_\_\_\_ day of \_\_\_\_\_ between \_\_\_\_\_ hereinafter called the "contractor") of the one part and [Vice Chancellor of Baba Farid University of Health Sciences, Faridkot through **The Registrar Baba Farid University of Health Sciences, Faridkot**] of the other part: Whereas the contractor has offered to execute the work **Supply, Design, Manufacture, installation, commissioning & testing of 600 KW roof top Solar PV Power Plant (Net-Metering) with 5 year AMC of various rating on different buildings of GGS Medical College, Hospital & University at Faridkot. From the approved vendors of PEDa having 500 KW or more installing capacity.** Approx. Cost **Rs. 2,67,36,600.00** Earnest Money **Rs. 5,34,800.00/-** Time Limit **4 Months** and the University has accepted his tendered offer for the execution of above mentioned work.

**NOW THIS AGREEMENT WITNESS AS FOLLOWS:**

- In this agreement, words and expression shall have the same meanings as are respectively assigned to them as per the general conditions of contract hereinafter referred to:
- The following documents shall be deemed to form and be construed as part of this Agreement :
  - i) The "Notice inviting E-Tender"& "Instructions to tenderers" as at Annexure 'A' to this agreement.
  - ii) 'Percentage Rate/Item rate tender for works' as at annexure 'B' to this agreement.
  - iii) 'Conditions of contract' as at annexure 'C' to this agreement.
- The work will be executed strictly according to specifications & drawings relating to the work as indicated in the Notice Inviting e-Tender'. The schedule of items of work to be carried out will be as per approved 'Notice Inviting Tender'.
- All correspondence and modifications of e-tendered offer and acceptance letter will form part of this agreement.
- In considerations of the payments to be made by the University to the contractor in respect of completed work or item of work, the contractor hereby covenants with the University to execute the work in conformity in all respects with the provisions of this Agreement.
- The University hereby covenants to pay the contractor, in consideration of execution of work, the price in the manner as specified in this Agreement.

In witness there of the parties here to set their respective hands and seals on the day and year first above written.

In the presence of  
Name and Address  
1. \_\_\_\_\_  
2. \_\_\_\_\_

Signature of Contractor  
Address \_\_\_\_\_  
\_\_\_\_\_

Signed sealed & delivered by \_\_\_\_\_ in the capacity of  
Name and Address  
1. \_\_\_\_\_  
2. \_\_\_\_\_  
\_\_\_\_\_

Registrar  
BFUHS, Faridkot  
\_\_\_\_\_  
For & on behalf of  
Vice Chancellor, BFUHS, Faridkot

Contractor

Witness

Registrar

## ANNEXURE 'A'

**BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT****Notice Inviting Tender and Instructions to Tenderers**

1. Online Tenders in the Prescribed form P.W.D No F-1, are hereby invited on behalf of THE Vice Chancellor, BFUHS, Faridkot for **Supply, Design, Manufacture, installation, commissioning & testing of 600 KW roof top Solar PV Power Plant (Net-Metering) with 5 year AMC of various rating on different buildings of GGS Medical College, Hospital & University at Faridkot. From the approved vendors of PEDDA having 500 KW or more installing capacity. Approx. Cost : Rs. 2,67,36,600.00 , Earnest Money Rs. 5,34,800/, Time Limit 4 Months**
2. The agency can purchase tender online on <https://etender.punjabgovt.gov.in> from **23-01-2020** at 9.00 am and Last date time for on-line submission of bids on **13-02-2020** upto 05.00 PM and date & time of opening of Technical bids on **14-02-2020** at 11.00 am. The opening date of financial bids of the technical qualified bidder will be informed on the university website. **Payment through online mode only @ Rs 5,000/- (Rs. Five thousands Only) each tender form (non refundable,)**
3. The time allowed for completion of the work will be **4 Months** after the date of issuance of acceptance Letter to the contractor.
4. The Earnest money amounting to **Rs. 5,34,800/-** deposit must be submitted in the shape of a on-line payment. The bidder who will not submit the earnest money upto the last date and time fixed for the submission of tender will be considered as In-valid and his/ her bid will be rejected without any prior notice.
5. The contractor whose tender is accepted shall be required to furnish security at the rate of 5% (five percent) of the cost of the work, by deductions from the running bills (three percent of the total cost to cover liability of defects and short comings and two percent of total cost for the winding up the contract satisfactory) The earnest money if realized from the bank will be treated as part of the security deposit.
6. The offer shall remain open for Acceptance for a period of ninety days from the date of opening of the Tender. The earnest money shall be forfeited if the tenderer withdraws or modifies his offer within the validity period or fails to sign the (Formal contract) agreement after acceptance of his offer or fails to commence the work or within ten days of issue of acceptance letter. After the forfeiture of earnest money the contract shall be immediately nullified.
7. On acceptance of the tender, the contractor shall be either himself remains available at site of work or arrange the availability of an accredited representative, fully authorized in writing at the site of work to receive instructions from the Engineer-in-Charge or his representative and to ensure prompt compliance thereof.
8. The undersigned does not bind himself to accept the lowest rate or any tender and receive instructions accepting the whole or part of the tender and tenderer shall bound to perform the same at the quoted rates.
9. Sale tax or any other tax on the material or the turnover shall be payable by the contractor and the University will not entertain any claim in this respect.
10. Before filling his tender the contractor shall visit the site and satisfy himself as to the conditions prevalent there especially regarding accessibility to the site, nature and extent of the ground working conditions stacking of materials, installation of tools plants etc accommodation and movement of labour, supply of water and power for satisfactory completion of the work

Contractor

Witness

Registrar

contract. No claim whatsoever on such accounts shall be entertained by the University in any circumstances.

11. The contractor shall comply with the provisions of the apprentice Act 1961 minimum wages Act 1948 Workman's compensation Act 1923 contract labour (Regulation and abolition 1970). Payment of wages Act 1936. Employers liability act 1938 maternity Benefits Act 1961 and the industrial disputes 1947 as applicable and the rules and regulations issued there under form time Failure to do so shall amount to breach of the contract and the Engineer in Charge may his discretion to terminate the contract. The contractor shall also be liable for any pecuniary liability arising on account of violation by him of the provisions of the Act.
12. The tenderer shall bear all costs associated with the preparation and submission of his tender and the University shall in no case be liable for these costs.
13. Each tenderer shall submit only one tender either by himself or as in a joint venture. A tenderer who submits or participates in more than one tender will be disqualified.
14. Unless otherwise stated the contract shall be for the whole work as described in schedule of item of works and the drawings, including the contractor shall be bound to complete the whole as described in the schedule of item of works and the drawings, including the additional items if any, as per drawings and instructions. The certificate of completion as issued by the Engineer-in-Charge shall be the conclusive proof of completion of work.
15. The following documents shall accompany the tenders. **(Scanned copies of all bid documents uploaded on the e-procurement portal)**
  - (i) EMD Fee.
  - (ii) PAN No.
  - (iii) GST No,
  - (iv) Copy of registration of contractor of appropriate class.
  - (v) Power of Attorney as required under rule of joint venture.
19. The agency should have completed two similar nature of works with equal cost of 50% value of work or one similar nature of work with equal cost of 70% of value of work with in last three years.
20. Incomplete tender or tenders not fulfilling any of conditions specified above are liable to be rejected without assigning any reason.
21. EPC contractor must submit the 5 year warranty from their sub-vendors / OEM(S) for comprehensive back up on bond paper.
22. **Inspection Report regarding quality control.**  
It is expected that every agency will have proper qualified & quality staff & procedure in order to ensure quality of the solar power project. However after installation of the project the agency will submit an inspection report from PEDDA officials regarding successful completion of work as per DNIT/PEDA guidelines & specification at the cost of the agency.

**Payment Terms and conditions.**

- (i) 5% of the order value as advance against submission of equivalent amount of Bank Guarantor valid up to commissioning of the plant.
- (ii) 65% of the order value and taxes and duties against Receipt of equipment and submission of invoice and LR copy.
3. 10% of the order value along with taxes and duties upon completion of erection of plant.
4. 10% of the order value along with taxes and duties upon commissioning of the solar plant,
5. 10% of the order value along with taxes & duties upon completion of net metering and clearance from PSPCL end and submission of equivalent amount of Bank Guarantee for 12 months from the date of commissioning.

**ANNEXURE-B**  
**PERCENTAGE RATE RATE TENDER**

I/We hereby offer to execute for the Vice Chancellor, BFUHS, Faridkot for the work, specified in the underwritten Memorandum within the time specified in such memorandum at F-1 percent below/ above the rate entered in the Schedule referred to in Para five of the 'Notice Inviting Tender' and annexed here to and in accordance, in all respects, with the specifications, designs drawings, and instructions in writing referred to in Para five and in clause 13 of the " Conditions of Contact" and with such material as are provided for and in all respects in accordance with such conditions so for as applicable.

**Memorandum**

a)	General Description	<b><u>Supply, Design, Manufacture, installation, commissioning &amp; testing of 600 KW roof top Solar PV Power Plant (Net-Metering) with 5 year AMC of various rating on different buildings of GGS Medical College, Hospital &amp; University at Faridkot. From the approved vendors of PEDDA having 500 KW or more installing capacity.</u></b>
b)	Estimated Cost	Rs. <b>2,67,36,600/-</b>
c)	Earnest money	Rs. <b>5,34,800/-</b>
d)	Performance Guaranty	5% Performance Guaranty in shape of bank guarantee
e)	Percentage if any to be deducted from bills	Security @ 5% will be deducted from all the running bills.
f)	Time allowed for completion from the date of issue of Acceptance letter to the Contractor	<b>4 months (Months months)</b>

Should this offer be accepted in whole or, in part, I/We hereby agree to abide by all fulfill all the terms and provisions of the said conditions of contract annexed hereto and all the terms and provisions contained in the detailed "Notice Inviting Tender " and /or in default there to forfeit and pay to Baba Farid University of Health sciences, Faridkot, in office the sum of money mentioned in the said conditions.

A sum of Rs. **5,34,800 /-** the earnest money deposit must be submitted shape of online payment. I/We agree that the full value of Earnest money will be forfeited without prejudice to any other right or remedies to the University in office should I/we:

- Withdraw or modify my/our offer during the period of validity or
- fail to sign the contract agreement after acceptance of the after or
- fail to commence the work within ten days of the issue of acceptance of my/our offer, otherwise the said earnest money shall be retained by him towards security deposit against Clause (d) of above memorandum.

Date the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

Signature of the contractor

Witness.....

Address \_\_\_\_\_

Address \_\_\_\_\_

Occupation.....

Telephone.....

The above offer is hereby accepted by me on behalf of the Governor of Punjab

Date the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

Signature of the contractor

Contractor

Witness

Registrar

## ANNEXURE-C

### CONDITIONS OF CONTRACT

#### Definitions:

- The "contract" means the document forming the tendered offer and acceptance thereof constituting binding contract between the Registrar, BFUHS, Faridkot and the contractor. The tender documents including the conditions, the drawings design, the specifications supplemented with instructions issued from time to time by the Engineer-in-charge and shall be binding on the parties in the stated order of precedence. All these documents taken together with the tendered offer and its acceptance shall be deemed to form the contract and shall be complementary to one another.
- The "Common Schedule of Rates" shall mean a printed document containing rates of different items of works pertaining to different branches of P.W.D. i.e. Irrigation, B&R (Buildings & Roads Branch) and the Public health branch and approved by the Committee of Direction of chief Engineers of these P.W.D. branches and the Punjab Govt.
- The "Completed works" shall mean, work completed in all respects as per laid down specifications, drawings, approved N.I.T and to the entire satisfaction of the Engineer-in-charge.
- The "Contractor" shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include the legal personal representative, or the persons comprising such firm or company or the successors of such firm or company as well as the assignees of such individual or firm or company whose tendered offer has been accepted.
- The "completion date" is the date when the Engineer-in-charge certifies that the work can be put to use, after receipt of an intimation from the contractor regarding its completion.
- The "Communication" between parties is the written and signed letters notices, reminders, memoranda and instructions recorded in the instructions book or book kept at site.
- The "Days & months" are calendar days and calendar months.
- The "Engineer-in-charge" means the Engineer Deputed by University, Who shall supervise the work and administer the contract with the assistance of his authorized subordinates.
- The "Department" means Baba Farid University of Health Sciences, Faridkot.
- The "Site" shall mean the land and or other places on in to or through which the work is to be executed under the contract or any adjacent land, path or street which may be allowed to be used for the purpose of carrying out the contract.
- The "Schedule of material" shall mean the list of materials which are to be used on the work will be the liability of the contractor as per Annexure-E
- The "Start Date" is the date when contract came into existence upon the issue of "Letter of Acceptance" by the Registrar, BFUHS/Engineer-in-charge.
- The "Schedule of Items of Work" shall mean the Items of Work to be executed at site of work to be executed at site of work pertaining to the work allotted to the contractor.
- The "Works or Work" shall unless the context otherwise requires, mean what the contractor is required to execute and hand over to the University Authorities.

Note:- In interpreting these "Conditions of Contract" singular also means plural, male means female and vice versa.

## CLAUSES OF CONTRACT

### **Clause - I PERFORMANCE GURANTEE & SECURITY**

The contractor, whose tender is to be accepted shall furnish:-

- A Bank Guarantee of Schedule Bank in the prescribed form (Specimen form attached) in favour of the Registrar, BFUHS, Faridkot for an amount of 5% of the amount of contract valid up to six months beyond the date of completion (Time Limit) to cover the amount of liquidated damages and or the compensation of the breach of contract. No payment for work done of any kind shall be released till such Guarantee is furnished. The performance guarantee will be released immediately on completion of work and accepted by the Engineer in Charge as satisfied O.K. Work.
- A cash security of 5% of the amount of the contract inclusive of the Earnest money initially deposited with the bid to cover the cost that may be involved in removal of defects, imperfections, or taking remedial measures in the work, which has been executed to be progressively deducted @ 5% in all payments after affording credit for the initial Earnest money 60% of the security will be refunded after 06 months of the completion of work as certified by the Engineer-in-Charge with respect to satisfactory removal of all defects, imperfections, short comings and taking remedial measures, that may be necessary and after recording of final measurements of work done, for which the certificate of the Engineer-in-charge would be conclusive.
- The remaining amount of security shall be released after the expiry of Twelve months or one rainy season whichever is later from the date of completion of work and after removal of all defects, imperfections and shortcoming that may be noticed during this period and after satisfactory winding up of the contract as provided in clause-6A the entire satisfaction of the Engineer-in-charge.
- Where the contractor requested for first & Final bill (without any running Bill) on completion of work contractor need not furnish performance guarantee as the contract has already been performed. Clause-2.

### **Clause - 2 COMPENSATION FOR DELAY**

The time allowed for carrying out the work shall be the essence of the contract and shall be strictly observed. It shall be reckoned from the date on which the order to commence the work is given to the contractor who shall ensure all due diligence to achieve progress of work not less than indicated below :

- |                                     |      |
|-------------------------------------|------|
| • On lapse of 25% contractual Time  | 20%  |
| • On lapse of 50% contractual Time  | 50%  |
| • On lapse of 75% contractual Time  | 80%  |
| • On lapse of full contractual Time | 100% |

In case of default, the contractor shall not withstanding issuance of prior notice in this regard pay prospectively as liquidated damages an, amount of up to 1% of the amount of contract or such lesser amount that the Engineer-in-charge may levy, for every week that the work remains uncompleted after 10 days of the issue of acceptance letter or the minimum progress of work stated above is not achieved or the work remains unfinished after the completion date. In case of continued default or shortfall in progress, The Engineer-in-charge may go on enhancing the levy of liquidated damages prospectively each time limited to 1% of the total estimated amount of work per week of further default subject to maximum unit of 5% of the amount of the contract.

### Clause – 2A DISPUTE SETTLEMENT

If over the works, any dispute arises between the two parties, relating to any aspects of this agreement, the parties shall first attempt to settle the dispute through mutual and amicable consultation.

In the event of agreement not being reached, the matter will be referred for arbitration by sole Arbitration not below the level of retired/ Serving Superintending Engineer of PWD (B&R) Punjab, to be appointed by the **Registrar, BFUHS, Faridkot**. The Arbitration will be conducted in accordance with the Arbitration and Conciliation Act 1996. The decision of the Arbitrator shall be final and binding on both the parties

### Clause - 3 BREACH OF CONTRACT LEAVY OF DAMAGES

The Engineer-in-charge may without prejudice to other right and remedies, under the provisions of the contract or otherwise after issuing a notice in writing and getting the final bill prepared absolutely determine the contract after levying compensation for damages of five percent of the amount of the contract, if the contractor, commits breach of contract under any clause of the contractor in any of the following cases:-

- If the contractor suspends the execution of the work and inspire of having been given a notice in writing by the Engineer-in-charge fails to resume the work within ten days of the issue of the said notice.
- If the contractor, having been given a notice in writing by the Engineer-in-charge, fails to rectify, reconstruct or replace any; defective work or continues the execution or work in an inefficient, improper, un-workman like manner or not in accordance with sound Engineering practices or without complying with the directions and requirements within a period of 10 days of the issue of said notice.
- If the contractor being a company shall pass a resolution or a court shall make an order to the effect that the company shall be wound up or if a receiver or a manager on behalf of the credit or shall be appointed or if circumstances shall arise which entitle the court of creditor to appoint a receiver or manager or to make a winding up order.
- If the contractor being a company of acts or defaults mentioned in Clause 21 & 24 thereof.

Provided further, that in case action under clause 2 as aforesaid levy of liquidated damages is also taken, total amount of liquidated damages and compensation for breach of contract under both the clauses shall be limited to 7.5 percent of the amount of the contract or the amount available with the Deptt. Including Bank Guarantee whichever is less. The requisite amount for which the contractor may become liable shall be released by encashing the Bank Guarantee furnished by the contractor, as specified in clause I above and/or from other amount due to the contractor in respect of this work or any other work, under taken for the University Authorities.

- After the termination of the contract under this clause, the department shall be at liberty to
- Get the balance work executed through some other contractual agency or through departmental means or to
- Abandon the balance work altogether or to
- Modify the design and scope of the work in any manner. The contractor shall have no claim against the department for treating the work in any manner deemed fit.

**Clause-4 LIABILITY OF CONTRACTOR AND POWERS TO TAKE OVER AND DISPOSE OFF CONTRACTOR PLANT**

In any case, in which any of the powers conferred upon the Engineer-in-charge by clause-3 hereof, shall have become exercisable and shall not be 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 or default on the part of the contractor, for Which by any clause or clauses, hereof, he is declared liable to pay compensation and the liability of the contractor for past and future compensation remain unaffected.

In the event of the Engineer-in-charge putting in force all or any of the powers vested in him under the proceedings clauses, he may, if he so desires, after giving a notice in writing to the contractor take possession of any or all tool materials and stores in or upon the works or the site thereof belonging or produced by him or intended to be used for execution of the work in any part hereof paying or allowing for the same in account at the contract rates or in case of these not being applicable at current market rates certified by the Engineer-in-charge whose certificate there of shall be final. Otherwise, the Engineer-in-charge may, be giving a notice in writing to the contractor or his agent at the site of work, require him to remove such tools, plants materials or stores from the premises within the time specified in notice. In the event of the contractor, failing to comply with any such requisition. The Engineer-in-charge may get them removed 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. The certificate of the Engineer-in-charge as to the expenses of any such removal and the amount of proceeds and expenses of any such sale shall be final & conclusive against the contractor.

**Clause-5 EXTENSION OF TIME**

If the contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Engineer-in-charge (with corresponding time extension in Performance Bank Guarantee) within thirty days of the date of hindrance (but before the expiry of the time limit) on account of which he desires such extension as afore said and Engineer-in-charge shall, if in his opinion be necessary or proper, No application for extension of time received late or any officer other than the Registrar/Engineer-in-charge shall be considered valid if the contractor fails to apply for extension as aforesaid and the work is not completed within the time limit, the contract shall be determined absolutely after action under clause 2 and 3 above.

**Clause-6 COMPLETION CERTIFICATE**

Within ten days of the completion of work, the contractor shall give notice of such completion to the Engineer-in-charge and within 30 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 completion indicating the defects (a) to be rectified by the contractor and or (b) for which payment will be made at reduced rates shall be issued. However, no certificate provisional or otherwise shall be issued, nor shall the work be considered to be completed until the contractor shall have removed, from the premises on which the work shall be executed, all scaffolding, surplus material, rubbish and all huts and sanitary arrangements set up for his labour on the site and cleaned off the dirt from all wood work doors and windows, walls, floor or other parts or 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 execution thereof and not until the works shall have been measured by the Engineer-in-charge if the contractor shall fail to comply with the requirements of his clause to the removal of scaffolding, surplus material and rubbish, all huts and sanitary arrangements and cleaning off as aforesaid

before the date fixed for the completion of work, the Engineer-in-charge may at the expense of the contractor get so cleared such dirt as aforesaid and the contractor shall forthwith pay the cost of all expense so incurred shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually released by the sale proceeds thereof.

#### **Clause -6A WINDING UP OF THE CONTRACT**

On completion of the work, the contractor shall hand over the same to the Engineer-in-charge or his authorized representative free from all defects, shortcomings or imperfections. He shall clear the site of Supply, Design, Manufacture, installation, commissioning & testing of 600 KW roof top Solar PV Power Plant (Net-Metering) with 5 year AMC of various ratings on different buildings of GGS Medical College, Hospital & University at Faridkot from the approved vendors of PEDDA having 500 KW or more installing capacity. All temporary works pits, godowns, offices, sanitary, scaffolding, debris, waste materials, and installations. He shall also furnish the following documents duly signed by him or his authorized representatives:-

- Completion drawings showing the work as finally constructed.
- Variation statement showing the altered items, if any, against those provided in the original drawings.
- Original site instructions book.
- Original registers for various quality control tests as specified,
- Cement consumption register.

#### **Clause -7 PAYMENTS ON INTERMEDIATE CERTIFICATES REGARDED AS ADVANCES**

No payment shall be made for a work estimated to cost less than 5% of Tender cost (Approx.), till after the whole of the work shall have been completed and a certificate of completion given. But in the case of works estimated to cost more than 5%, the contractor shall on submitting a bill there of be entitled to receive a monthly payment proportionate to the part thereof of the time limit that executed to the satisfaction of the Engineer-in-charge whose certificate of the sum payable shall be final and conclusive against the contractor. But all such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, un-sound, imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the performance of contract or any part thereof in any respect of the accruing of any claim, nor shall it conclude, determine or effect in any way the power of the Engineer-in-charge under these conditions or any of them as so the final settlement and adjustment of the accounts otherwise or in any other way, very or affect of the contract. The final bills shall be submitted by the contractor within one month of the date fixed for completion of the work, otherwise the certificate of the Engineer-in-charge as regards measurements and the total amount payable for the work shall be final and binding.

#### **Clause – 8 BILLS TO BE SUBMITTED MONTHLY**

A bill shall be submitted by the contractor each month on or before the tenth day or any other date fixed by the Engineer-in-charge accompanied by the following documents:-

- Measurements and quantities of items of work done since last bill.
- Up to date statement of materials received, from the stores showing the recoveries made up to last bill in question, both in terms of quantity and value.
- Copies of quality control tests on specified form at covering the work done since last bill.
- Copies of instructions recorded in the site instruction book containing the instruction and compliance made thereof, covering the work done since last bill.

A bill which is not accompanied with the above documents shall not be entertained.

The Engineer-in-charge shall get the bill verified if possible within 30 days from its presentation and the contractor shall be required to sign the corrections made, if any in token of its acceptance, before releasing or adjusting the payable amount.

If the contractor does not submit the bill within time limit or delays its submission or acceptance of corrections after verifications the entire responsibility for non-payment or delay in payment shall rest with him.

**Clause-9 BILLS TO BE ON PRINTED FORMS/EXTRA ITEMS**

The contractor shall submit all bills on the printed forms can be had on application from the office of the engineer-in-charge and the rates in the bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the lender, at the rates hereinafter provided for such work.

The contractor shall deliver in the office of Engineer-in-charge on or before the 10<sup>th</sup> day of every month during the continuance of the work covered by this contract, a return showing details of any work to be charged of extra with value based upon the rates and prices mentioned in the contract shall include in such return particulars of all demands of whatever kind and who so ever arising, which at the date thereof he has in respect of or in any manner arising out of execution of work. The contractor shall be deemed to have waived off all claims not included in such return and will have no right to enforce any such claims not so included, whatsoever be the circumstances.

**Clause-10 STORES SUPPLIED BY GOVERNMENT (DELETED)**

**Clause-10A SECURED ADVANCE**

The contractor, on signing an indenture in the form to be specified by the Engineer-in-charge Shall be entitled to be paid during the execution of work, upto 75% of the estimated value of any materials, which are in the opinion of the Engineer-in-charge non-perishable under para 2.105 of PWD code coupled in accordance with the requirements with rule 7.37 of D.F.R. (Financial Hand Book No.3) of the contract and which have been procured and adequately stored against damage but which have not been incorporated in the works at the time of making the advance.

**Clause-11 WORK TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATIONS DRAWINGS ORDER ETC.**

The contractor shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials, and labour and otherwise in every respect in strict accordance with the Punjab PWD specifications latest Edition. The contractor shall also conform exactly fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and to which the contractor shall be entitled to have access during the office hours or on the site of work. The contract shall be furnished free of charge one copy of all such drawings and such specification as are not included in the printed Punjab P.W.D specification. He shall, if he so requires, be entitled at his own expense to make or cause to make copies of the drawings designs, specifications and instructions as aforesaid for ensuring the requisite quality of construction, the material used in works shall be subject to quality control tests for materials and workman-ship test as laid down in Punjab PWD. Specifications as amended from time to time or the relevant standards laid down by the Bureau of Indian standards/Hand Book of quality control for construction of Roads and runway I.R.C latest edition or instructions issued under the orders of the **Registrar Baba Farid University of Health Sciences, Faridkot** & by the Engineer-in-charge. The contractor shall provide all help and assistance in proceeding with required tests.

The contractor shall set up a quality control field laboratory equipped at least with the test equipment indicated in to these "Conditions of Contract" Annexure-1 and employ trained staff to carry out periodical test as per directions and procedures laid down by the Quality control cell of the PWD (B&R). The records shall be maintained in the prescribed forms and copies thereof covering the work done each month shall be submitted with the bills.

**Clause-11A REMOVAL OF EMPLOYES/WORK MEN**

The Engineer-in-charge shall have full powers at all times to object to the employment of any workmen, foremen, or other employees on the work by contractor, and if the contractor shall receive notice in writing from the Engineer-in-charge requiring the removal of any such person from the work, the contractor shall comply with the orders forth with. No such workman foreman or other employees, after his removal from the works by order of the Engineer-in-charge shall be re-employed or reinstated on the work by the contractor at any time except with the previous approval in writing of the Engineer-in-charge for requiring the removal of any such workman, foreman or any other employee.

**Clause-12 ALTERATION IN SPECIFICATION AND DESIGNS**

The Engineer-in-charge shall have the power to make any alterations, omissions from additions to on substitutions for the original specifications, drawings, designs and instructions that may appear to be necessary or advisable during the progress of work, and the contractor shall be bound to carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-charge. Such alternations/additions or substitutions shall not invalidate the contract and any altered, additional or substituted work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work and at the same rates as are specified in tender for the main work. The time of completion of the work shall be extended in the proportion that the altered additional or substituted work bear to the original contract work and the certificate of the Engineer-in-charge shall be conclusive as to such proportion. The rates for such additional altered or substituted work shall be determined in accordance with the following provisions in their respective order.

- If the rate of the additional, altered or substituted work are specified in the contract for the work the contractor is bound to carry out the additional, altered, or substituted work at the same rates as are specified in the contract for the work.
- If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- If the rates cannot be determined as provided in (i) and (ii) above, then such work shall be paid at the rates entered in common schedule of the rates minus/plus the percentage rate at which the bid has been accepted.
- If the rates for the altered, additional or substituted work cannot be determined in the manner specified in Clause (i) (ii) (iii) above, then the contractor shall within seven days of the date of receipt of the order to carry out the work in form the Engineer-in-Charge of the rate which he intends to charge for such class of work supported by analysis of the rate in support of rates/claimed. The Engineer-in-charge shall determine the rate or rates on the basis of prevalent market rates and pay the contractor accordingly.

However the Engineer-in-charge by notice in writing, will be at liberty to cancel the order given to the contract to carry out such class of work and arrange to carry out in such manner as he may consider advisable, provided always that if the contractor shall have commenced work or incurred any expenditure in regards thereto before the rate shall have been so determined, then in such case he shall be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination to the rates of dispute, the decision of the superintending Engineer of the circle shall be final.

**Clause-13 NO COMPENSATION FOR ALTERATION OR RESTRICTION IN WORKS**

If at any time, after the commencement of the work the University Authority shall for any reason what-so-ever does not require the whole or part of as specified in the contract to be carried out, the Engineer-in-charge shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation what-so-ever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work having been made in the original specifications, drawings, designs and instructions, which shall involve any curtailment of the work originally contemplated.

**Clause-14 ACTION AND COMPENSATION PAYABLE IN CASE OF BAD WORKS.**

If it shall appear to the Engineer-in-charge, or his subordinate in-charge of the work that any work has been executed with unsound, imperfect, unskillful workmanship or with materials of any inferior description or that any articles or material provided by the contractor for the execution of work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the contractor shall on demand in writing by the Engineer-in-charge specifying the work, materials or articles complained of, notwithstanding that the same have been inadvertently passed, certified and paid for, forthwith rectify or as the case may be remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge & Cost. In the event of his failing to do so, within a period so specified by the Engineer-in-charge in his demand aforesaid the contractor shall be liable to pay compensation rate of one percent of the estimated amount for every week not exceeding ten weeks, while his failure to do so shall continue and in the case of such failure, the Engineer-In-Charge may rectify or remove and execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expenses in all respects of the contractor.

**Clause-15 WORKS TO BE OPEN TO INSPECTIONS**

All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer-in-charge and his senior subordinates and The contractor shall at all times during the usual working hours or at all other times at which reasonable notice of the intention of the Engineer-in-charge or his senior subordinates to visit the work shall have been given to the contractor, other himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to a contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

**Clause-16 NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP**

The contractor shall give not less than 10 days notice in writing to the Engineer-in-charge or his subordinate-in-charge of the work before covering up or otherwise placing beyond the reach of measurement, any work in order that the same may be measured and correct dimensions thereof may be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in-charge or his subordinates in charge of the work if any work shall be covered up or placed beyond the reach or measurement without such notice having been given or consent obtained, the sum shall be uncovered at contractor's expense or in default thereof no payment or allowance shall be made for such work or of the material with which the same was executed.

**Clause-17 LIABILITY FOR DAMAGE AND IMPERFECTION FOR ONE YEAR**

If the contractor or his workmen shall break, deface, injure or destroy any part of a building in which he may be working or any building, road, fence, enclosure or green grass land, water pipes, cables, drains, Electric or Telephone posts or wires, trees or cultivated ground continuous to the premises on which the work or any part of it is being executed or if any damage shall happen to the work, while in progress from any cause what-so-ever or any defect, imperfection or other faults appear in the work within one year from the date of completion certificate issued by the Engineer-in-charge.

the contractor shall make good at his own expense or in default, the Engineer-in-Charge may cause the same to be made good by other workmen and deduct the expenses incurred both on labour and material (for which the certificate of the Engineer-in-Charge shall be final) from any sums that may be then due or at any time thereafter may become due to the contractor from his security deposit.

**Clause-18 CONTRACTORS TO SUPPLY MATERIAL PLANT SCAFFOLDINGS**

The contractor shall arrange and supply at his own cost all materials (except such specific materials as may be issued from the stores of the Engineer-in-charge) plant tools, appliances, implements, ladders, cordage tackle, scaffoldings, water and power supply and temporary work requisite or proper and effective execution of the work. Whether original, altered or substituted and whether included in the specification other documents forming part of the contract or referred to these conditions or not all which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter which under these conditions he is entitled to be satisfied or which he is entitled to require together with the carriage there of to and from the work. The contractor shall also supply free of charge the requisite number of persons with the means and material necessary for the purpose of setting out works on counting weighing and assistance in the measurements or examination at any time or from time to time of the work or materials. Failing his so doing the same may be provided by the Engineer-in Charge at the expense of the contractor and this expense may be deducted from any amount due to the contractor under the contract or from his security deposit. The contractor shall also provide necessary fencing and lights required to or other proceeding at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.

**Clause-19 LABOUR LAWS**

The contractor shall comply with all the provisions of minimum wages Act 1948. Workman's Compensation Act 1923. contract labour (Regulation and abolition) Act 1970 and the rules framed there under, the payment of wages Act 1936, Employees liability Act 1938. Maternity Benefits Act 1961. The apprentices Act 1961 and rules framed there under and the Industrial Disputes 1947. He shall also make satisfactory arrangements for labour huts, protection of health and sanitary arrangements for the workmen employed on the work.

In every case in which by virtue of provisions of the Contract Labour (Regulation and Abolition) Act 1970 and of the contract labour rules. Government is obliged to pay any amount of wages to a workman employed by the Contractor in execution of the works or to incur any expenditure in providing welfare and health amenities required to be provided under the above said act and the rules under PWD Contractor's labour Regulations or under the framed by the Government from, time to time, for the protection of health and sanitary arrangement for workers employed by The Approved Contractors. The Government will recover from the contractor the amount of wages so paid or the expenditure so incurred under without prejudice to the rights of the Government under section 20 sub section (2) and section 21 sub section (4) of the contract

labour (Regulation and abolition) Act 1970. Government shall be at liberty to recover such amount or any part thereof the deducting it from the security deposit or from any sum due by Government to the contractor whether under this contract or otherwise. Government shall not be bound to contest any claim made against it under section 20 sub section (I) and section 21 sub section (4) of the said Act except on the written request of the Contractor and upon his giving to the Government full security for all costs of which the Government might become liable in contesting such claim.

**Clause-20 CONTRACTOR LIABLE FOR PAYMENT OF COMPENSATION TO INJURED WORKMEN OR IN CASE OF DEATH.**

In every case in which by virtue of the provision of the section 12, sub section (I) of the workman's compensation Act 1922, the Government is obliged to pay compensation to a workman employed by the contractor in execution of work, the University authority will recover from the contractor the amount of compensation so paid and without prejudice to the rights of Government under section 12, sub Section (ii) of the said Act. The University authority shall be at liberty to recover such amount of any part thereof by deducting it from the security deposit or from any sums due by the University to the contractor whether under section 12 Sub Section (1) of the said Act except on the written request of the contractor and upon his giving to Government full security for the costs for which the University might become liable in consequence of contesting such claim.

**Clause-21 WORK NOT TO BE SUB LET**

The contractor shall not be assigned or sub let without the written approval of the Engineer-in-charge. Employment of labour *on* piece rate basis shall, not however, be deemed sub-letting. If the contractor shall assign or sublet his contract or attempts to do so without the approval as aforesaid or become insolvent or commence any or solvency proceedings or make am composition with his creditors or attempt to do so, if any bribe, gratuity, gift, loan, perquisite, reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given, promised or offered the contractor or any of his servants or agents to any public such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-charge may absolutely there-upon terminate the contract as specified in clause 3 and in the event the said course being adopted, the consequences specified in the said clause 3 shall ensure.

**Clause-22 COMPENSATION CONSIDERED REASONABLE WITHOUT PREFERENCE TO ACTUAL LOSS.**

All sum payable by way of compensation under any of these clauses shall be considered as reasonable competition to be applied to the use of Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained,

**Clause-22A DEDUCTIONS OF GOVT. DUES ON ANY ACCOUNT WHATSOEVER TO BE PERMISSIBLE.**

Any excess payment made to the contractor inadvertently or otherwise under this contract or on any account whatsoever, and any other sum found to be due to the Government, by the contractor in respect of this contract or any other contract work on order or on any account what-so-ever may be deducted from any sum payable by the Government to the contractor either in respect of this contract or any other work order or contract or on any account by any other department of the Government.

**Clause-23 CHANGE IN CONSTITUTION**

Where the contractor is a partnership firm, the prior approval in writing of Engineer-in-charge shall be obtained before any change is made in the constitution of the firm where the contractor is an individual or a Hindu Undivided Family business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement, where under the partnership firm would have the right to carry out the work hereby undertaken by the contractor. If prior approval as aforesaid is not obtained, the contractor shall be deemed to have been assigned in contravention of clause 21 hereof and the same action may be taken and the same consequences shall ensue as provided in the said clause-21

#### **Clause-24 DIRECTIONS OF THE ENGINEER-IN-CHARGE**

All work to be executed under the contractor shall be executed under the direction and subject to the approval in all respects of Engineer-in-charge authorized by the University, who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried out.

#### **Clause-25 DISPUTES AND ARBITRATION**

- If any dispute or difference of any kind what-so-ever, shall arise between the Government its authorized representative and the contractor in connection with or arising out of this contract or the execution of work there under.
- Whether before its commencement or during the progress of work or after the termination abandonment or breach of the contract, it shall, in the first instance, be referred for settlement to the Engineer-in-charge of the work and he shall within a period of Sixty days after being requested in writing by the contractor to do so convey his decision to the contractor. Such decision in respect of every matter so referred shall be subject to arbitration as hereinafter provided, be final and binding upon the contractor. In case the work is already in progress, the contractor shall proceed with the execution of the work on receipt of the decision by the Engineer-in-charge as aforesaid with all due diligence whether any of the parties requires arbitration as hereinafter provided or not.
- If the Engineer-in-charge has conveyed his decision to the contractor and no claim for arbitration has been filed by the contractor within a period of sixty days from the receipt of the letter of communicating the decision, the said decision shall be final and binding upon the contractor and will not be subject matter of arbitration at all.
- If the Engineer-in-charge fails to convey his decision within a period of sixty days after being requested as aforesaid the contractor may within further sixty days of the expiry of the final 60days from the date on which the said request was made by the contractor refer the dispute for arbitration as hereinafter provided.
- All disputes or differences in respect of which the decision is not final and conclusive shall at the request of either party made in a communication sent through registered A.D post be referred to the sole arbitration of Retired/Serving Superintending Engineer, PWD (B&R) Branch to act as an arbitrator on receipt of a request from either party.
- Registrar, BFUHS, Faridkot shall have the authority to change the arbitrator on an application by the either contractor or the Engineer-in-charge requesting change of arbitrator giving reasons thereof either before the start of the arbitration proceedings or during the cause of such proceedings. The arbitration proceedings would stand suspended as soon as an application for change of Arbitrator filed before the Registrar and a notice thereof is given by the applicant to the Arbitrator. The Registrar after hearing both the parties may pass a speaking order rejecting the application or accepting to change the Arbitrator simultaneously, appointing a technical officer not below the rank of Superintending Engineer as under the Contract. The New Arbitrator so appointed may enter upon the reference a fresh or he may continue the hearings from the point where these were suspended before the previous Arbitrator.

- The reference to the Arbitrator shall be made by the claimant party within one hundred twenty days from the date of dispute of claim arising during the execution of work. If the claim pertains to rates or recoveries introduced in the final bill the reference to the Arbitrator shall be made within six calendar months from the date of payment of the final bill to the contractor or from the date of registered notice is sent to the contractor to the effect that his final bill is ready by the Engineer-in-charge (whose decision in this respect shall be final and binding) whichever is earlier.
- It shall be an essential term of this contract that in order to avoid furious claims, the party invoking arbitration shall specify the disputes on facts and Calculations stating the amount claimed under each claim and shall furnish a "deposit-at-call" for ten percent of the amount claimed, on a scheduled bank in the name of the Arbitrator, by his official designation who shall keep the amount in deposit till the announcement of the award. In the event of an award in favour of the claimant, the deposit shall be refunded to him in proportion to the amount awarded with respect to the amount claimed and the balance, if any shall be foresaid and paid to the other party,
- The provisions of the India Arbitration Act 1996 or any other statutory enactment there under or modification thereof and for time being in force shall apply to the arbitration proceedings under this clause.
- The Arbitrator shall award separately giving his award against each claim and dispute and counter claim raised by either party giving reasons for his award. Any lump-sum award enforceable shall not be legally enforceable.
- The venue of arbitration shall be such a place or places as may be fixed by the Arbitrator in his sole discretion. The work under the contract shall continue during the arbitration proceedings.
- The stamp fee due on the award shall be payable by the party as desired by the Arbitrator and in the event of such party's default, the stamp fee shall be recoverable from any other sum due to such party under this or any other contract.
- Neither party shall be entitled to bring a claim for arbitration, if it is not filed as per the time period, already specified or within six months of the following :-
  - Of the date of completion of the work as certified by the Engineer-in-charge.
  - Of the date of abandonment of the work or breach of contract under any of its clauses, or
  - Of its non-commencement or non resumption of work within 10 days of a written notice for commencement or resumption as applicable or
  - Of the cancellation, termination or withdrawal of the work from the contractor in whole or in part and/or revision or for enclosure of the contract or
  - Of receiving an intimation from Engineer-in-charge that the final payment due or recovery from the contractor has been determined, for the purpose of payment/adjustment whichever is the latest.

If the matter is not referred to arbitration within the period prescribed above all the rights and claims of either party under the contract shall be deemed to have been forfeited and absolutely barred by time for arbitration and even for civil litigation.

- No questions relating to this contract shall be brought before any civil court without first invoking and completing the arbitration proceedings, if the issue is covered by the scope of Arbitration under this contract. The pending of arbitration proceedings, shall not disentitle the Engineer-in-charge to terminate the contract and to make alternate arrangements for completion of the work.
- The arbitrator shall be deemed to have entered on the reference on the day he issues notices to the parties fixing the first date of hearing. The arbitrator may from time to time, with the consent of the parties enlarge the initial time for making and publishing the award.
- The expiry of the contractual time limit, whether originally fixed or extended, shall not invalidate the provisions of this clause.

**Clause-25-A EXTRA ORDINARY CLAIMS**

No claim for payment of an extra-ordinary nature, such as claims for bonus, for extra labour employed in completing the work before the expiry of the contractual period at the request of Engineer-in-charge or claims for compensation where work has been temporarily brought to a stand-still though no fault of the contract shall be allowed unless and to the extent that the same shall have been expressly sanctioned by the

**Baba Farid University of Health Sciences, Faridkot** Under the signature of one its Vice Chancellor.

**Clause -26 (a) STORAGE OF CEMENT AND RECORD OF CONSUMPTION**

Cement bags issued by the department shall be stored in godowns to be constructed by the contractor. Godown shall be provided with a single door with two locks. The keys of one lock each shall remain with the authorized representative of the department and the contractor at the site of work. Cement shall be taken out of the store according to daily requirement with the knowledge of both the parties and the account shall be maintained in the Performa as the Annexure II to these condition of contract.

**(b) VARIATION IN CONSUMPTION OF MATERIALS.**

Variation in consumption of material will be regulated as per amended para 27.4 of P.W.D Specification 1963 appended as Annexure "D'

**(c) DETERIORATION PILFERAGE OF MATERIALS.**

In case any quantity of cement steel or any other commodity issued to the contractor by the Engineer-in-charge for use (directly on the aforesaid work) or manufacture of material required in connection these with is disposal of by him or lost or allowed to get deteriorated the cost of such quantity of that material shall without prejudice to other rights and remedies available to the Government be recovered from the contractor at double the rate at which it is agreed to be supplied to the contractor

**(d) DOOR AND WINDOW FITTINGS**

Deleted.

**Clause-27 LUMP SUM IN ESTIMATE**

When the estimate on which a bid is made include lump sums in respect of part of the work the contractor shall be entitled to payment in respect of the items of work involved at the same rates as are payable under this contract for such items. If the part of the work in question is not, in the opinion of the Engineer-in-charge capable of measurement, the Engineer-in-charge may at his discretion pay the lump sum amount entered in the estimate and the certificate in writing from the Engineer-in-charge shall be final and conclusive against the contractor with regard to any sum or sum payable to him under provision of this clause.

**Clause-28 SPECIFICATION**

In the case of any class of work for which there is no specification as mentioned in clause 11, the work shall be carried out in accordance with the specifications laid down by the Bureau of Indian Standards and in the event of there being no such specification, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

**Clause-28 –A (a) CONCRETE WORK**

All the concrete work shall have to be done with mechanical mixer unless permitted otherwise by the Engineer-in-Incharge All R.C.C work shall be compacted with a mechanical vibrator driven by petrol/diesel

or electricity. All R.C.C work and plain cement concrete of mix 1:3:6 (M-10), and richer mixer, only Ghaggar coarse sand or Pathankot sand having a fineness modulus between 2.5 to 3.5 shall be used. Test samples shall be taken during the execution of work as per stipulations of the Bureau of Indian Standards. The compressive strength of test samples shall meet the requirements of relevant standards laid down by the B.I.S. The contractor shall set up a field testing laboratory with necessary equipment and appointed staff for carrying out the test at his cost.

**(b) CURING OF CEMENT WORK**

The contractor shall ensure proper curing of all work involving use of cement strictly as per stipulation of the Punjab PWD Specifications. Since proper curing during the critical period has a direct bearing on the strength and safety of cement work, the Engineer-in-Charge shall, in the case of any default on the part of the contractor, take prompt action to arrange adequate curing at the cost of the contractor without issue any prior notice in this respect to avoid lapse of critical period of curing. The certificate of the Engineer-in-Charge would be final and binding in this respect and the cost incurred shall be recovered from the contractor.

**(c) PITS AT SITE PROHIBITED**

No pits shall be dug by the contractor at or near the site of work for taking out earth for use in work. In case of default, the pits so dug shall be got filled by the department at the cost of the contractor, charging additional amount of fourteen percent towards departmental charges.

**(d) CO-ORDINATION WITH OTHER AGENCIES**

The contractor shall maintain close co-ordination and afford necessary facilities to other agencies executing other works like Electrification, Horticulture, Water supply, Sewerage and external service etc. No claim for additional payment on this account shall be entertained.

**Clause 29-A (a) STATUTORY LEVIES**

The rates as offered and accepted in this contract are inclusive of all taxes and statutory levies as income tax, Octroi/Terminal Tax, Sales tax/turn over tax, royalty, contribution under Employment State Insurance and local taxes payable under the respective statutes (ESI contribution etc.)

**(b) INCOME TAX**

Income tax shall be deducted at source as per provisions of the Income Tax Act and a certificate such deduction made in each financial year shall be furnished to the contractor by the disbursing officer.

**(c) SALES AND OTHER TAXES**

Sales tax turnover tax or any other tax shall also be deducted from the bills of the contractor if so directed by the authorities concerned.

**(d) LOCAL LAWS AND LEVIES**

The contractor shall comply with the proper bye-laws and legal orders of the local body or public authority under the jurisdiction of which the work is executed and pay all fees and charges for which he may be liable. Nothing extra shall be payable on this account.

**(e) DAILY PAYMENT IN EMERGENCY**

In case of emergency, the contractor shall be required to pay his labour every day and in case of default, the requisite payment shall be made by the Government and the amount shall be recovered from the contractor.

**Clause-30 VARIATION IN PRICES**

To compensate for the general rise or fall in prices of labour and material (excluding the material supplied at fixed rates by the department accordance with clause (10) the contractor's payment shall be adjusted for such increase or decrease as per provision detailed below subject to the condition that compensation for escalation in price shall be available only for work done during the stipulated period of the contract including such period for which the contract validly extended under the provisions of clause 5 of the contract without any action under clause 2 and also subject to the condition that no such compensation shall be payable for a work which the stipulated period or completion in six months or less.

The amount certified in each payment certificates shall be adjusted by applying the respective price adjustment factor to the net amount due for payment after recovery or material issued at fixed rates exhibited in the "Notice Inviting tender" as under.

$$P = 0.35 + 0.65 \times \frac{I_m}{I_o}$$

Where P, is the adjustment factor for the portion of the contract price.

Im= Im is the official whole sale price index published by the Ministry of Economic affairs at the end of the calendar month prior to preparation of the bill.

Lo= Io is the official whole sale price index published by the Ministry of Economic affairs at the end of the calendar month previous to the one in which the bids comprising the contract were received.

If the value of the index is changed or amended after it has been used in a calculation for a particular payment a correction shall be applied and an adjustment made in the next payment certificate. The index value is deemed to take into account of all changes in cost due to fluctuation and nothing extra shall be payable or deductible on account of variation in prices. The contract shall furnish documentary evidence of the whole sale price index from time to time to facilitate calculation for variation in prices.

**Clause-30 A** No escalation is to be paid for the work done in first 6 month irrespective of the time period specified .

**Clause-30 B** The date of tender for the purpose of escalation will be reckoned as the date on which final financial bid in submitted or rate negotiated whichever is later.

**Clause-31 (A) TECHNICAL STAFF**

The contractor shall employ the following technical construction staff on a whole time basis during the execution of work and shall submit names and attendance certificate on the 10<sup>th</sup> of each calendar month.

- One graduate Civil Engineer & Electrical Engineer having relevant experience of not less than three years for work amounting to more than Rs. 50.00 lacs.
- One graduate Civil Engineer & Electrical Engineer or qualified diploma holder having relevant experience of not less than three years of works amounting up to Rs. 50.00 lacs.

The technical staff shall be available at site at all times.

In case the contractor fails to employ the above minimum technical staff or fails to submit the names and attendance certificate of such staff, ^recovery shall be made from his bills at the rate of twice the average pay of the corresponding staff working with the Public Works Department.

**PERFORMANCE TEST**

The contractor shall give a satisfactory performance test of the entire installation as per standard specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for this test.

Deleted

**(B) CONSULTANTS FOR QUALITY CONTROL**

It is expected that every contractor will have proper quality staff and procedures in order to ensure quality, They are also expected to improve their procedures in line with I.S.O 9002 and get the certification. For all works amounting to more than Rs. 2.00 Crore. The contractor shall engage a competent and independent quality control consultant approved by registrar/Engineer-in-charge of work to exercise effective control over the construction operate in the field so as to produce quality work. The fully equipped laboratory shall be set up at site of work and trained staff shall be employed by the said consultant. The contractor shall supply to the Engineer-in-Charge a copy of his agreement and the fee for quality control should generally be between 0.5% and 1.5% at the contract value. The payment to the quality consultant shall be made by the Engineer-in-charge direct as per the copy of the agreement supplied by the contractor. This payment will be recoverable from the contractor. The consultant will guide the contractor for production of quality works at all stages and shall maintain records reports and test results, so as to indicate the extend of quality Engineer-in-Charge regularly. The contractor shall also attach a copy of these reports, tests and checks with his bill without which no payment shall be made. The Engineer-in-charge can also order the change of consultant if in his opinion they are not performing competently. The Engineer-in-charge will be free to conduct surprise, random or in site checks so as to have a cross check on quality control consultant, the Engineer-in-charge may order employment of a consultant at the cost of the contractor or may order the department staff to carry out the quality control checks and a deduction at the rate of 1.5% of the total cost of the work shall be deducted from the bill of the contractor even if the actual expenditure incurred on private consultant or department quality control is less, Nothing in this clause shall reduce the over all responsibility of the contractor quality and he shall remain liable for any defect in the execution.

Deleted

**Clause-32 ACTS OF GOD**

No claim whatsoever shall be entertained for any loss or damage caused by rain, floods or any other natural causes or other acts of God.

**Clause-33 JURISDICTION**

The jurisdiction of Civil Court for matter under dispute shall be on the basis of the location of the office of the Engineer-in-charge.

**Clause-34**

The terms and condition of the Agreement have been explained to me us and I/we certify that I/We clearly understand the same.

**Clause-35**

The contractor will submit five photograph of the work showing physical progress of the work every month.

Contractor

Witness

Registrar

### FAIR WAGES CLAUSE

- a) The contractor shall pay not less than fair wages to the labourers engaged by him on the work

#### EXPLANATION

- Fair wages means wage whether for time of piece work notified at the time of inviting tenders for the work and where such wages have not been notified the wages prescribed by the P.W.D. B&R Branch .Punjab (I) for the district in which the work is done.
- The contractor shall notwithstanding the provision of any arrangements to the contrary, cause to be paid fair wages to labourers indirectly engaged on the work, as the labourers have been directly employed by him.
- In respect of all labour directly or indirectly employed on the work for the performance of the contractor shall comply with or cause to be complied with the Punjab (1) P.W.D. Contractor's labour Regulation made by the Government from time to time in regard to payment of wages, wage period deduction from wages, recovery of wages not paid and deduction unauthorized made, maintenance of wages register, wage cards publication of wages and other terms of employment, inspection and submission of periodically returns and matters of such like nature.
- The Engineer-in-charge shall have the right to deduct from the money due to the contractor, any amount required or estimated to be required for making good the loss suffered by a worker while working by reason of non-fulfillment of the conditions of the contract for the benefit of the workers nonpayment of wages or deduction made from his or their wages, which are not justified bs the terms of the contract for non-observation of their regulation referred to in clause ( c ) above.
- Viz-a-Viz the Punjab (1) Government the contractor shall be primarily liable for all payment to bemade under and for the observance of the regulations aforesaid without prejudice to his right to claimindirectly from his sub-contractors.
- The regulation shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

**The Registrar Baba Farid University of Health Sciences, Faridkot**

**CONTRACTOR'S LABOUR REGULATIONS**

- **Short Titles:**

The regulations may be called Punjab (1) Public Works Department Contractor's Labour Regulations.

- **Definitions:**

In the regulations, unless otherwise expressed or indicated, the following words and expressions shall have the meaning hereby assigned to them respectively that is to say :

- "Labour" means workers employed by Punjab (1) Public Works Department Contractor directly or indirectly through sub contractor or other person or by an agent on his behalf.
- "Fair Wages" means wages whether for time or piece works notified at the time of inviting tenders for the work and where such wages have not been so notified, the wages prescribed by the Punjab(l) Public Works Department for the district in which the work is done.
- "Contractor" shall include every person whether a sub contractor or headman or agent employing labour on the work taken on contract.
- "Wages" shall have the same meaning as defined in the payment of wages Act, 1936 and include time
- and piece rate wages.

- **Display of notice regarding wages etc.:**

The contractor shall, before the commence his work on contract, display and correctly maintain, and continue, to display and correctly maintain, in a clean and legible condition at conspicuous place on the work, notice in English and in the local Indian language spoken by the majority of the workers, giving the fair wages notified or prescribed by the Punjab (1) Public Works Department and the hours of the work for which such wages are earned.

- **Payment of Wages :**

Wages due To every worker shall be paid to him direct.  
All wages shall be paid in current coin or currency or in both.

**5. Fixation of Wages Period :**

- The Contractor shall fix wage periods in respect of which the wages shall be payable.
- No wage period shall exceed one month.
- Wages of every workman employed on the contract shall be paid before expiry often days after the last day of the wage period in respect of which the wages are payable.

- When the employment of any worker is terminated by or on behalf of the contractor, the wages earned by him shall be paid before the expiry of the day succeeding the one on which the employment is terminated.
- All payments of wages shall be made on a working day.

**6. Wage Book and wages slips etc :**

The contractor shall maintain a wage book of each worker in such form as may be convenient, but the same shall include the following particulars.

- a) Rate of daily or monthly wages.
  - b) Nature of work on which employed.
  - c) Total amount payable for the work during each wage period
  - d) Total amount payable for the work during each wage period
    - e) All deductions made from the wages-with an indication in each of the ground for which the deduction is made.
  - f) Wage actually paid for each wage period.
- (i) The contractor shall maintain a wage slip for each worker employed on the work
  - (ii) The authority competent to accept the contract may grant exemption from the maintenance of wage Book and wage slip to a contractor who, in his opinion may not directly or indirectly employ more than 100 persons on the work.

**7. Fines and deductions which may be made from wages :**

- (i) The wages of the worker shall be paid to him without any deduction of any kind except the following
    - a) Fines
      - b) Deduction for absence from duty i.e. from the place from which the place of his employment he is required to work. The amount of deductions shall in proportion to the period for which he was absent.
      - c) Deduction for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money he is required to account, where such damage or missing is directly attributes to his neglect or default.
      - d) Any other deductions which the University may from time to time allow.
- No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his made until the worker has been given an opportunity showing cause against such fines or deductions.
  - The total amount of fines which may be imposed in any one wage period on a worker shall not exceed an amount equable to half an anna in a rupee of the wage payable to him in respect of that period.
  - No fine imposed on any worker shall be recovered from him by installments, or after the expiry of 60 days from the date on which it was imposed.

**8. Register of fines etc.**

- The contractor shall maintain register of fines and of all deductions for damages or loss made.
- The contractor shall maintain a list, in English and in the local Indian Language clearly defining acts and omissions for which penalty or fines can be imposed. He shall display such list and maintain it in a clean and legible condition in conspicuous place on the work.

**9. Preservation of books :**

The wage book, the wage slips and the register under these regulations shall be preserved for 12 months after the date of last entry made in them.

**10. Powers of Labour Welfare Officers to make investigation or enquiry.**

The Labour Welfare Officers or any other person authorized of Punjab (1) Government on their behalf shall have to make enquires with a view to a ascertaining and enforcing due and proper observances of the wages clause and the provisions of these regulations. He shall investigate into any compliant regarding the default made by the contractor or sub contractor in regard such provision.

**11. Report of Labour Welfare Officer.**

The labour welfare officer or any other person authorized a aforesaid shall submit a report of the results of his investigations or enquiry to Engineer-in-charge, indicating the extent if any, to which the default has been committed and the amount of the recoverable in respect of the acts of omission and commission of the labour with a note that necessary deduction from the contractor's bill be made and the wages and the other dues be paid to the labour concerned.

**12. Appeal against the decision of Labour Welfare Officer:**

Any person aggrieved by the decision and recommendations of the Labour Welfare Officer or other person so authorized may appeal against such decision to the Labour Commissioner but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

- 12(a).** No party shall be allowed to be represented by a lawyer during any investigations, enquiry. A appeal or any other proceedings under these regulations.

**13. Inspection of Registers:**

The contractor shall allow inspection of the wage book and slips to any of his workers or to his agents at a convenient time and place after due notice is received or to the Labour Welfare Officer or any other person authorized by the Punjab (1) Government in this behalf.

**14. Submission of returns**

The contractors shall submit periodical returns as may be specified from time to time.

**15. Amendments**

The Punjab (1) Government may, from time to time, add or amend these regulations and on, any question as to the application, interpretation or effects of these regulations, the decision of the Labour Commissioner to Punjab (1) Government, or any other person authorized by the Punjab Government in that behalf shall be final.

**16. Registration of work**

The contractor shall require registration of workers in the building and other construction workers (RECS) act 1996 and extension of benefits to such workers under the act.

**ADDITIONAL CONDITIONS:-**

1. The Contractor shall quote the overall excess or below or at par the NIT amount. Item rate will not be accepted. For payment purpose the quoted percentage shall be applicable uniformly to the rates of items described in the bill of quantity.
2. The prime Civil contractor will engage/identify his sub contractor for execution of Mettalled Road work, internal Public Health works, internal Electrical works having valid enlistment for executing the road work/water supply/sanitary engineering works, electrical works and he should have satisfactorily qualification criteria of similar nature of work as per contractor data. An undertaking will be given by the prime contractor in this regard as per Annexure-F
3. The description of all the above items is subject to all notes and clarification included in the Common Schedule of Rates-2010 and of Pb. PWD specification latest edition corrected up to date.
4. Agenda & Corrigendum issued by the Chief Engineer Pb. PWD B& R from time to time upto date will be applicable for the purpose of measurement/Payment.
5. The payment will be made after deducting Income Tax, VAT, Labour Cess as applicable by the rules.
6. The contractor shall carryout the mixed design if required for the relevant item of concrete from a reputed institution/laboratories as approved by the Engineer at his own expenses. Prior approval of Engineer is to be taken before the samples (Cement, Coarse & Fine Aggregates) sent to the institution/laboratories for mix design. The design mix required may be with or without admixtures. The decision of Engineer-In-Charge final and binding above. Nothing extra will be paid on this account.
7. Cost of binding wire, wastage of steel is included in the rate and shall not be paid separately.
8. The material will be arranged by the contractor
9. Amount/Quantity of any item can be increased or any item can be omitted or Substituted as per actual requirement at site of work as per approval of the Engineer-In – Charge. No claim in this regard will be entertained.
10. Nothing extra will be paid due to loss/damages caused by rains, floods, war, epidemic strike of the department officials or any other Act of God or any other cause what so ever.
11. The quantities given against respective item are arbitrary subject to actual as per approved designs/Drawings.
12. The work is required to be completed strictly as per the scope of NIT approved drawing irrespective of Qty, and amount of agreement as desired by the Engineer-In-charge.
13. No claim on account of paucity of funds, change in Priority or any other causes what so ever will be entertained and the Contractor/firm will have no right to go on for Arbitration on this account.

| Contractor

Witness

Registrar

## TECHNICAL SPECIFICATIONS

### A. Building work:

1. The work shall be executed as per Punjab PWD specifications amended up to date supplemented with relevant Indian Standard Code of Practice relating to building works shall be followed for the execution of the building works as per details in architectural drawings, structural drawings and details of finishing items included therein.
2. For RCC work steel shuttering or any plate Shuttering should be used.
3. The Joinery-work will be got executed as per detailed drawings supplied by the Architect engaged by the University and instructions issued by the Engineer-In-charge, Nothing extra on this account will be entertained.
4. The rubbing and polishing shall be done to granolithic granite finish.
5. (a) The contractor will have to set up fully equipped quality control laboratory duly equipped with necessary laboratory equipment at his own cost near the site of work /plant site and the tests required for quality control will be got done at the cost of contractor conforming to the tests mentioned in the quality control hand book/specifications relating to each item of work.  
  
(b) The quality control will be exercised/ observed by the Contractor /Engineer as per guidelines stipulated in hand book of quality control for construction of road and runways published by IRC (latest edition on the day of tenders) or in specifications.  
  
(c) Four tests for quantity of bitumen in mixed materials shall be carried out in each kilometer length of material laid.

### B. Concrete Roads & parking

1. The work will be executed as per PWD Specifications/IRC Code of Practice, Guidelines and Standards and instructions issued from time to time including layout plans, levels, gradient and slopes described in the drawings as and where required as per site conditions. The materials and workmanship of best quality are to be employed for execution of the work and instructions of the Engineer are to be complied with. The latest edition of the Specifications/Standards 30 days prior to date of submission of bid shall be followed.
2. (a) The payment of earth work shall be made on the basis of cross section which should be signed by the tenderer before the commencement of work.  
  
(b) The final X-sections shall be measured in the presence of the tenderer and signed in token of acceptance on completion of work.

**D. Electrical works:**

1. The electrical works will be executed as per Punjab PWD specifications amended up to date supplemented with relevant Indian Standards and Code of Practice relating to internal electrical services, fittings, external lighting etc. as per detailed drawings and details included in items as per bill of quantities.
2. The work shall be carried out strictly in accordance with in the Punjab PWD Specifications amendment upto date for electrical works and also according to the instructions of the Engineer of the work. If any item is not available in Punjab PWD Specification, relevant ISI specifications shall be followed. Latest edition of ISI shall be applicable where ever ISI standards have been mentioned.
3. Any material desired to be got tested by department shall be supplied free cost by agency. In case the material fails to meet required specifications, testing charges will be borne by agency.
4. Power supply and water supply required for work, shall be arranged by the agency for installation and testing of the equipment at the site of work. All tools and tackles required for handling of equipment and material at the site of work as well for their assembly and erection including necessary test instruments shall be arranged by the agency.
5. The contractor will be responsible for any damage cause to P&T or Electricity cable or any other Estate services during execution of work. The debt/claim raised by P&T and Electricity department for such damages will be recoverable from him.
6. 6 pin 15 Amps sockets shall be used in all power plug controls in place of 3 pin sockets and nothing extra shall be payable on this account.
7. Contractor shall be required to provide suitable thimbles or turned sockets or glands at ends of P.V.C cables where the same are to be fitted in switches, motor plates, bus bar chamber if so required without any addition of cost. Rates given in the attached schedule are inclusive of this work.
8. The contractor where ever necessary, will have to provide deep type semi recessed/recessed surface inspection boxes, as the case maybe, so that both recessed and on surface pipes could run straight as they come and terminate in box/main switch/ B.D.Bs so as to ensure neat finish. For this no extra payment shall be made.
9. The connection to the main switches /B.D.Bs/Bus bar chamber should be with pipe nipples instead of flexible pipe for which neither any extra payment nor any deduction will be made. However the flexible pipe will be allowed to be used with prior approval of the Engineer.
10. The connection of earth wire with iron clad switch and iron clad branch distribution fuse board or other metallic cases shall be according to the Indian Electricity Act and the Rules there –under and made by means of suitable cables, sockets soldered at the end of the earth wire. Rates given in the schedule are inclusive of this work.
11. The suitable series of M.C.B's shall be used for light load, power load and motor wiring purposes and nothing shall be deducted or paid extra to the contractor on this account.
12. The contractor will arrange to provide all switches and B.D.Bs of the same make in each premises., An exception to this, in case of non-availability of some particular number/size of the switches of a particular make being used/intended to be used, can be made with prior approval of the Engineer.

Contractor

Witness

Registrar

13. G.I. pipe should be B-Class of TATA, Jindal make. However the choice of make shall rest with the Engineer
14. The breaking up and making good of walls, ceiling and floor etc. shall be done by the contractor at his own cost and to the entire-satisfaction of the Engineer of the work. All the cases and holes made for wiring or other purposes shall be filled in properly and neatly and brought to the original finish according to the entire satisfaction of the Engineer. No extra payment for the same will be made.
15. The rates for the wiring light, fan, call bell plug points etc. given in the attached schedule are irrespective of length of the points.
16. Looping in system of wiring shall be adopted for all sub-circuit wiring.
17. All the pipe work sheet-metal/ iron clad switches branch distribution fuse boards, conduit or strip for light ,fan and plug points ,T.W. board blocks etc shall be painted/varnished both from inside ad out side as the case may be with two coats of approved paint/varnish. Rates given in the attached schedule are inclusive of this work.
18. The connection of earth wire with Sheet-Metal/iron clad switch and branch distribution fuse boards or other metallic cases shall be according to the Indian Electricity Rules and made by means of suitable cable socket soldered at the end of the earth wire. Rates given in the attached schedule are inclusive of this work.
19. The size of branch distribution boards are designed on the basis of eight points (light, fan, Call bell and light plug) connected to one way of branch distribution boards and in cases of 10/15 Amp. power plug points are to be connected to one way of 32 Amp. B.D.B or one point per way 16 Amp. B.D.Bs. this practice should strictly be followed for connecting points to the ways of B.D.Bs.
20. G.I. pipe for earthing purposes only for protection of earthing wires may be of Class 'A' water quality
21. Where-ever saddle clamps are used for fixing pipe, same be of 3 mm thick iron sheet width of which shall not be less than the outer diameter of the pipe. Alternatively, suitable size holder bats may be used if desired by the Engineer. Neither any deduction nor any extra payment for the same will be made if the holder bats are used.
22. Before energizing the system, the following tests should be given by the contractor, so as to find out the installation conforming to the relevant rules/regulations:
  1. Earth resistance test.
  2. Earth continuity test of conduit pipe or other iron clad system etc.
  3. Insulation test.
  4. Polarity test
23. All shutters for covering the switches & B.D.Bs should be as per approved drawings.
24. The control switch should not installed at a height less than 20 Cm from floor level.
25. The body of all the branch distribution fuse boards should be of machine made with 1.60mm thick mild steel sheet.
26. Grip fuse units of sheet metal/I.C switches and branch distribution fuse boards should be H.C type so as to have the facility of inter charge ability. Sheet metal/I.C switch should be rewire able type below 200A rating and H.R.C type for 200A and onward rating.
27. Brass screws to fix brown bakelite/white glazed or translucent backside painted sheet cover 3 mm thick. This sheet should be fixed by means of flat heads brass machine screws with brass ring washers underneath.

28. Welded conduit pipe (Screw type) made from 1.60 mm thick steel sheet as stipulated in the schedule enameled both from inside and outside shall be used. The length of conduit pipe shall be joined by means of screwed sockets so that it shall be electrically continuous throughout. The threads shall be free from grease oil etc. and material of the nature should be allowed to come in contact with the conduits. Sharp edges should not be allowed to remain due to which insulation of conductor is likely to be damaged.
29. All the conduit pipe to be used on the work shall be of heavy gauge welded screwed type (ISI marked), conduit pipe upto 32mm dia made of 1.6mm thick M.S sheet and more than 32 mm dia. 2.0 mm thick sheet. For the purpose of checking the gauge of the sheet the under noted weight of various sizes of conduit shall be considered as standard weight and conduit used by the contractor must to these weight.

Nominal size outside diameter of conduit	Tolerance on outside diameter.	Minimum Outside Dia meter	Minimum wall thickness	Gauge	Weight per meter (gms)
1	2	3	4	5	6
20	0.3	19.7	1.6	16	735
25	0.4	24.6	1.6	16	935
32	0.4	31.6	1.6	16	1215
40	0.4	39.6	2.0	14	1910
50	0.5	49.5	2.0	14	2660
63	05	62.5	2.0	14	3340

30. All conduit used in the work shall be adequately bushed with PVC bushes to prevent a abrasion of insulation of conductor shall also be bonded to earth. This clause however does not apply to small conduit cases installed in the partition wall in PVC individually and PVC sheathed system of wiring were teak wood bushes can be installed and bonding to earth is not necessary.
31. Healthy gauge welded conduit pipe less than 20mm dia and higher than 25mm dia shall not be used in such circuit wiring.
32. Not more than 4 and 8 wires of 1.5 mm sq.PVC cables shall be encased in 20 mm and 25 mm dia conduit pipe respectively except with the special permission of the Engineer.
33. All cover plates whether of inspection boxes or outlet boxes shall be fixed with round head oxidized brass screws. All cast iron inspection boxes and outlet boxes for housing/accessories shall be of threaded type of suitable sizes as approved by the Engineer. Cover plats of round inspection boxes shall be of 1.2 mm thick M.S sheet painted white and 6mm bigger than the outer dia, of the inspection boxes. Cover plates of rectangular and inspection boxes shall be of 1.58 mm thick iron sheet and outlet boxes of 5mm thick bakelite brown/white glazed of translucent back side painted sheet as approved by engineer.
- Ceiling roses of semi-recessed type shall only be used in case of conduit pipes and they shall be so fixed-in-such a manner so that canopy fan can effectively cover the same.
34. The whole system of conduit in a building shall be erected and the inside of it thoroughly dried of all sweating or dampness by means of drawing in a cloth fixed to steel fish wire through it before the conductors are put into it further before putting conductors in the conduit pipe the earth continuity test of whole the system should be taken by the Engineer. It would the responsibility of the contractor to arrange and give such tests.
35. Conduit pipe where already laid for wiring of light, fan call bell and plug points as well as for plug control will be delivered to the contractor, responsibility for erecting the wiring in works in absolutely cleaned condition with painted round inspection boxes and cover and

the whole system is handed over to the contractor (later) the responsibility to whom wiring work is allotted.

36. Bonding of third pin of socket outlet shall be carried out by mean of 4 mm. dia. G.I wires, 2.24mm.dia aluminum wire and 4sq.mm G.I stranded wire, in case of casing and capping P.V.C sheathed recessed conduit pipe and surface conduit wiring respectively with suitable wall socket.
37. Watering tank at the CSR rate & specifications be provided on every earth variable.
38. Cost of Empty to be spared and suitable erection charges shall be deducted from the contractor.
39. The M.C.Bs shall be used of L 'series for light load control and out of C' series for power load and wiring purpose and nothing shall be deducted.
40. M.S. boxes 16 gauge in place of cast iron can also be used with prior approval of the Engineer in charge and no extra cost of deduction shall be made.
41. Where sheet metal distribution boards or M.C.B's and isolators are used, all the conduit pipe/pipes reaching the point shall terminate direct in distribution board it-self and the same shall be fixed by mean of suitable size check –nuts on each on inside as well as outside the board to ensure proper continuing to extra payment or deduction to this effect.
42. Where miniature circuit breakers and isolators are used all of their terminals shall be connected only through suitable size thimbles or required shape and size and not direct. All of those lugs/thimbles shall be properly compressed with the crimping tool at the end each cable to avoid and loose connection. No extra payment or deduction to this effect shall be made.
43. All the cable, poles and street light fitting etc. To be purchased by the contractor from the manufacturers for installation at the site of works shall be inspect in the premises of the factory it-self by the concerned Sub-Divisional Engineer/executive Electrical Engineers before the material is received is received at site by the contractor. This will be a binding on the contractor to inform the concerned sub-divisional Engineers Executive Electrical Engineers under whom the work is executed while placing orders their levels.
44. The firm shall have to supply any documents if so desired by the Engineer-in-charge in support of the authenticity of the makes of the material brought at size.
45. The contractor shall be responsible for maintaining the street light including the replacement of lamps, chokes, igniters, starters etc. For a period of one year after the completion of work and final payment shall be released to the contractor only after the work is handed over to the Department compete in all respect.

#### FOR SUB-STATION

46. The contractor will provide qualified site Engineer as per site requirement for supervision of electrical installation on day to day basis who will assure the electrical work has been done as per PWD specifications.
47. The firm will submit to this office test certificate of material along with copy of bill & guarantee cards.
48. The firm will provide one year free service after the date of completion as defect liability period.

**FORMAT****AFFIDAVIT/UNDERTAKING\***

1. I/we, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also hereby certifies that neither our firm M/s \_\_\_\_\_ have abandoned any work under Government of India or Govt. of Punjab nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorize(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understand(s) and agree(s) that further qualifying information may be requested, and agrees to furnish any such information at the request of the Department / Project/Work implementing agency.
5. The undersigned binds himself with all the stipulations of the Bidding Document including period of completion, provision of adequate equipment, personnel and other resources required for completion within the stipulated completion period and agrees to augment them, if found necessary for timely completion of the Project/Work, as desired by the Engineer/Employer.
6. Affidavit/undertaking of not having been black-listed by any Govt. /Semi Govt. Organization/Corporation at any stage and/or debarred by the department of Punjab PWD (B&R).
7. The undersigned has never been convicted by any court of law for any of the offences under any Indian/ foreign laws.

\_\_\_\_\_ (Signed by an Authorized Officer of the Firm)

Title of Office \_\_\_\_\_

Name of Firm \_\_\_\_\_

DATE \_\_\_\_\_

\* To be executed on a non-judicial stamp paper .

**GENERAL TERMS AND CONDITIONS:****1. Eligibility Criteria and other Terms & Conditions:**

This invitation open to all **PEDA approved agencies**, manufacturers, suppliers & system integrators of Solar PV Power Projects who have not been debarred/blacklisted by any Govt./Semi Govt. organization for design, manufacture, supply, installation, testing and commissioning of different capacity Roof Top Solar Power Projects subject to adherence to following conditions.

S.No	Location Area	capacity of rooftop capacity
1	Senate Block BFUHS	24
2	New & Old Girls Hostel	65
3	GGSM Hospital Building	505
4	Nursing College & Hostel	12
	Total capacity of rooftop capacity	606 KW

- a. The offers shall be accompanied with set of complete technical literature, operation and maintenance manual of the product.
- b. Material shall be strictly as per laid down specifications and if there is any left out specification in the Information Document, the same shall be **considered as per the latest PEDA specifications and guidelines**.
- c. The solar photovoltaic technology (including all forms of photo voltaic) based RTS projects for generation of electricity will be deployed under the Programme. Project proponents to adhere to the national/international standards specified by MNRE from time to time.
- d. The individual SPV modules shall be warranted for 25years.The complete systems would be warranted by the manufacturer for five years from the date of commissioning of the Project. After Installation & Commissioning,  
Solar Rooftop Power Project shall be jointly visited by a committee of supplier/empanelled agency, user and officer of **BFUHS** within 15 working days.
- e. The companies should have their service network in Punjab and shall provide address of service centers. **It is mandatory to depute one engineer to visit site everyday for one year to ensure the smooth running of the solar plant and training of BFUHS personnel.**
- f. All disputes relating to this work shall be subject to jurisdiction of **Faridkot** only.

**CONDITIONS :-**

1. **BFUHS** is inviting tender for Empanelment of parties for supply, installation, testing, commissioning and comprehensive maintenance contract for five years of Rooftop Solar Photovoltaic Power Plant at **BFUHS** complex of various capacities on different rooftops.
2. The Blacklisted and debarred firms by PSPCL/any other Govt./Semi govt. organization shall not be eligible for participation in the tender.
3. The offers should be kept valid for at least 120 days from the date of opening of tenders.
4. Telegraphic or conditional quotations will not be accepted.
5. **BFUHS** reserves the right to nullify the NIT without assigning any reason.
6. In case the due date of opening of tenders happens to be a holiday, tenders shall be received and opened at the same time on the next working day.
7. Every Agency/firm has to inform their GSTIN No. at the time of payment.
8. The instructions issued under this NIT, will be read together with PEDAs regulations for Grid Connected Rooftop as well as instructions for Net-Metering for Grid Connected Roof Top Solar PV Power Plants in PSPCL's Electricity Supply Instruction Manual 2018, amended time to time.
9. Any change/addition/deletion/alteration/modification in any terms & conditions of this tender finalized day meeting will become the part of this tender and will be binding on the bidders/firms/contractors.

**DECLARATION BY THE BIDDER**

We \_\_\_\_\_ (here in after referred to as the Bidder) being desirous of tendering for the work under the above mentioned tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document.

**DO HEREBY DECLARE THAT**

1. The Bidder is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document.
2. The Bidder is capable of executing and completing the work as required in the tender.
3. The Bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.
4. The Bidder has no collusion with other Bidders, any employee of **PSPCL** or with any other person or firm in the preparation of the bid.
5. The Bidder is Financially solvent and sound to execute the work.
6. The Bidder is sufficiently experienced and competent to perform the contract to the satisfaction of **BFHUS**.
7. The information and the statement submitted with the tender are true.
8. The Bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State, and Central Government that may affect the work, its performance or personnel employed there in.
9. The Bidder has not been debarred from similar type of work by PSPCL and or Government undertaking/Department.
10. This offer shall remain valid for acceptance for 120 days from the date opening of tender.
11. The Bidder gives the assurance to execute the tendered work as per specifications terms and conditions.
12. The Bidder confirms the capability to Supply, Install, Testing and Commissioning including 5 years Operation, Annual Warranty and Maintenance of Grid Interactive Rooftop Solar PV Power Plants and power evacuation system including meters and other necessary infrastructures of Grid Interactive Solar Rooftop PV Power Plants and power evacuation system including meters and other necessary infrastructures.

**ELIGIBILITY CRITERIA AND OTHER TERMS & CONDITIONS.**

- 1.1 This invitation open to all PEDDA approved agencies, manufacturers, suppliers & system integrators of Solar PV Power Projects who have not been debarred/black listed by any Govt. organization for design, manufacture, supply, installation and commissioning of different capacity Roof Top Solar Power Projects.
- 1.2 The offers shall be accompanied with a set of complete technical literature, operation and maintenance manual of the product in English/ Punjabi Language.
- 1.3 Material shall be strictly as per laid down specifications and if there is any left out specification, in the Information Document the same shall be considered as per the latest MNRE specifications and guidelines.
- 1.4 The SPV modules shall be warranted for 25 years and complete SPV systems would be warranted by the manufacturer for five years, from the date of commissioning of the Project..
- 1.5 The companies should have their service network in Punjab and shall provide address of service centers.
- 1.6 The tenderer shall quote the rate both in figure as well as in words.
- 1.7 The bidder should also submit an undertaking on its letterhead that all the terms & conditions of the DNIT are acceptable to the bidder.
- 1.8 The bidder should submit a notarized affidavit on Indian Non judicial stamp paper of Rs.10/- that no case is pending with the police against the Proprietor / firm / partner or the Company (Agency). Indicate any convictions in the past against the company/firm/partner. Please also declare that proprietor/firm has never been black listed by the organization.”

**2. SCOPE OF SUPPLY.**

The SPV power plants should be supplied & installed by the companies as per specifications given in technical specifications which comply with the MNRE, GOI Guidelines. Following parts for each SPV projects are mainly required to be supplied.

1. SPV Module of capacity ranging from 335Wp and above.
2. Power conditioning Unit (PCU) 1KW and above.
3. PVC insulated Copper cables as per BIS Codes for AC & DC inter connections.
4. Junction Boxes with SPD.
5. Structure for solar PV project (i) Aluminum upto 100 KWp (ii) MS Galvanized above 100 KWp and upto 500KWp,.
6. ACDB with SPD and MCB/MCCB, Uni-directional solar meter and necessary protection as per CED rules and safety regulations.
7. Lightning arrestor.
8. Danger board.
9. Earthing as per BIS/ISI standards required for the SPV Power Plant.
10. Remote monitoring system from 10kWp and onwards.
11. O&M manual and warranty card in English/Punjabi Language.

12. The process and expenditure of meter testing and electrical inspection.

13. Any other part as per site requirement.

### 3. **WARRANTY**

- i. The Solar power projects shall be warranted for five years after the date of commissioning of the project for replacement in case of any manufacturing, operation failure, non performance as per design standards.
- ii. The PV module(s) shall be warranted for a minimum period of 25 years from the date of commissioning of the project. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
- iii. The Warranty Card to be supplied with the system must contain the details of the system. The bidder will have to be furnishing a warranty certificate of the systems on a required stamp paper for the same.

### 4. **Annual Maintenance Contract during Warranty period of five years.**

- a) Visit to the site on call basis to provide maintenance services within two days of lodging of complaint.
- b) Corrective & remedial maintenance services to set right the malfunction of the SPV-projects include supply and replacement of all damaged parts/ components including electronics/ charge controller, Inter connected cables/ parts and fuse etc. with new parts.

### 5. **OPERATION & MAINTENANCE MANUAL**

- An Operation, Instruction and Maintenance Manual in English/Punjabi languages should be provided with the Solar PV projects. The following minimum details must be provided in the Manual.
- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on the Solar PV project - its components, PV module, inverter, junction boxes and expected performance shall be provided.
- Type, Model number, Voltage & capacity of inverter, used in the system.
- The make, model number, country of origin and technical characteristics of all the component are required to be provided.
- Clear instructions on regular maintenance and trouble shooting of the Solar PV Projects.
- DO's and DONT's.
- Name, address and Mobile No. of the contact person for repair and maintenance, in case of non-functionality of the SPV Projects.

## **GENERAL TECHNICAL SPECIFICATIONS.**

### **1. SOLAR PHOTOVOLTAIC MODULES.**

Each solar PV plant array capacity should not be less than the capacity of the same SPV Plant capacity and it should comprise of solar modules of minimum 335 watts. The Photovoltaic modules must be tested & approved by one of the IEC authorized test centers , Test Certificates can be from any of the NABL / BIS accredited testing / calibration laborites the module type must be qualified as per IEC 61215( Second Edition). In addition PV modules must qualify to IEC 61730 Part I to II for safety qualification testing. SPV module conversion efficiency should not be less than 16.0% under STC.

The module shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period. The Bidder will have to furnish a CORPORATE GURANTEE on a required stamp paper for the same.

#### **IDENTIFICATION AND TRACEBILITY.**

Each PV module used in any solar power project must use a **RF Identification Tag (RFID)**, which must contain the following Information:

- i. Name of the manufacturer of PV Module
- ii. Name of the manufacturer of solar cells
- iii. Month and year of the manufacturer (separately for solar cells and modules.
- iv. Country of Origin (separately for solar cells and modules
- v. I-V Curve for the module
- vi. Peak wattage , Im , Vm and FF for the module
- vii. Unique Serial No and Model No of the Module
- viii. Date and year of obtaining IEC PV module qualification certificate.
- ix. Name of the test lab issuing IEC certificate

### **2. SPV PANEL ARRAY STRUCTURES**

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

- Determination of true south at the site;
- Array tilt angle to the horizontal, with permitted tolerance;
- Details with drawings for fixing the modules;
- Details with drawings of fixing the junction/terminal boxes;
- Interconnection details inside the junction/terminal boxes;
- Structure installation details and drawings;
- Electrical grounding (earthing);
- Inter-panel/Inter-row distances with allowed tolerances; and
- Safety precautions to be taken

The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof properly. The portion of array structure if any lying within the column shall be of GI of superior quality and Alluminium as per scope of supply. All nuts and bolts shall be of very good quality stainless steel. Detailed design and Drawing of the module mounting structures shall have to be submitted to PEDDA for acceptance before execution of work. Strict care should be taken during execution to avoid any damage to the roof surface of the buildings and to ensure no leakage should occur.

- i. Wherever required, Suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design and can be with combination of I, C and L or any sections as per structure design requirement.

- ii. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 70 microns as per IS5909, if steel is used.
- iii. Structures with adequate strength and in accordance with relevant BIS standards shall be used with proof that the design of the structure can withstand a wind speed upto 170KM per Hour.
- iv. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.
- v. Each structure should have angle of inclination as per the site conditions to take maximum insulation.
- vi. The base plate and vertical section of the structure should be minimum of 3 mm thickness.
- vii. Each panel frame structure be so fabricated as to be fixed on the rooftop column/wall structures. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods. All nuts and bolts shall be of very good quality stainless steel except foundation bolts which will be of MS (GI Coated).
- viii. The structure should be non penetrating and low height. The entire structure should be connected to each other in a grid form so as to sustain the wind speed upto 170KM/Hr.
- ix. If, possible, 4 Ft. offset from boundary of rooftop from all sides should be kept while installing structure for modules.
- x. **No damage in any way should be caused to the building rooftops while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder**

**1. POWER CONDITIONING UNIT (STRING INVERTORS).**

The power conditioning units of each different capacity SPV Power Plants totaling should not be less than the each SPV Power Plant capacity and it should be provided to convert DC power produced by SPV modules, in to AC power. A multi function power conditioning system combining the functionality of a grid interactive solar inverter with a highly efficient conversion unit having following **Technical Specification:**

Type	:	Self commuted, current regulated, high frequency IGBT based with Trench Gate Structure
Output voltage	:	Single Phase, 230V, AC (1kWp to upto 10kWp) and 3 phase, 415V, AC (more than 10kWp to upto 500kWp) (+12.5%, - 20%V, AC)
Frequency	:	50 Hz $\pm$ 1 Hz
Continuous rating	:	Not less than system capacity individually
DC input Operating range	:	500 V to 5000V nominal
Total Harmonic Distortion	:	less than 3 %
Operating temperature Range	:	0 to 55 deg C
Housing cabinet	:	PCU to be housed in suitable cabinet with minimum IP65 standard
Inverter efficiency	:	>95 % at full load.
Power Control	:	MPPT

- 1.1 The bidder shall use the original parts in case of any fault in the PCU/Inverter during the AMC period of 5 years. In case the original part/parts are not available with the manufacturer of the PCU/Inverter (Based on certificate from the manufacturer), the bidder shall use the new parts of other standard brands available in the market or will use the repaired parts.**

**Other important Features/Protections required in the PCU.**

- Authentic tracking of the solar arrays maximum power point tracking (MPPT).
  - Array ground fault detection.
  - LCD and piezoelectric keypad operator interface Menu driven
  - Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.
  - MOV and gas filled spark gap technology type surge arresters on AC and DC terminals for over voltage surge protection from any source.
  - PCU should be rated to operate at 0 to 55 deg. Centigrade above ambient temp
  - All parameters should be accessible through an industry standard communication link.
  - The PCU should go in sleep mode when there is no grid supply.
  - The string inverter should have display of adequate size on its front panel to show various parameters.
- 3.1 Since the PCU is to be used in solar photo voltaic energy system, it should have high operational efficiency. The idling current at no load must not exceed 2 percent of the full-load current.
- 3.2 A suitable Surge Protection Device separately at output (A.C. side) shall be provided for each SPV Power Plant.
- 3.3 The PCU output shall be 230V,AC for single phase and 415V, AC, 50 Hz for 3 phase.
- 3.4 The PCU shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.
- The PCU shall go to shut down/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay; in sufficient solar power output etc.

**a) Insufficient Solar Power Input**

When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to a standby/shutdown mode. The PCU control shall prevent excessive cycling during rightly shut down or extended periods of insufficient solar radiation.

The power conditioning units / inverters should be applicable IEC/ equivalent BIS standard for efficiency measurement and environmental testing as per standard code IEC 61683 and IEC 60068 2(6,21,27,30,75,78). The charge controller/ MPPT

units should qualify IEC 62093 and IEC 60068 2 (6,21,27,30,75,78). The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 62208 specifications.

The PCU's should be tested from the MNRE approved test centres / NABL /BIS accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses. Party must supply and upload the test report of PCU /inverter along with the tender document.

**b) Utility-Grid Over or Under Frequency**

- 3.5 The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes.
- 3.6 The PCU generated harmonics measures at the point of connection to the utility services when operating at the rated power shall not exceed a total harmonic current distortion of 3 percent, a single frequency current distortion of 3 percent and single frequency voltage distortion of 1 percent, when the first through the fiftieth integer harmonics of 50 Hz are considered.
- 3.7 The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95 lagging below 25 percent of the rated output.
- 3.8 The high voltage and power circuits of the PCU shall be separated from the low- voltage and control circuits. All conductors shall be made of standard copper.
- 3.9 The PCU shall withstand a high voltage test of 2000 V rms, between either the input or the output terminals and the cabinet (chassis).
- 3.10 Full protection against accidental open circuit and reverse polarity at the input shall be provided.
- 3.11 The PCU shall not produce Electromagnetic Interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.
- 3.12 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and ac and the dc disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front cover of the PCU enclosure.

**3.13 ELECTRICAL SAFETY, EARTHING AND PROTECTION:**

- a) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.
- b) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.
- c) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
- d) Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS

standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

- e) Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution.

- 3.14 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- 3.15 The PCU shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with WEC 69042.
- 3.16 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 10 years design life of the unit.
- 3.17 The PCU enclosure shall be weatherproof and capable of surviving *climatic changes and should keep the PCU* intact under all conditions. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.
- 3.18 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.
- 3.19 All doors, covers, panels and cable exists shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm.
- 3.20 The design and fabrication of the PCU the site temperature (0<sup>o</sup> to 70<sup>o</sup> C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.

**3.21 FACTORY TESTING:**

- a) Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.
- b) Operation of startup, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.
- c) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.
- d) A factory Test Report (FTR) shall be supplied along with the unit. The FTR shall include detailed description of all parameters tested qualified and warranted.

**3.22 OPERATING MODES.**

The following operating modes are to be made available.

Night or Sleep mode: Where the inverter is almost completely turned off, with just the timer and control system still in operation, losses should not exceed 2 watts per 5 kilowatt.

**In case of Grid Failure, the PCU should go in sleep mode/ turned off immediately.** Standby mode: Where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 20 watts).

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

### **3.23 HARMONICS STANDARD**

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

#### **1.2 Technical and interconnection requirements**

Overall conditions of service	State Distribution/Supply Code	State Distribution/Supply Code
Overall Grid	Central Electricity Authority (Grid	Central Electricity Authority (Grid Standard)
Standards	Standard) Regulations 2010	Regulations 2010
Equipment	BIS / IEC / IEEE	BIS / IEC / IEEE
Meters	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time
Safety and supply	Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010	Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010
Harmonic	IEEE 519 CEA (Technical	IEEE 519 CEA (Technical Standards for
Requirements	Standards for Connectivity of the	Connectivity of the Distributed Generation
Harmonic Current	Distributed Generation Resources) Regulations 2013	Resources) Regulations 2013
Synchronization	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection.

Voltage	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the photovoltaic system must isolate itself from the grid.
Flicker	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Operation of Photovoltaic system should not cause
Frequency	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds.
DC injection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
Power Factor	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate.
Islanding and Disconnection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The photovoltaic system in the event of fault, voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013.	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
Paralleling Device	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013.	Paralleling device of photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point.

#### **ENERGY METER CONFIGURATION OPTIONS.**

The metering system for rooftop solar system, under net-metering arrangement, shall be as under: -

One Bi-directional as main meter and One No. Uni-directional as solar meter with necessary CTs as requirement.

under: -

One Bi-directional as export meter and one No. Bi-directional as check meter with necessary CTs as requirement.

Sr. No.	Meter Description	Accuracy	Load of Consumer	Voltage
1.	Single Phase 10- 60A,	Class-I	Up to 10kW	Single Phase LT 230V. Grid System Stability: to be examined by the Distribution Licensee.
2.	3 Phase 10-60A, whole Current	Class-I	More than 10kW& up to 25kW	Three Phase LT 400 V
3.	LT AC 3 Phase 4 Wires CT operated static DLMS AMR Compliant energy meter	Class-0.5S or better	More than 25kW& up to 500kW	Three Phase LT 400 V

**1.3 The Solar power generated at rooftops will be collected at one central point in the same building from where it will be fed on LT side.**

**If required, any protection device/ adapter panel/breaker/switchgear be provided to terminate the each SPV Power Plant output on LT side by the party at its own cost.**

**METER TESTING & ELECTRICAL CLEARANCE:**

All installation work should be done as rules & regulations of Indian Electricity Act. & Electricity Department, PSPCL Punjab. The bidder/ empanelled agency shall have to take the clearance from SDO/Electrical Inspector, PSPCL, Punjab as the case may be at its own cost before connecting to the Grid. The process and expenditure of meter testing and electrical inspection to be met by bidder/ empanelled agency.

**2. SURGE PROTECTION DEVICE (SPD)**

There should be a separate Surge Protection Device to be provided on D.C. and A.C. Side.

**3. COMMON AC DISTRIBUTION PANEL BOARD (ACDPB).**

5.1 Common AC Distribution Panel Board (DPB) shall control the AC power from inverter. AC Distribution panel (ACDP) should consist of appropriate size of MCB/MCCB with appropriate breaking capacity as incomer and suitable numbers of MCB/MCCB with appropriate size breaking capacity out going switches.

5.2 The panel should have space for Energy Meter.

Contractor

witness

Registrar

4. **CABLES:-**

- a. ISI marked **as per given brands** PVC insulated Copper Cond. Cable of various sizes as per load requirement for connecting all the modules / arrays to Jn. Boxes and from Jn. Boxes to AJB and from AJB to inverter. Copper/ Aluminum **armored** Cables of appropriate size from Inverter onwards in A.C. side.
- b. Cabling: Cabling shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.
- c. Wires: Only copper wires of appropriate size **based on load requirements** of reputed make as specified in DNIT shall have to be used. However aluminum cables can be used on A.C side of transmission. However on D.C Side, only solar D.C. Cable should be used. PVC/XLPE insulated armoured sheathed cables required for the plant will be provided by the manufacturer. All cable schedules/ layout drawings have to be got approved from the purchaser prior to installation)
- d. Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.
- e. Cable Marking: All cable/wires are to be marked with proper manner by good quality ferule or by other means so that the cable can be easily identified.  
Cu/Al. PVC insulated armoured sheathed cables required for the plant will be provided by the manufacturer. However Cables for both D.C/A.C as per brands and specifications mentioned can be used. All cable schedules/ layout drawings have to be got approved from the purchaser prior to installation.

5. **LIGHTNING PROTECTION.**

There shall be the required number of suitable lightning arrestors installed in the array area. Lightning protection shall be provided by the use of metal oxide arrestors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act and Electricity Department, PSPCL Punjab.

6. **EARTHING PROTECTION:**

Each array structure of the PV yard should be grounded/ Earthing properly as per IS:3043-1987. In addition the lightning arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act./IE Rules and Electricity Department, PSPCL, Punjab. Earth Resistance should be tested in presence of the representative of Department after earthing by calibrated earth tester. PCU and ACDB should also be earthed properly.

7. **Annual MAINTENANCE:**

All the equipments (but in case of SPV Modules the guarantee period is 25years) shall be provided with annual Maintenance for 5 years against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or components, or any part thereof, so found defective during

Comprehensive Maintenance period shall be forthwith repaired or replaced free of cost to the satisfaction of the beneficiary.

**8. JET PUMP 1/2 HP ( CROMPTON/ KIRLOSKOR): -**

As per site requirement, minimum 1 No. 1/2 HP BIS approved surface pumps shall be installed for each SPV Power Plant for 10kWp and above. Suitable Nos of water outlets shall be provided through B-class ISI Marked GI Pipes for cleaning of the modules.

**9. SCOPE OF AMC OF SPV POWER PLANT FOR A PERIOD OF 5 YEAR FROM DATE OF COMMISSIONING:**

- a. Proper AMC of the SPV Power Plant for a period of five years after commissioning along with supply of consumable items as and when necessary and submission of daily performance data of the power plant shall come, under the AMC contract.

The break down maintenance of the entire system including supply of necessary spare parts, if any, are already under the coverage of warranty clause of the specific condition for a period of 60 months from date of commissioning of power plant. The AMC schedule of the SPV power plant during the 5 years contract period shall be as detailed below.

- b. The security of the power plant will rest with the supplier/agency till such time operation and maintenance of the power plant is not handed over to the purchaser/department.
- c. The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.
- d. The deputed personnel shall be in a position to check and test all the equipment regularly, so that, preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behavior of any equipment shall be brought to the notice of Engineer-in-Charge immediately for appropriate action.
- e. Normal and preventive maintenance of the power plant such as cleaning of module surface, tightening of all electrical connections etc.
- f. During AMC period of 5 years of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons, what-so-ever, the supplier/firm shall be responsible for immediate replacement/rectification. The damaged component may be repaired, if it is understood after examination that after repairing performance of the component shall not be degraded, otherwise the defective component