

MAHARAJA AGRASEN MEDICAL COLLEGE, AGROHA (HISAR)

TENDER DOCUMENT

Ref. No. TENDER/2022/SOLAR POWER PLANT 30KW

1	Name of Work	Supply, erection, testing & commissioning of 30kw from existing 100kw to 130kw Grid connected Rooftop Solar Power Plant at MAMC, Agroha
2	Period of Work	60 days
3	Estimated Cost	16.00lakh (Rs. Sixteen lakh)
4	Cost of Documents	Rs.1000/- (Rupees one thousand only) Non-Refundable
5	Earnest money to be deposited	Rs.32000/- (Rs. Thirty two thousand only) Refundable
6	Last Date & Time for submission of Tender	30/12/2022 up to 3:00PM
7	Date of opening of Technical Bids	31/12/2022 at 2:00PM
8	EMD & FEE	Online as per tender portal
9	Copy of NIT detailed below	Page 1 to 18
10	Annexure-A	Rate quoting sheet
11	Annexure-B	Pre-qualifying and general conditions
12	Annexure-C	Instructions for tenderers
13	Annexure-D	Scope of work and technical requirements
14	Annexure -E	General terms & conditions
15	Annexure -F	Technical specifications
16	Annexure - G	List Of Approved Manufacturers
17	Notice Inviting Tender is available at Official website of M.A.M.C., Agroha i.e. www.mamc.edu.in	

Sign. with seal of Contractor

Director

ANNEXURE-A

RATE QUOTING SHEET

Sr. No.	Description of Work	Rates to be Quoted (including all type of taxes)			
		Unit	Qty.	Rate	Total Amount
1	Supply, erection, testing & commissioning of 30kw from existing 100kw to 130kw Grid connected Rooftop Solar Power Plant at MAMC, Agroha including all type of allied equipments which is required for 30KW Solar Power Plant- complete in all respects as mentioned in DNIT (Solar Panel, Solar Modules mono parc half cut cell)	EACH	1		
	Total Amount in figure				
	Total Amount (in word)				

Note:- Inconsistent rates of any items not allowed.

Sign. with seal of Contractor

Director

ANNEXURE-B

Pre-Qualifying requirements of tenders:-

1. Qualification of the bidder:-

a) The bidder should have experience of carrying out similar type of works for the preceding three years period of three years.

b) The firm has empanelment with Ministry of New and Renewable Energy Department as channel partner for Grid connected Rooftop Solar Power Plant/HREDA/SECI

c) The firm should have done works of Rooftop Solar in any Govt. department/Semi Govt./Corporation/Board during last Three year up to amount not less then estimated cost of the project during preceding three years.

d) The firm must have A-class electrical license issued by CEI Haryana.

e) The firm must have GST and PAN number.

f) The firm must not be blacklisted from any department (self declaration certificate must be attached).

g) All the documents must be self attested with rubber stamp of the firm.

2. All bidders shall provide the Qualification Information, Forms of Bid and the affidavits /Undertakings. The scanned copy of affidavit shall have to be submitted in technical bid and Completion of Technical Evaluation the original affidavit should be submitted by the bidders. The Affidavit in original shall form part of the agreement.

2.2 All bidders shall provide following information and documents with their bids:

- a) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder.
- b) Total monetary value of similar nature work performed during each of the last three years.
- c) Experience in works of similar nature and size for each of the last three years and details of work underway or contractually committed, and clients who may be contacted for further information on these contracts.
- d) Reports on the financial standing of Bidder, such as profit and loss statements / auditor's reports for the past three years.

2.3 Bids from Joint ventures are not acceptable.

2.4 Qualification Criteria:- To qualify for award of the contract, each bidder in its name should have in the Last three years as referred:

- a) Average Annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be at least equal to the estimated cost.
- b) Experience of having at least one similar completed work in last three years costing not less than estimated cost.

Following shall be applicable to the above:-

a) Cost of work shall mean gross value of the completed work including the cost of materials supplied by the Govt. / Client, but excluding those supplied free of cost. This should be certified by an officer not below the rank of Executive Engineer/ Project Manager or equivalent (calculated on the basis of 8% value added compounded per year).

b) The applicant should have minimum Average Annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be at least equal to the estimated cost. This should be duly audited by a Chartered Accountant.

Sign. with seal of Contractor

Director

- 2.5 Sub-contractors' experience and resources shall not be taken into account in determining the Bidder's compliance with the qualifying criteria.
- 2.6 Even though the bidder met the above qualifying criteria, they are subject to be disqualified if they have:
- Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or.
 - Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures, poor quality work etc.
 - Participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.

The bidder who had abandoned the work or his contract was rescinded or was terminated due to non completion of work/ or any other default on the part of the contractor in any contracts during last three years, shall be considered as non performer and no work will be allotted to him. No specific order for debarment shall be needed for this purpose.

3. The application for tenders must be accompanied with the copy of GST & PAN Numbers, valid copy of Empanelled with Govt.
4. The Contractor should have registered with ESIC & Labour department as Contractor. He will be fully responsible for any mishappening with the manpower.

ANNEXURE-C

INSTRUCTIONS TO TENDERERS

1. The scope of work shall consist of cost of all material, labour tools and plants, water and electricity bill etc., engineering, supervision, Installation, calibration, adjustment as required for commissioning of the equipment. The term complete installation shall mean, not only major items of the plant and the equipments covered by the specifications, but also incidental sundry components necessary for complete execution and satisfactory performance of installation with all labour charges, whether or not specifically mentioned in the tender documents which shall be provided by the contractor at no extra cost.
2. Nothing shall be paid for the damage by rain, floods or any other act of God.
3. The whole work shall be carried out strictly in accordance with Haryana PWD/MNRE/HREDA/SECI specifications with up to date amendment/correction slips up to entire satisfaction of the Engineer-in-charge.
4. Nothing shall be paid for unforeseen delays on account of non-availability of any kind of material drawing or design.
5. The contractor shall provide suitable measuring arrangement at site for various articles brought by him.
6. In this contract schedule of rates, only essential portion of items have been written but it will deem to cover the entire items fully described in Haryana Common Schedule of rates.
7. No claim will be entertained from the contractor in case of any mistake in description, rates or unit occurs in any of the items taken in this schedule while composing this on account of typing or comparison and over –sighting. If there is any mistake, the same shall be rectifiable at any stage as per Haryana common Schedule of rates.
8. Approximate quantities have been given in the contract schedule of rates and these may vary at the time of actual execution of the work. The payment will however be made according to the actual work done by the contractor.
9. The amount of work can be increased or decreased as per requirement of site and contractor will have no claim on this account.
10. The items given in the contract schedule of rates can be changed by the Engineer-in –charge and its execution will be binding on the contractor.
11. In the event of any extra or additional work being carried out under orders in writing of the Engineer-in-charge of the work in connection with any type of work the same shall be measured as laid down in the respective schedule of H.S.R. 2021, any amendment thereof.
12. No claim on account of fluctuation in prices due to any reasons whatsoever will be considered.
13. The department reserves the option to take away any items of the work or any part thereof at any time during the currency of the contract and re-allot it to another contractor with due notice to the contractor without liability of compensation.
14. The successful contractor shall have to sign an affidavit to the effect that he has no relation or connection with the firm/contractor blacklisted by Govt. of Haryana /Govt. of India from time to time.
15. Any item of work not provided in the contract schedule of rates, if required to be executed will be paid as per Haryana schedule of rates 2021.
16. Before energizing the system for any type of electric installation the following tests /certificate should be given by the contractor:-
 - a. Earth resistance test.

- b. Insulation test.
 - c. Polarity test.
 - d. CEI inspection/test (where ever mandatory required)
17. All cable connections with main switches and MCCB shall be through dowel or any other reputed make tinned copper/Al lugs/thimbles duly crimping tools & earthing connection be also made solidly.
 18. All recess chases and holes made for wiring or other purpose shall be filled up properly and wholly and brought to its original finish to the satisfaction of the Engineer-in-charge.
 19. The route, diagram in duplicates on suitable size of tracing cloth for cables/installation made shall have to be supplied immediately after completion of work.
 20. The contractor has to strictly follow the fair wages clause.
 21. The Contractor must have valid license from the Chief Electrical Inspector, Govt. Of Haryana.
 22. The contractor shall be required to give the insulation test certificate applicable type test as per latest IS /specification and routine test conducted by the manufacturer of all materials like solar panel inverter PVC underground cable, transformer, panels and allied materials involved in the scope of work.
 23. The tests should be conducted in the presence of the representatives of M.A.M.C. deputed by Director/ Engineer-in-charge.
 24. The items/materials brought at site of work should be ISI marked/specified make and as per the list approved appended in the DNIT. In case there in any dispute regarding its quality then the same will be got checked from any approved laboratory at his own cost by the contractor within 10 days from the date of order given by the Engineer-in-charge in writing.
 25. Analysis of rates for non schedule item i.e. items which are not provided in the schedule of rates, shall be based on the rates of materials and wages of labour provided in the HSR – 2021/minimum wages act in case such rates of materials and wages of labour not mentioned in HSR- 2021, but involved in the non – schedule items, the rate should be determined as per actual lowest market rates at the time of execution of work. The contractor shall be required to provide in original such voucher which shall be subject to verification by the Engineer – in – charge, if deemed necessary. The rates for non-schedule items shall be computed on the basis of voucher rate plus contractor profit of 10% and approved by the competent authority.
 26. All M.S. parts /accessories (except of earthing work) to be installed for overhead /underground works are required be galvanized/ powder painted with approved color as desired by Engineer-in-charge after due primer coat. This work is essential irrespective of items issued by the Department or otherwise.
 27. Contractor shall comply with the provision of Apprentice Act 1961 and the rules and order issued there under from time to time and if he fails to do so his failure will be breach of contract. The Engineer-in – charge may at his discretion cancel the contract shall also be liable to peculiar liabilities arising on A/c of violation of provision of act by him.
 28. Transformer, H.T/L.T. Panel, cables and Electrical items shall be got inspected /approved by the Engineer-in-charge or his authorized representative before installation at site. Inspecting authority /approving Authority may get test/inspect the above item at the works of manufactures firm on the cost of the Contractor i.e. pre-dispatch inspection.
 29. Contractor shall be responsible for getting the electrical installation inspected from Chief Electrical Inspector, Haryana/ Pollution Control Board, Haryana, wherever applicable and he will also make necessary payment of fees for this purpose MAMC will however render necessary assistance to the contractor in this regard.
 30. All testing charges of various equipments if required by any electricity authorities/ Pollution Control Board shall be borne by the contractor.

31. The contractor shall submit original manufacturer test reports, type test, routine test as per applicable IS in respect of solar panel/invertor Transformer, HT/LT panel, cable and major materials.
32. After completion of the work, a complete drawing showing connections to the various equipments is to be prepared by the contractor and to be submitted to the department along with the final bill of the work.
33. The contractor shall not be entitled for any payment on account of work done by him till he signs the contract agreement.
34. MAMC is not responsible for arranging any material whatsoever and contractor will have to complete the work within time. Non – availability of material OR delay in consignment will not be entertained to as an excuse for extension for time for completion of work except any force majeure.
35. If any make of the items is not specified /miss-specified, any ambiguity or inconsistency that can be clarified from the Engineer-in-charge of the work and the decision of the Engineer will be final.
36. The tender shall remain valid for 90 days from the date of opening with the issue of allotment letter to the contractor within the validity period, the contractor agreement will stand concluded even without signing of the contract agreement .In case the contractor fails to commence the work, his earnest money will be forfeited and action under clause 2 &3 will also be taken against him. In case the contractor withdraws or amend his offer before allotment letter his earnest money will be forfeit. He will also be liable to be debarred /black listed in both the cases.
37. Tender quotations which are dependent upon the quotations of other tender shall be summarily rejected.
38. The actual quantities of the work completed successfully and accepted shall be paid.
39. **AUTHORITY OF THE PERSON SIGNING THE CONTRACT ON BEHALF OF THE SUPPLIER:-**The person who has signed these Tender papers (including the terms and conditions) has got authority to sign on behalf of the supplier. It is discovered at any time that the person so signing had no authority to do so, the purchaser without prejudice to any other right or remedy available to him may, cancel the contract and hold such person liable to the purchaser for all costs and damages arising from the cancellation of the contract including any loss which the purchaser may sustain on account of such purchase.
40. **TESTS AND INSPECTION:** The material shall be inspected and tested by the purchaser or his authorized agent before dispatch unless dispensed with in writing by the purchaser. The Supplier shall give to the purchaser at least 10 days advance notice from the date of readiness of material for such inspection and test.
METHOD OF TESTING: The Purchaser or his authorized agent shall have the right to put all the material or part thereof to such tests as he may think fit and proper. The supplier shall not be entitled to object on any ground whatsoever to the method of testing by the purchaser or his authorized agent.
REMOVAL OF REJECTED MATERIAL: If any material is rejected by the Purchaser or his authorized agent after tests and inspection or by the consignee, the material so rejected shall be removed from the premises of rejection by the supplier at his own cost. Such rejected material shall under all circumstances lie at the risk of the Supplier from the moment of such rejection; and if such material is not removed by the Supplier within a period of 5 days, from the date of notice given by the consignee/Purchasing Department for lifting of such material, Purchaser or his authorized Agent or consignee may dispose of such material in any way at the Supplier's risk and cost and retain such portion of the proceeds as may be necessary to cover any expense incurred in connection with such disposal and shall also be entitled to recover

handling and storage charges for the period during which the rejected material is not removed.

POST RECEIPT INSPECTION: The material after receipt in the stores of the MAMC shall be subjected to inspection for its conformity to the specification by a representative of the MAMC in the presence of representative of the contractor/supplier after issuance of e-mail notice/telephonic communication to the supplier/ contractor. In case the firm fails to depute a representative on the specified date, the MAMC would be free to get the material checked in the absence of firm's representative for which the firm would have no reason to protest at any stage and would be fully responsible of the outcome.

41. Contractor must carefully study the technical specifications and general terms and conditions before preparation of tender. All terms and conditions of NIT and Corrigendum shall be applicable.
42. All tenders/offers will be regarded as constituting an offer or offers open to acceptance in whole or in part until the last date of validity as prescribed in the notice inviting tenders or as indicated by the Contractor in his tender/offer, whichever be later.
43. The price must be quoted in Indian Rupees and any mistake in calculating the rupee price will not justify the claim for increase in prices
44. Authenticated documents to prove authority of signatory (legal power of attorney in favor of signatory) must be uploaded. Memorandum of article and Memorandum of association of the firm, if applicable, shall also be uploaded with the tender
45. The deviations in Technical & Commercial terms and Conditions, if any, must be brought out clearly failing which it will be presumed that the same are acceptable in to-to.
46. Contractor/s shall submit their offer in an ambiguous free wording failing which MAMC interpretation will be final
47. The revision of price bid after opening of Part-I i.e. technical and commercial part of the tender is not allowed. In case of withdrawing the same within the validity period, EMD shall be forfeited
48. Arithmetical Errors: - in case of any inconsistency in the prices furnished, the purchaser shall be entitled to consider the lowest prices for the purpose of evaluation and award of contract. All arithmetical errors will be rectified on the basis of the unit price or total price (in figures and in words) whichever is more beneficial to the purchaser/MAMC.
49. Material offered should be strictly according to the technical specification attached with the tender documents as laid down in Annexure-A & Annexure-D to the Terms and conditions of the contract. Unless a deviation in the specifications given in Annexure 'D' is pointed out by the Contractor specifically, it will be presumed that Offer/tender conforms to the specifications as laid down in Annexure 'A' & 'D'.
In case of any ambiguity in the MAMC technical Specification, the provision of relevant IS with latest amendment will prevail. The Director, MAMC shall be the deciding authority in such cases.
50. EMD is liable to be forfeited in case of evidence of cartel formation by the bidder(s). The provision for penal action in case of cartel formation by the bidders shall be as per clause No. 9 of policy (guidelines) issued by the State Govt. vide G.O No. 2/2/2010-41 BII dated 28.5.2010.
51. The Contractor must submit a hard copy of all the documents related to part-I (i.e. techno-commercial terms and conditions, where the tender is invited in two parts) uploaded on the site for the said tender duly certifying that these documents are same as uploaded on designated website, within 4 days of opening of part-I. (All affidavit & undertakings should be submitted in original with hard copy).

Sign. with seal of Contractor

Director

52. Submission of Quality Assurance Procedure:-The Vendor / Contractor at the time of submission of the drawings for approval from MAMC is also required to submit a Quality Assurance Procedure (QAP) of the materials to be supplied for review and approval. In this

QAP, the vendor / contractor shall clearly indicate the quality measures being taken by the manufacturer to maintain the quality of the finished product. The drawings/QAP once approved shall not be required to be submitted for approval again.

- i) Tests being performed on the raw material purchased by manufacturer for manufacturing of the finished product.
- ii) Tests being conducted during manufacturing of the product (In process testing).
- iii) Tests which shall be done on the finished product at the time of pre-dispatch inspection.
- iv) Test results assured by the vendor.
- v) Tests procedure followed for the inspection with full details of test setup etc.

The Inspection shall be carried out on the basis of the approved QAP. All the details provided by the vendor / contractor shall be verified by MAMC / Third Party during the inspection and if any deviation is found from the approved documents, it will be noted in the inspection Report

53. Only those firms who have not been blacklisted by any State Govt. or any State/Central Govt. Power Utility in India on the date of issuance of NIT shall be entitled to submit the tenders. The firm shall submit an affidavit of non-blacklisting on the non-judicial stamp paper of the appropriate value duly attested by Notary public
54. Safe custody of all machinery and equipment supply by the contractor shall be his own responsibility till the final taking over by the M.A.M.C., Agroha. The contractor shall be fully responsible for any loss of equipments and his manpower/labour during execution of this work.
55. The contractor shall operate the solar plant / inverter / D/TF and AMF/ATS Panel for a period of 15 days after it is energized the date of taking over the equipments shall be reckoned after its trouble free operation during the running period.

ANNEXURE – D

SCOPE OF WORK AND TECHNICAL REQUIREMENT:-

- a.) The scope of the bidder include identification of building for Rooftop Solar Power Plant for production of minimum 25 years, obtaining no objection certificate (NOC) from DISCOM for Grid connectivity if required, complete design, engineering, manufacturer, storage, Civil work, erection, testing, commissioning of the grid Rooftop connected Solar Power as per MNRE/SECI/HREDA acceptable norms.
- b.) The size of the project Solar Plant must be as approved design of HAREDA/SECI/MNRE for 30kw.
- c.) Installation of Roof Top Solar PV System:- All the pedestals meant for mounting the modules must be casted on the lintel by removing the tiles and other loose materials in the area where the pedestals are to be casted. The surface of the lintel should be thoroughly cleaned and an adhesive should be applied on the lintel surface before casting the pedestals in order to have strong bonding with the lintel. After casting of the pedestals the water proofing materials should be applied surrounding the pedestals in order to avoid any water seepage during rainfall or else.
- d.) Successful bidder shall ensure that SPV modules, parts of MS structures, all galvanised other all galvanised hardware like nuts, bolts and grouting hardware etc. are not loosely scattered over the terrace of a building. These items must be securely stored in an enclosed room where they cannot be affected by winds or such loose materials must be tied properly. Further, successful bidder shall ensure that rooftop Solar PV system should be designed and installed in such a way that its performance should not be affected due to the problem of water logging at site etc.
- e.) Successful bidder must ensure that the installation should have all the safety practice during storage, installation and commissioning, so that no loss to life or property is caused & bidder is fully responsible for any type of loss to life and property.
- f) **Subsidy:-**If any subsidy for this category of Rooftop Solar Power Plant provided by the Solar Energy Corporation of India or any authority will be in your scope to get release the subsidy in favour of Institute deemed to be property of Institute.
- g) If any type of NOC/Clearance required from DISCOM & Chief Officer MNRE/HREDA Haryana will be in the scope of contractor to get obtaining the NOC/Clearance.
- h) **Warranty:-** Contractor shall provide guarantee for the smooth functioning of the equipment/material as under:
 - a) 60 months (5 years) initially for solar panel and invertor except other allied materials with warranty of 12 months (1 year). However solar panel should have warranty of production performance capacity of 25 years.
 - b) 12 months for other equipment provided under the contract.

In case of any defect during warranty period item/equipment shall be replaced free of cost within a reasonable period as decided by the Director MAMC. However the proportionate amount of the bank guarantee will be refunded after completion of warranty period.

The bidder is MNRE approved however, he is fully responsible for the loss of men and materials.

ANNEXURE-E
General terms & conditions

1. **PRICES:** The rates shall be inclusive of all type of taxes.
2. **Make & quality of materials:** - All the materials must good quality and approved make from the MNRE/SECI and HAREDA. The following make of the material required by the Institute.

Sr. No.	Name of materials	Make
1	Solar Panel, Solar Modules mono parc half cut cell	Jackson Engineering, Tata Power, Sukam, Luminious, Adani, Vikram
2	30KW Grid type invertor	Delta, Havells, Sungrow, Growatt (with minimum 5 years warranty)
3	GI structure	ISO certified firm TATA, SAIL, RINL
4	Cables	Havells, Phenolex, KEI, POLYCAP, RR
5	Earthing	All the earthing must be as per standard design of the Solar Power Plant
6	Other accessories	All the accessories for erection and completion of the project must be as per norms and technical specifications of MNRE (Technical Specifications attached at Anx. F&G

3. **PERIOD OF CONTRACT:** - The work must be completed within the stipulated period of 60 days.
4. **PENALTY / DEDUCTIONS:** - (a) in case of non completion of work within the stipulated time, a penalty equaling 10% of the total cost of works shall be levid from the contractor.
(b) In case of any leftover work/unsatisfactory work in the opinion of Engineer-in-charge, the work will be got done from some other contractor at the contractor's risk and besides cost penalty will be imposed @ 10% of the leftover work cost.
5. **FORCE MAJEURE:**__Contractor shall not be liable for any delay for reasons arising out of compliance with regulations, orders or instructions of Central / State Govt., acts of the God, acts of civil and Military authorities, fires, floods, strikes, lockout, freight embargoes, war-risk, riots, civil commotion, epidemics and accidental. If the contractor wants, the reasons may be explained through request application which may be prior to delay.
6. **NEGLIGENCE:** If the contractor neglects to execute the work with due diligence and expedition or refuses to do the work, then MAMC may serve 15 days notice, in writing to the contractor to make good the failure within the stipulated time otherwise MAMC shall be at liberty to take the work wholly or partially at the risk and cost of the contractor at a reasonable price. It shall be lawful for the MAMC to retain any balance which may otherwise be due to the contractor on any account, if dues of the contract are not sufficient to cover the amount thus recoverable from the contractor and to recover the whole of the balance of the amount from the contractor by action at law or otherwise. The remedy under this clause will be in addition to and without prejudice to rights available to the MAMC under other clauses of the terms and conditions.
7. **SUBLETTING NOT ALLOWED:-** Contractor shall not sublet the contract.
8. **SECURITY DEPOSIT AND EMD:-** (a) The 10% security, all type of taxes TDS, labour cess as per Govt. rules as charged by the government from time to time and water charges 0.5% if used and 0.5% electricity charges OR as per actual meter consumption shall be covered from each running bill. However, the earnest money deposited by the contractor shall be adjusted into to the security deposited. The 10% security so deducted from the running bill OR final bill will be refunded after completion of defect free period of one year from date of completion/handing over the work subject to submission of 5% security of the total work done in shape of

Sign. with seal of Contractor

Director

Performance bank guarantee in favour of Director MAMC Agroha. However, performance bank guarantee will be refunded after completion of 5 years warranty of inverter/solar panel subject to furnishing of an affidavit/agreement. No interest will be paid on the deposited security.

9. **PERIOD OF LIABILITY:** The contractor shall give warranty for the period of 25 years from the date of successful commissioning of Solar Power Plant with respect to efficiency and production of the energy.
10. **MEASUREMENT:-** All measurement shall be in metric system. All the works completed will be measured by the representative of the Engineer-in -Charge. The contractor will submit the bill in duplicate on approved Performa to the Engineer-in -Charge.
11. **ENGAGEMENT OF ADEQUATE MANPOWER:-** The contractor shall provide skilled Manpower/ Engineer for erection testing commissioning of Solar Power Plant since he will be fully responsible for loss of life & property as per clause -17 follows further.
12. **TERMS OF PAYMENT:** Subject to any deduction which the MAMC may be authorized to make under this contract, the payment shall be made as follows "70% payment shall be made against the running bill on erection of material at site after deduction 10% security on adjustment of EMD.
13. **MODE OF PAYMENT:** The payment shall be made through account payee cheque in favour of contracting firm by the MAMC, AGROHA (Hisar). No Bank charges etc. of any kind shall be paid by MAMC.
14. **INCOME AND OTHER TAXES DEDUCTIONS:** The income tax plus surcharges and any other statutory levies required to be deducted by the MAMC will be deducted at source at the rate applicable as per Haryana Govt. Rules from time to time.
15. **SERVICE TAX:-** No service tax will be paid extra until and unless it is liable on the services provided by the contractor and specifically demanded for the same in his offer. However, non-claiming of service tax from the MAMC by the contractor cannot help the contractor in escaping from his liability to the Govt. against the taxable service. In case, the service tax is to be paid by the MAMC, the contractor will have to submit the proof of submission of service tax claimed from MAMC to the relevant authority.
16. **TAXES AND DUTIES:-** No taxes or duties will be paid extra until and unless the same has been demanded by the firm in its offer specifically. In case the same is to be paid by the MAMC, an undertaking is to be submitted by the firm in this regard stating that the taxes or duties as claimed from the MAMC have been deposited with the relevant authority.
17. **SAFETY RULES:-** Contractor shall have to comply with all the provisions of Safety rules. The contractor shall be fully and wholly responsible for any mishappening, injury, fatal / non-fatal accident sustained by him / his employees / workers at site during performance of the work under the contract and MAMC shall not entertain any claim of this account. However, if MAMC is forced to pay any compensation to any workman employed / engaged by the contractor, the amount so paid shall be recovered from the contractor from his pending dues against this contract or any other contract with the MAMC.
18. **BREACH OF CONTRACT:-** If the contractor fails to adhere to the time schedule or if his services are found to be unsatisfactory, the MAMC will be entitled at its option either:-
 - a) To recover damages as per penalty clause mentioned as above, if the said delay is not covered under the Force Majeure reasons.
 - b) To get the work done from any other agency after serving a notice of three days to the contractor at his risk and cost and without prejudice to the other provisions of the work order.

OR
 - c) To cancel the contract by giving 15 days notice & forfeit the security.
19. **CONTRACT AGREEMENT:-**The contractor shall execute a contract agreement on specific Performa on Non judicial Stamp Paper of appropriate value within 4 days of date of issue of LOI / W.O. Cost of the stamp paper will be borne by the contractor. The person who has signed the tender papers should have got authority to sign on behalf of the contractor. If it is discovered at any time that the person so signing has no authority to do so, the MAMC without prejudice to

- any other right or remedy available to it, may cancel the contract and get the work done from any other agency at risk and cost of the contractor. The contractor shall mean the contractor's legal representatives, successors and assigns.
20. **ARBITRATION:-** In all cases of disputes or disagreements between the parties arising out for the Settlement of the differences, the matter shall be finally settled by the Arbitrator appointed by the Director, MAMC, Agroha & the dispute will be dealt in accordance with provision of the Arbitration & Conciliation Act, 1996.
21. **JURISDICTION:-** All legal proceedings in connection with contract shall be subject to the Territorial jurisdiction of local court at Hisar (Haryana).
22. **ELECTRICITY / WATER:-** Electricity/ Water will be provided @0.5% cost of the tender as per Requirement of job & electricity charges will be charged as per actual energy meter consumption or 0.5% of the total work done cost.
23. **ACCOMMODATION:-** The contractor will be responsible for the accommodation of his employees / workers deployed for execution of work.
24. **TRANSPORTATION OF MATERIAL:-**
- a) The contractor shall make his own arrangement for transportation of the material from site to anywhere and vice versa.
- b.) The contractor shall make his own arrangement for removal of old as well as unused material from the site to the place as specified by the Engineer-in-Charge after completion of work.
25. **PRESERVATION & STORAGE OF MATERIAL:-**
All the material issued to the contractor by the MAMC or brought by the contractor for its bonafide use shall be stored and preserved against any loss, damage, shrinkages or deterioration in any form. Any damage / loss suffered on this account shall be considered as loss due to willful negligence on part of the contractor and shall be liable to compensate MAMC for these losses suffered at penal rates to be determined by the MAMC. The rates charged for the purpose of recovery shall be final and binding on the contractor.
26. **SUPERVISION OF WORK:-** The Engineer-in-Charge shall have the general supervision of the work. The work shall have to be started by the contractor as per the instruction of Engineer-in-Charge or his authorized representative at any time on working day, on holiday or after office hours. All the work is to be executed as per approved design and entire satisfaction of the Engineer –incharge. The decision of Engineer-incharge shall be final with regards to all matters relating to his contact.
27. **AUTHORIZED REPRESENTATIVE:-** The firm will intimate (in writing) the name of authorized Representative at site to whom necessary instructions regarding the works can be imparted and who will make correspondence regarding contract related issues. The signatures of the aforesaid authorized representative shall be got attested from First Class Magistrate or Notary Public.
28. **OWNERSHIP DEED:-** The firm will give ownership deed / partnership deed / proprietorship deed (As applicable) duly attested by Notary Public for record and reference of his office.

ANNEXURE –F

Technical Specifications:-

[Grid connected solar photo voltaic power plant (for the individuals/private user)]

COMPONENTS	DESCRIPTION
Solar Photo voltaic Modules, mono parc half cut cells	<ul style="list-style-type: none"> • The PV modules shall be of indigenous make as per DNIT Anx.E • Module shall consist of Solar Cell of minimum 3 Bus Bar technology. • Test Certificate issued by one of the IEC authorized test centers. • The total solar PV array capacity should not be less than plant capacity (kWp). • The efficiency of the PV modules should be minimum 15% and fill factor should be more than 70%. • Test Certificate issued by one of the IEC authorized test centers. • I-V curves at STC shall be provided with the module. • Modules of any type mono/poly crystalline or thin film can be used • Each PV module must use RFID tag which must contain information as per MNRE requirements
Power Conditioning Unit (PCU)/Inverter	<ul style="list-style-type: none"> • The combined wattage of all inverters should not be less than rated capacity of the power plant under STC. • Shall have Maximum Power Point Tracker (MPPT). • Shall have function to supply the power to load in combination of PV and Grid if PV supply is short than load. • PCU shall also be DG set interactive, if required. • Shall be capable of complete automatic operation including wake-up, synchronization & shutdown. • PCU/ inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder. • Shall have built-in meter and data logger (for systems of > 10 KWp capacity) to monitor plant performance through external computer shall be provided. • Shall have test certificates from the MNRE approved test centres / NABL /BIS /IEC accredited testing- calibration laboratories or by international test houses. • Protection of Enclosure: IP-20(Minimum) for indoor & IP-65(Minimum) for outdoor. • Efficiency(minimum) : ≥ 95 • PF : > 0.9
Mounting structures	<ul style="list-style-type: none"> • The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. • The support structure used in the system should be hot dip galvanized iron with minimum 80 micron thickness or made of Aluminum of adequate strength and appropriate design.

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Director

Junction Boxes	<ul style="list-style-type: none"> The Junction Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / surge arrestors, suitable Reverse Blocking Diodes.
Protections	<ul style="list-style-type: none"> The system should be provided with all necessary protections like grid islanding, Surge protection, earthing, Lightning. Each array structure of the PV yard should be grounded/ Earthed properly as per IS:3043-1987. In addition the suitable nos. of lightning arrester/masts should also be provided inside the array field. The Rooftop PV system shall be equipped with anti-islanding protection. In addition to disconnection from the grid (due to islanding protection) due to under and over voltage conditions shall also be provided. A manual disconnect pole isolation switch beside automatic disconnection to grid would have to be provided between PCU and bidirectional meter to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall have provision of locking by the utility personnel. Protection shall met the safety rules as per IE Act.
System Monitoring Parameters	<ul style="list-style-type: none"> Inverter/PCU voltage & current Mains Voltage, Current & Frequency PV Voltage, Amps & KWh System Mimic & Faults Battery voltage, Current & Temperature (in case of hybrid system)
Connecting Cables (DC & AC) and accessories	<ul style="list-style-type: none"> All cables to be supplied should be as per BIS and should have proper current carrying capacity and should not be heated. DC Cables of various sizes as per load requirement for connecting all modules /arrays to junction boxes and from junction boxes to PCU should be used. Only copper wire of appropriate size based on load requirement of reputed make shall have to be used. The size of each type of DC/AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2%.
Warranties	<ul style="list-style-type: none"> The PV Modules must be warranted for output wattage, which should not be less than 90% of rated output at the end of 10 years and 80% of rated output at the end of 25 years. The whole system shall be warranted for 5 years along with 5 years AMC.
Integration of PV power with grid	<ul style="list-style-type: none"> The output power from PCU shall be synchronized with Grid Power. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power.

<p>Metering Arrangement</p>	<ul style="list-style-type: none"> • The bidirectional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy. • An electronic meter (certified by the DISCOM) to measure the solar generation shall also be installed. • The user must take certificate from the concerned DISCOM certifying that the net metering connection has been done with all protections/security measures. • Priority needs to be given for internal consumption first and thereafter any excess power can be exported to grid.
<p>Safety Measures</p>	<ul style="list-style-type: none"> • It is the entire responsibility of the system supplier for providing all electrical safety measures in the installation(s) including connectivity with the grid and follows all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc. All work shall be carried out in accordance with the latest edition of the Indian Electricity Act and rules formed there under and as amended from time to time.
<p>Monitoring</p>	<ul style="list-style-type: none"> • For systems of capacity 10 kWp and above, web based remote monitoring which shall also be linked with HAREDA software monitoring system.

Note: If required, minimum battery bank can be installed with the system.

INTEGRATION OF PV POWER WITH GRID:

- a. In case of Power plant without battery bank (i.e. with string inverter), the existing uni-directional meter of the user shall be installed for gross metering of solar generation while a Bi-directional meter shall be installed for net-metering purpose.
- b. In case of Power plant with battery bank (i.e with PCU), one DC energy meter shall be installed separately for gross metering of solar generation while a Bi-directional meter shall be installed for net-metering purpose.
- c. CEA guideline 2013 for interconnecting solar power with Grid shall be followed.
- d. Certification of Islanding protection in the inverter/PCU from the manufacturer of the equipment shall be mandatory. This shall be arranged by the supplier from the manufacturer.
- e. Verification report/test report shall be issued by the DISCOM or their authorized agency.
- f. All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.

PRIORITY FOR POWER CONSUMPTION:

Regarding the generated power consumption, in case of string inverter, priority need to given for internal consumption first and thereafter any excess power can be exported to grid. In case of hybrid system the PCU shall have the function of combining the power from SPV and Grid (in case load is greater than PV power available), first priority shall be from Solar, second from grid and third from battery bank or priority shall be adjusted on the user choice.

CODES AND STANDARDS

The quality of equipment supplied shall be controlled to meet the guidelines for engineering design included in the standards and codes listed in the relevant ISI and other standards, such as:

- a. IEEE 928 Recommended Criteria for Terrestrial PV Power Systems.
- b. IEEE 929 Recommended Practice for Utility Interface of Residential and Intermediate PV Systems.
- c. IEEE 519 Guide for Harmonic Control and Reactive Compensation of Static Power Controllers.
- d. National Electrical NEPA 70-(USA) or equivalent national standard.
- e. National Electrical Safety Code ANSI C2- (USA) or equivalent national standard.
- f. JRC Specification 503 (Version 2.2 March 1991) or JPL Block V standard for PV modules.
- g. The inverter manufacturer should attach efficiency certificate from Independent Third party Testing laboratory i.e. IEC, TUV, SNL/ERTL & STQC. PCU should confirm to IEC 61683 for efficiency measurements and IEC 60068 2 for environmental testing. MPPT unit should confirm to design qualification IEC 62093.
- h. IEC 62116 for Anti Islanding
- i. IEC 62109-1, IEC 62109-2 for safety
- j. IEC 61727 For Utility Interface.

Annexure-G

LIST OF APPROVED MANUFACTURERS FOR DIFFERENT MATERIALS TO BE USED IN THIS PROJECT FOR ELECTRICAL WORKS

Details of Materials	Manufacturers Name
M.S. Conduits and Accessories	BEC/NIC/STEEL CRAFT (ISI), Jindal or equivalent ISI Mark
P.V.C. conduits and Accessories	Ravindra, Finolex, Polycup
Electrical Accessories, Batten Holder, Pendent Holder, Ceiling Rose, Bell Pus Switches and Sockets etc. (ISI Marked)	HAVELLS, ANCHOR,SSK/Schneider
Bakelite Sheet	Hylam / Formica / Sunlam (ISI Marked)
Call Bell & Buzzer	Havells/Anchor / SSK / Schneider
PVC Wires (Copper Conductor)	Finolex / Havells / Plaza / RR
P.V.C. Underground Cables with Aluminium / copper conductor	Havells / Plaza /KEI / Universal/
H.T. (XLPE Cable with Aluminium Conductor)	ISI marked / Havells / KEI / Universal
L.T. (XLPE Cable with Aluminium Conductor) (I.S.I. Marked)	Havells/KEI / Universal / RR
P.V.C. Pipe (6 Kg. pressure) (ISI Marked)	AKG / Finolex / RAVINDRA
G.I. Pipe and M.S. Pipe (Medium) (ISI Marked)	Tata / Jindal / Parkash / Ravindra
IC Switches CAT-A	Havells/L&T / INDO ASIAN / Siemens
CAT-B (ISI Marked)	Standard / Havells/L&T/ INDO ASSIAN/SIEMENS
CAT-C (Conforming to IS)	HAVELLS/L&T/INDO ASSIAN/SIEMENS
MCB (ISI Marked)	INDO ASIAN / Siemens / Havells /L&T
Enclosures (Standard Size only)	Makes as per MCB ^{'s}
ELBC ^{'s} (ISI Marked)	INDO ASIAN / Siemens / Havells /L&T
MCCB ^{'s}	INDO ASIAN / Siemens / Havells /L&T
Telephone Wires	Delton / Finolex/RR
Cable Lugs	Dowells / ACTION /crimping type
Coaxial Cable	Delton / Dauphin/ FINOLEX
Telephone Tag Block	Krone
Energy Meter	SECURE, L&T, GENUISE
Terminal Blocks	Elmex
Indicating Lamps	L&T/HAVELLS
Cable Glands	Chromium plated Brass heavy duty glands, weatherproof with rubber washers and gaskets of Comet make

In the absence of above – mentioned makes, the Society will be empowered to suggest & approve another make of equivalent quality which is as available in the market.

Sign. with seal of Contractor

Director