ITI LIMITED
(A Government of India Undertaking)

NOTICE INVITING TENDER FOR

SURVEY, DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF

1200 KWp GRID CONNECTED SOLAR PV POWER PLANT

UNDER ROOFTOP/GROUND MOUNTED NET-METERING POLICY

WITH 05 YEARS OF COMPREHENSIVE

OPERATION & MAINTENANCE CONTRACT

AT

ITI LIMITED, PALAKKAD PLANT,

KANJIKODE WEST (P.O.), PALAKKAD, 678623, KERALA

(Tender Enquiry No.: EE/PE/420/21/03-01R)

DGM (CENTRAL SERVICES)
ITI LIMITED, PALAKKAD PLANT,
KANJIKODE WEST (P.O.),
PALAKKAD,
KERALA 678623
Phone: 0491 2566070
Mobile No:+91-944686355
Email: plant_pkd@itiltd.co.in
Website: http://www.itiltd.in

ITI LIMITED
(A Government of India Undertaking)

NOTICE INVITING TENDER NO: **EE/PE/420/21/03-01R Date: 09.04.2021**

This is a Notice Inviting Tender (NIT) for—Survey, Design, Supply, Installation, Testing and Commissioning of 1200 KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05 Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623 as per description and terms& conditions specified hereinafter:

Item Description:

Sl. No.	Description of Work
01	Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05 Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623

Tendering Procedure:

Bid shall be submitted off-line. Tender documents can be downloaded from our website www.itiltd.co.in or CPPP site www.eprocure.gov.in. Any changes modification in the tender enquiry will be intimated through above websites only. Bidders are therefore, requested to visit our website regularly to keep themselves updated.

Price Bid:- Price Bid format given with tender shall be submitted after filling all relevant information like basic prices, taxes & duties. The Price bid should be strictly as per the format available with the tender, failing which the offer is liable for rejection (leaving blank or changing format of price sheet will not be accepted).

The bid shall comprise of technical bid and commercial Bid. The detailed scope of work, terms and conditions, etc. are available with the Bid documents.

The bids must also be accompanied with Tender Document Fee of Rs.5000.00 (Rupees Five Thousand Only) in the form of Crossed Demand Draft and Earnest Money of Rs. 5,00,000.00 (Rupees Five Lakhs Only) in the form of Crossed Demand Draft/Bank Guarantee in favor of "ITI Ltd, Payable at Palakkad. The Bank Guarantee should be issued by any scheduled Bank and valid for 180 days. Tender document Fee and EMD Money should be submitted along with Technical Bid.

SINCE, THIS IS A WORKS CONTRACT, BENEFITS TO MSEs UNDER PUBLIC PROCUREMENT POLICY SHALL NOT BE APPLICABLE.

The details for Bid are as follows.

Sl. No.	Description	Schedule
1	Tender Publishing Date	09.04.2021
2	Site Visit	09.04.2021 to 26.04.2021
3	Last date of seeking Clarification by the bidder	19.04.2021
4	Publication of corrigendum, if any	21.04.2021
5	Last date for submission of Bid	30.04.2021(14:00 Hrs)
6	Tender Document Fee	Rs 5,000/- in the form of Cross Demand Draft in favor of ITI Limited Payable at **Palakkad**.
7	Ernest Money Deposit	Rs 5,00,000/- in the form of DD/BG in favor of ITI Limited payable at **Palakkad.**
8	Opening of Technical Bid	30.04.2021(14:30 Hrs)
9	Opening of Financial Bid	To be informed later to successful bidders in the technical bid
10	Address for Submission of Hard Copy of Bid	ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623

ITI Ltd reserves the right to reject the whole or part of any or all bids received, without assigning any reason**.**

DGM (CENTRAL SERVICES)

ITI Limited

Process Compliance Form

(To be printed on the tenderer's letter head and shall be signed, stamped before submission).

To

DGM (CENTRAL SERVICES)
ITI Limited, PALAKKAD PLANT,
KANJIKODE WEST (P.O.),
PALAKKAD, KERALA- 678623

Sub:-Acceptance to the Process related Terms and Conditions for the Tendering.

Dear Sir,

This has reference to the Terms & Conditions for Tendering mentioned in the Tender No.:-
……

We hereby confirm the following: -

1) The under signed is authorized representative of the company.
2) We have carefully gone through the NIT, Tender Documents and the Rules governing the tendering as well as this document.
3) We will honor the Bid submitted by us during the tendering.
4) We undertake that if any mistake occurs while submitting the bid from our side, we will honor the same.
5) We are aware that if ITI has to carryout tender again due to our mistake, ITI has the right to disqualify us for this tender.
6) We confirm that ITI shall not be liable & responsible in any manner whatsoever for my/our failure to submit the offer in time due to Postal /Courier delay or reason whatsoever.

With regards

Signature with company Name & Seal:
Designation:
E-mail Id:

Table of Contents

SECTION-I

BID INVITATION

1. BRIEF DESCRIPTION OF THE BIDDING PROCESS:

The DGM(CENTRAL SERVICES) on behalf of ITI Limited, Palakkad invites eligible bidder to submit a bid in accordance with the provisions of this Tender Document for ***"****Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under* ROOFTOP/GROUND MOUNTED *Net-Metering Policy with 05 Years of Comprehensive Operation & Maintenance Contract at ITI LIMITED, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA-678623"* As per description and terms & conditions specified herein after:

Item Description

Sl. No.	Description
01	*Survey, Design, Supply, Installation, Testing and Commissioning of 1200 KWp Solar PV under Grid Connected* ROOFTOP/GROUND MOUNTED *Net-Metering Policy with 05 Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA-678623*

Tendering Procedure: Bid shall be submitted off-line. Tender documents can be downloaded from our website: www.itiltd.co.in or website of CPPP www.eprocure.gov.in. Any changes/modification in the tender enquiry will be intimated through above websites only. Bidders are therefore, requested to visit our web site regularly to keep themselves updated.

Price Bid: Price Bid format given with tender shall be submitted after filling all relevant information like basic prices, taxes &duties. The Price bid should be strictly as per the format available with the tender failing which the offer is liable for rejection (leaving blank or changing format of price sheet will not be accepted).

The bid shall comprise of Technical Bid and Commercial Bid. The detailed scope of work, terms and conditions, etc. are available with the Bid documents.

The technical bids must also be accompanied with Tender Document Fee of Rs.5,000.00 (Rupees Five Thousand Only) in the form of crossed Demand Draft and Earnest Money of Rs.5,00,000.00 (Rupees Five Lakh Only) in the form of crossed Demand Draft/FDR/Bank Guarantee in favor of ITI Limited, payable at Palakkad. The Bank Guarantee should be issued by any scheduled Bank and valid for 180 days. **SINCE, THIS IS A WORKS CONTRACT, BENEFITS TO MSEs UNDER PUBLIC PROCUREMENT POLICY SHALL NOT BE APPLICABLE.**

2. BIDDING INFORMATION

Sl. No.	Description	Schedule
1	Tender Publishing Date	09.04.2021
2	Site Visit	09.04.2021 to 26.04.2021
3	Last date of seeking Clarification by the bidder	19.04.2021
4	Publication of corrigendum, if any	21.04.2021
5	Last date for submission of Bid	30.04.2021(14:00 Hrs)
6	Tender Document Fee	Rs 5,000/- in the form of Cross Demand Draft in favor of ITI Limited Payable at **Palakkad**.
7	Ernest Money Deposit	Rs 5,00,000/- in the form of DD/BG in favor of ITI Limited payable at **Palakkad.**
8	Opening of Technical Bid	30.04.2021(14:30 Hrs)
9	Opening of Financial Bid	To be informed later to successful bidders in the technical bid
10	Address for Submission of Hard Copy of Bid	ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623

DGM (CENTRAL SERVICES)

SECTION-II

INFORMATION AND INSTRUCTION TO BIDDER

1. ELIGIBILITY CRITERIA

A. TECHNICAL ELIGIBILITY CONDITIONS:

Bidder must fulfill following criteria:-

1. The Bidder should be a Company/Firm/Corporation, incorporated in India under the Companies Act, 1956 or 2013 and having experience in installation and commissioning of Solar Power Plants.

   Or

   A Limited Liability Partnership Firm (LLP) registered under section 12 of Limited Liability Partnership Act, 2008 and having experience in Installation &Commissioning of Solar Power Plants.

2. The bidder should have experience of having successfully completed solar pv power plants during last 3 years ending last day of Dec 2020 with Govt./Quasi Govt./PSUs/Reputed Private Firms should be either of the following:

   1. Three works, each with capacity not less than the 40% of tendered capacity **or**
   2. Two works, each with capacity not less than the 50% of tendered capacity **or**
   3. Single work with capacity not less than the 80% of tendered capacity.

Note: CA certificate along with details as mentioned at Appendix-IV is required.

Copy of **Completion/Execution/Performance certificate** issued by **end user** shall clearly mention the reference of relevant work order, full address of client & details of officer issuing such certificate, actual value of executed work, actual date of completion, confirmation of successful execution of job etc.

3. Company should have class-A electrical license issued by any state government or central government.

B. FINANCIAL ELIGIBILITY CONDITIONS:

1. Bidder shall have positive Net-worth in any one year in last three financial years.
2. Firm should have a minimum annual average turnover of Rs.500Lakhs (Rupees Five hundred Lakhs) in last three financial years.

In support of the claim of meeting the financial criterion, the bidder must furnish:

a) Details of Financial Capability of Bidder in prescribed Format duly signed and stamped by a Chartered Accountant.

b) Copy of Audited Annual Financial Statements (including Balance Sheet, Profit & Loss Account, Auditor Reports, etc.) shall be submitted in bid shall be duly signed and stamped by a Chartered Accountant.

Bidder should submit following documents along with Technical bid-

1. Company Incorporation Certificate/Company Registration Certificate.
2. Copy of GST Registration No. & PAN no.
3. Tender Fee & EMD
4. Balance sheet for last three years.
5. Turnover Certificate duly certified by practicing CA.
6. Last Three years Income Tax Return.
7. Experience Qualification as per tender eligibility conditions. Copy of relevant **Work Order/ Contract/Service Order/Performance Certificate**, clearly mentioning Nature of Work/Service, Various Components/Items, Scope of Work, Period, Value, etc.
8. Any other relevant documents

C. OTHER CONDITIONS:

1. **Responsibility for executing Contract**: The contractor is to be entirely responsible for the execution of the contract in all respects in accordance with the terms and conditions as specified in the acceptance of tender.
2. The contractor shall not sublet transfer or assign the contract to any part thereof without the written permission of DGM(CENTRAL SERVICES), ITI Ltd, Palakkad Plant, Palakkad. In the event of the contract or contravening this condition, DGM(CENTRAL SERVICES), ITI Ltd, Palakkad Plant reserves the right to cancel the contract and place the contract elsewhere. Any loss or damage arising out of this situation has to be borne by the contractor and ITI shall not be responsible for it.
3. **Document**: The bidder should have a valid **PAN/TAN/GST No & other statutory document** as applicable and produce attested copies of such certificates along with the tender papers in Technical Bid, failing which the tender is liable to be rejected. Check list to be attached.

D. PRICES:

a. Prices are to be quoted **in Indian Rupees, FOR ITI Ltd, Palakkad**.
b. Prices quoted in the Price/Financial Bid must be meaningful and measurable in the context.
c. Price must be quoted in original sheet of BOQ failing which the same is liable to be rejected.
d. Offer shall be valid for minimum120 days from the date of bid opening.

A. RELAXATION OF PRIOR TURNOVER AND PRIOR EXPERIENCE FOR START UPS (AS DEFINED IN GAZETTE NOTIFICATION NO.D.L-33004/99 DATED 18.02.2016 AND 23.05.2017 OF MINISTRY OF COMMERCE AND INDUSTRY), AS AMENDED TIME TO TIME*. Relaxation of prior **experience and turnover** for start-ups is **applicable** to this tender.

For availing the relaxation, bidder is required to submit requisite certificate towards Start-up enterprise registration issued by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and the certificate should be certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's Company/firm) and notary public with legible stamp.

The relaxation of prior experience and prior turnover to Startups is to be given to the specific goods/job domains wherein they are registered for.

Since certificate of DPIIT towards recognition do not specify the goods/job domain, startups are required to submit the documents for the same including the application submitted to DPIIT.

The certificate shall only be valid for the entity:

(i) Up to ten years from the date of its incorporation/ registration AND

(ii) If its turnover for any financial years since incorporation/registration has not exceeded Rs.100 Crores.

Further, above document should be certified by the **Chartered Accountant** (not being an employee or a Director or not having any interest in the bidder's company/firm) and **Notary Public** with legible stamp.

In case of startup where the Financial statement of Startup(s) is not available and **Net Worth** could not be established with other documents like Memorandum of Association, etc., the certificate issued by Chartered Accountant/ Certified Public Accountant (CPA) may be considered.

"Those bidder from a country which shares a land boundary with India. If yes, whether the bidder is registered with the "competent authority".

Definition of country which shares a land boundary with India and Competent authority would be in accordance with Office Memorandum number F.No. 6/18/2019-PPD dated 23rd July 2020 issued by Ministry of Finance, Department of Expenditure, Public Procurement division, Government of India".

2. SCOPE OF WORK

Tentative BOQ (for tender purpose) for the work *Survey, Design, Supply, Installation, Testing and Commissioning of 1200 KWp Solar PV Power Plant under Grid Connected* ROOFTOP/GROUND MOUNTED *Net-Metering Policy with 05 Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA-678623.*

S.N	Item Description	Qty.	Supply	E&C	O&M	Remark
1	Solar PV module of capacity not less than 325Wp as per technical specifications	For 1200KW	By ITI	Bidder	Bidder	ITI will supply 325W Polycrystalline Solar Module. Bidder has to design the project accordingly. Bidder to specify the quantity of solar modules.
2	High grade MS with Zinc Coating/Pre GI structures (as per Site requirement) of required sizes and shapes for fixing Solar panels and other	For 1200KW	Bidder	Bidder	Bidder	Final design shall be Submitted by successful bidder after placement of LoA.
3	String Inverter, as per Technical Specifications.	For 1200KW	Bidder	Bidder	Bidder	**Make: Delta/Schneider/SMA/ABB**
4	Transformer 11KV or 66KV or both, oil Cooled, as per standard Technical specifications suitable for SPV power plant	For 1200KW	Bidder	Bidder	Bidder	**Make: GE/CG/Equivalent make**
5	11KV Panel with VCB, Meter, protection devices. Or 66KV out door switch yard with SF6 CB, CT, PT, LA, Isolator with Earth Switch, protective devices, Control Panel, etc. as required. Or Both the above as per the prevailing electrical standard and technical specifications to meet the DISCOM standard for grid connectivity.	As per design and site Requirement.	Bidder	Bidder	Bidder	**Make:** **VCB: Schneider/CG/Equivalent** **SF6 CB:** **Schneider/CG/Equivalent** **All other items :** **Reputed Make**
6	Supply, installation of 11KV busbar for interconnecting new 11KV with existing 11KV panel if required.	As per design and site Requirement.	Bidder	Bidder	Bidder	
7	Supply, Laying, Termination of XLPE 11KV cable. And Supply, installation of all materials such as cable, Guard wire, etc. required for the outdoor 66KV Transformer and switch yard as per prevailing electricity rule and Electrical Inspectorate, Kerala standard	As per design and site Requirement.	Bidder	Bidder	Bidder	Reputed Make
8	LT Panel(s) of suitable rating	For 1200KW	Bidder	Bidder	Bidder	**Reputed Make**
9	Remote Monitoring Equipment (SCADA) Communication Equipment, Desk top with 32" LED Screen, Wi-Fi equipment	One Set	Bidder	Bidder	Bidder	**Compatible with Inverter/PCU and with RS485/Wi-Fi/Mod bus/LAN Communication Interface**

10	Supply of DC. cables 6Sq.mm/10Sq.mm, Single Core	As per design and site Requirement.	Bidder	Bidder	Bidder	Size of the cable to be Decided based on voltage drop. **Make: Polycab/KEI/Havells**
11	Laying, termination of (Overhead/surface/Underground), testing and commissioning of copper conductor, XLPE insulated armored cables (as per IS spec and specifications) of various sizes required to complete the work.	As per design and site Requirement.	Bidder	Bidder	Bidder	
12	Supply of LV, Aluminium armored AC Cables with size of 3.5Cx120 sq. mm minimum	As per design and site Requirement.	Bidder	Bidder	Bidder	**Make:** National/PolyCab/KEI/ Havells
13	Laying (Overhead/surface), Termination, testing and commissioning of 1.1KV XLPE insulated, GS wire	As per site Requirement and design For site	Bidder	Bidder	Bidder	
14	Supply, Installation of AC DB / DC DB/Junction Box/Array Junction Box and associate Accessories	As per site Requirement and design for site	Bidder	Bidder	Bidder	**Reputed Make**
15	Earthing & LA (ECE Type)- Supply, Erection, Testing and Commissioning of all earthing equipments and LA(ECE Type) as per relevant IS standard and applicable IE rules to complete the work.	As per design and site Requirement.	Bidder	Bidder	Bidder	Calculation, Design & Drawing to be submitted for approval
16	Safety Equipment- Supply and fixing of CO2 based firefighting equipments of reputed make, ISI marked as per the actual site requirement.	As per design and site Requirement.	Bidder	Bidder	Bidder	
17	**Civil Works-** All the Associated Civil works complete in all respects, required to complete the work such as Mechanical structure foundation and cable trench work etc. will be in the scope of bidder.	As per design and site Requirement.	Bidder	Bidder	Bidder	

18	**Metering System-** The Bidirectional electronic energy meter (0.2S Class/as per prevailing KSEB standard for Grid connectivity) for measuring Export– Import energy meter conforming to relevant IS/IEC standard and as per regulation of respective states for 11KV /66KV outgoing feeder suitable for inter facing with GPS time synchronization equipment.	As per design and site Requirement.	Bidder	Bidder	Bidder	Specification shall be as Per respective KSRCDISCOM guideline **Make:HPL/Secure/L&T**
19	Solar Energy Meters as per requirement of connection points as per guidelines of MNRE/DISCOM/SEB	As per design And site Requirement.	Bidder	Bidder	Bidder	Specification Shall be as per KSRC DISCOM guideline **Make: HPL/Secure/L&T**
20	Suitable equipment for DG Synchronization	As per design and site Requirement.	Bidder	Bidder	Bidder	
21	Toolkit for Installation-commissioning	As per design and site Requirement.	Bidder	Bidder	Bidder	
22	**Misc. Supply/works:** Any other supply/work essential to Complete the project work.	As per design and site Requirement.	Bidder	Bidder	Bidder	

Note: The SPV Modules for 1200 kWp Solar Power Plant will be supplied by tenderee at site.

The above BOQ is only for guidance purpose so that bidder gets an overview of the work to be executed.

It is mandatory for bidders to use the make given of the components as stated in the BOQ while designing of the project. Bidders are requested to visit site before quoting the tender. **The onus for carrying out site visit and understanding the site conditions and requirements solely rests with the bidder and the tenderee at no point will be responsible for the risks and costs to the bidder in executing the work due to his lack of knowledge or awareness of the site conditions and requirements/scope of the tender.**

Detailed BOQ covering preferred make, complete in all respects needs to be submitted by the bidder after the award of work to him and after the approval of detailed drawings of the project from ITI.

A. The system shall consist of (but not limited to) following equipment:

(a) Remote Monitoring System with associate hardware
(b) Module Mounting Structures (MMS)as per suitability of site
(c) Cables and hardware
(d) LT Panel or conventional switchyard
(e) Transformers of suitable capacity
(f) 11KV VCB panel with meters and associated accessories
(g) Metering cubicle with ABT energy meters (main and check meters) at11kV or 66KV switch yard in the PV plant
(h) AC Distribution boxes and DC distribution boxes
(i) Earthing kits& Earth mat
(j) Lightning arrestors in solar array
(k) Tool Kits for maintenance along with personal protective equipment
(l) Weather monitoring equipment (for measuring Solar Radiation, Temperature, etc.)

(m) Mandatory spares
(n) Illumination system for the plant including control room & switchyard
(o) Consumable for Modules washing and other items during O&M.
(p) Outdoor switch yard with 66KV Transformer, 66KV CB, 50/1A CT, 66KV/√3/110V/√3 PT, Isolator with Earth Switch and suitable cable and guard wire, structure, etc.

B. Grid interfacing, including all equipment required for the same such as isolators, lightning arrestor, panels, protection equipment, cables, conductors, earthing and SPV Panel yard, etc. as per statutory requirements and comply to CERC Grid code and State Electricity Board.

C. Scope of Work of Contractor: - The scope of work of the contractor is to survey, design, supply the material as per BoQ and any other item to complete Installation-Commissioning and 5 years O&M of SPV Power Plants. It includes:-

- Safe Storage, Safety and security of the Materials at Site.
- Design, Supply of MS Structures suitable for installation of 1200 KWp Grid Connected Solar Power Plant. The contractor shall make the installation shadow free.
- The Mechanical Structures be capable of withstanding a wind load of 150km per hour after erection and installation (or as per local area need).The certificate is required by chartered engineer in this regard.
- Preparation of drawing of Electrical scheme and get it approved from Electrical Inspectorate.
- Supply of material as per detailed BoQ but not limited to it.
- Material required such as cables glands, tags, cable trays, GI/Copper Strip for earthing material & item mention in above list, etc. to complete the job.
- Installation & commissioning of Module Mounting Structures, SPV Modules, String Inverter, Energy meters, Accessories, etc.
- Installation & commissioning of Transformer, 11KV VCB panel and associated protection and metering Accessories, etc.
- Installation of earthing material and lightning system, testing and commissioning of complete earthing and lightning system as per specification requirement.
- Laying, Termination, Glanding, Ferruling of all interconnecting cables among sub-array, String Inverter, Conduits, Cable Trays and load panel, etc.
- Wiring of complete solar system as per requirement.
- Testing of DC/AC wiring as per requirement.
- Any other work, tools & tackles required for completion of the project shall be arranged by the contractor.
- Meter cubical, testing, CT testing in DISCOM Lab and liasioning with DISCOM is in the scope of contractor.
- Preparing as built drawing and submit and arranging inspection from Electrical Inspectorate and getting sanction order.

- All necessary items/manpower/arrangements required for Proper and Safe Installation & Commissioning of Power Plant will be arranged by the contractor. Any material other than mentioned in Scope of work which is required for I&C of Power Plants is in scope of the contractor.

ITI shall handover the Solar Module (ITI scope) at Site.

- Contractor shall take all necessary steps, follow up & liasioning towards the Net Metering arrangements.
- **Contractor will take necessary statutory approvals/clearances from all concerned departments/Inspectorate etc. for installation &commissioning of Power Plant, at his own cost.**
- Contractor shall rearrange the existing AC wiring, if required.
- All arrangements for their deployed workman/manpower at site will be taken care by the contractor itself.
- Contractor shall give declaration that site has been visited and all information towards timely completion of project has been collected and taken care before quoting for the above enquiry.
- Prices quoted must be firm and fixed. No price variation/escalation shall be allowed.
- Contractor shall arrange all the manpower and material required for inter-connection of the SPV Power Plant to the load.
- After successful installation–commissioning of the Power Plant Contractor shall get a certificate of installation, commissioning and satisfactory operation from beneficiary as per requirement of work order.
- After installation–commissioning of the Power Plant Contractor shall arrange the inspection of Power Plant from ITI as per work order requirement and expenses, if any, shall be borne by contractor.
- Contractor shall install and commission the Power Plant in the stipulated time.
- Contractor will submit weekly Project Execution Plan (PEP) along with offer. In which contractor gives the details that how will project accomplished. Contractor shall also submit the PERTCPM for project scheduling & Management.
- The contractor shall maintain the system for a period of 5 years from the date of completion of I&C Work mentioned in Completion Certificate.
- Contractor shall maintain the MS/Pre GI Structures without any rusting for the period of 5years.
- Site clearance and removal of trees for ground based solar power plant will be in the scope of contactor.
- All the approval from the statutory authority from the concerned department for above work will be in the scope of contractor.

- Water supply if required will be provided by ITI-Palakkad at one point and further network of water supply will be in the scope of contractor.
- Electric supply if required will be provided by ITI-Palakkad at one point and network of electric supply will be in the scope of contractor.
- Material handling will be in the scope of contractor.

D. The following works will be carried out by the contractor at site:-

i. Civil work for module mounting structures of SPV module

a) Contractor shall prepare foundations (as per final design in accordance with site requirement) for installation of Modules Mounting Structures complete with plaster and White Wash color as per requirement. Any other civil work required for installation-commissioning of the Power Plant shall be carried out by contractor as per work order requirement and to the ITI satisfaction.

b) Preparation of cement, concrete (mixing as per final design) & mortar foundation in the designed ratio for all MS Mounting Structures as per layout/drawing enclosed.

A. **Size of Foundation**:-
B. **Nos. of GI bolts used in each Foundation**: -
C. **Nos. of Foundation**:-

c) Contractor shall supply and fix the reinforced Iron Rod (suitable size as per site requirement) for strengthening of Civil foundation.

d) Contractor shall fix the Module Mounting Structures of suitable height as per actual site requirement.

e) Contractor shall provide necessary permanent ladders, etc. wherever required to carry out the maintenance of SPV modules arranged on roof top.

ii. Fixing & Installation of solar system equipments

a) Fixing of Module Mounting Structure &Accessories
b) Fixing of SPV module
c) String Inverter with data logger
d) Installation of Export-Import & Solar Meter
e) Earthing and Lightning Arrestor (ECE Type)
f) All the cables (AC and DC both)
g) Wiring of complete SPV Power Plant &testing, commissioning of the same
h) Danger/Caution Sign board

Note: -*Defect liability period is 5years from date of commissioning and handing over the Power plant(s) to beneficiary.*

iii. Installation of Earthing material and Lightning system, testing and commissioning

a) Earthing including earthing pits, earth electrodes, earthing strips, grounding conductor of various sizes, Cu. strip for flange jumper and Cu. earth plates, etc. as per specification/standard drawing.

b) Lightning surge protection must be provided for the SPV array and other solar system components.

c) GI pipes, GI Cable-trays and accessories, cable markers, identifier tags, GI saddles and all other associatedaccessories as required for cable laying.

d) FLP type double-compression nickel-plated brass cable glands, tinned-copper lugs, clamping material, etc. for cable termination.

Fabrication and supply of MS frames, supports, canopies and brackets for miscellaneous electrical equipments, including welding, supply of bolts, nuts, etc. for mounting and other necessary supplies, all inclusive of painting, etc. as required.

iv. STANDARDS:

The work shall be carried out in the best workman like manner in conformity with this specification, the relevant specifications/codes of practice of Indian Standard Institution, approved drawings and instructions of the Engineer-in-Charge or his authorized representative issued from time to time. In case of any conflict between the standards, the instructions of Engineer-in-Charge of ITI shall be binding.

v. EARTHING NETWORK:

The earthing installation shall be done in accordance with the earthing drawings, specifications and the standard drawings. The entire earthing system shall fully comply with the Indian Electricity Act and Rules framed there under

vi. TESTING:

Earthing systems/connections shall be tested as follows:

a) Resistance of individual electrodes shall be measured by EARTH RESISTANCE TESTER after disconnecting it from the grid.

b) Earthing resistance of the grid shall be measured after connecting all the electrodes to the grid. The resistance between any point on the metallic earth grid and the general mass of earth shall notexceed1 ohm.

c) The resistance to earth shall be measured at the following:

- At each electrical system earth or system neutral earth.

- At each earth provided for structure lightning protections.
- At one point on each earthing system used to earth electrical equipment enclosure.
- At one point on each earthing system used to earth wiring system enclosures such as metal conduits and cable sheaths or armor.

vii. LIGHTNING PROTECTION:

Lightning protection system (ECE Type) shall generally comprise lightning finials (air terminals), roof conductors, down conductors, test links, and earth electrodes. The number, types, materials and sizes shall be in accordance with the prevailing stand and approved drawings.

viii. MISCELLANEOUS MATERIALS SPECIFICATIONS:

a) **Connectors & Termination**: Cable terminations shall be made with tinned copper crimped type solder less lugs of reputed make for all aluminum conductors and stud type terminals.

b) **Cable Identification**: Cable tags shall be of 2mm thick, 20mm wide aluminum strap of suitable length to contain cable number, equipment no., etc.

c) **Ferrules**: Ferrules shall be of approved type size to suit core size mentioned and shall be employed to design at the various cores of control cable by the terminal numbers to which the cores are connected for casein identification and maintenance.

d) **Cable Glands**: Cable glands to be supplied shall be nickel-plated Brass double compression type of reputed make.

e) **Cable Trays**: This shall be either prefabricated hot dip galvanized sheet steel tray of suitable Size.

f) **Cable Laying**: All cable routes shall be carefully measured and cables cut to the required lengths, leaving sufficient lengths for the final connection of the cable to the terminal of the equipment. The various cable lengths cut from the cable reels shall be carefully selected to prevent undue wastage of cables.

ix. OMPLETION PERIOD

Installation and commissioning of the SPV system should commence immediately after release of work order and Installation & commissioning should be completed within **8 Months** from the date of work order & may be extended depending upon the field situation with prior written permission from ITI.

General terms: Contractor shall follow all the provisions as per labour law (including piece rate and petty contractors) shall comply fully with all laws and statutory regulations pertaining to engagement, payment and upkeep of labour in India.

x. **Drawings & Certifications:**

Following drawings shall be submitted by contractor after placement of LOA/work order.

a) General Arrangement of System (GAD)
b) Part drawing of structures
c) Complete Electric drawing of system (detailed SLD)
d) Schematic drawing of the Solar PV power plant
e) Weight analysis of system
f) Civil foundation drawings
g) Wind Speed withstand capacity certificate duly certified by chartered engineer
h) STAD Report duly certified by chartered engineer

3. STANDARDS / CERTIFICATES

A. The goods supplied and works executed under this contract shall confirm to the standards mentioned in the technical specification and where no applicable standard is mentioned, the latest version of Indian Standard Institution or Bureau of Indian Specification shall be applicable.

B. The Bidder shall submit all the valid test certificates and reports of the system components following the latest MNRE Guidelines and the same components shall be supplied for which the test reports/certificates are submitted.

C. MINIMUM GUARNTEED GENERATION

The bidder shall furnish the guaranteed minimum energy generation from Survey, Design, Supply, Installation, Testing and Commissioning of 1200 KW Grid Connected Solar PV Power Plant under Rooftop/Ground Mounted Net- Metering with 05Years of Comprehensive Operation & Maintenance Contract. The minimum yearly guaranteed generation for Solar PV System must be equal to 4.0 units x 300 days x 1200 kW = 1440000 units/year.

If system produces units below guaranteed generation as mentioned above, then a *penalty of Rs.6/- per unit will be levied for every reduction from the guaranteed number of units. Hence, bidder has to quote accordingly.*

4. INSTRUCTIONS

A. Bidder shall upload Information, Experience Certificates, Test Reports and other such relevant document's specified in the list of other important documents

B. S**ite visit is mandatory.** The bidder shall visit the site & carry out the survey to assess all required site data for submitting the tender and obtain a certificate from the tenderee for having conducted the site visit as is in **Appendix-V**. **The tender submitted without site visit report will be rejected out rightly.**

C. The technical proposals conforming to eligibility criteria and found satisfactory will be taken up for detailed technical evaluation. A technical evaluation committee shall evaluate the bids submitted by bidders for detailed scrutiny. During evaluation of the technical bids, ITI Ltd may at its discretion ask the bidders for clarification of their bid.

D. In case bidder does not fulfill the technical bid the financial bid shall not be opened & he shall be disqualified from further bidding process.

E. Price Proposals of bidders qualifying above conditions shall be subsequently opened. The time and date of the opening of the Price bid shall be intimated to the qualified bidders by email.

F. All Technically Qualified bidders shall be informed about the date of opening of price bid and to attend the price bid opening.

G. Bids submitted without EMD &Tender Fees will be rejected. Bidder would need to submit the required documents through Postal/Courier.

H. The Bidder shall submit valid copies of-

1. GST registration certificate
2. PAN and Service Tax Registration Certificate issued by appropriate authority.
3. Income Tax Returns of previous three assessment years.
4. ITI reserves the right to reject or accept any overall tenders without assigning any reasons thereof.
5. The work order is not transferable. Subletting is not allowed.

5. COST OF BIDDING

The bidder shall bear all costs associated with the preparation and submission of bid and ITI will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

6.LANGUAGE OF BID

All documents, drawings, instructions, design data, calculations, operation, maintenance and safety manuals, reports, labels and any other data shall be in English Language. The contract agreement and all correspondence between the ITI and the bidder shall be in English language. Supporting documents and printed literature furnished by the bidder if provided in another language it shall be accompanied by an accurate translation of the relevant passages in the English language duly authenticated and certified by the bidder. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Application, the English language translation shall prevail

7. DOCUMENTS COMPRISING THE BID

Bids shall be submitted along with original documents duly signed and stamped on all pages by the authorized signatory at below mentioned address–

ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA -678623

Bid received after the due date of submission of bid will not be entertained. Bidder shall submit the bid in two parts viz. Technical and Financial bids. Technical Bid and Financial Bid shall be submitted in separate sealed covers super scribing with Tender Reference number and due date.

Part-I - Technical Bid:

The cover super scribed with ″Technical Bid″ should comprise of relevant certificates to fulfill the eligibility criteria prescribed in the tender document along with following documeńts/information.

- Bídder's Information Sheet as per Appendix-I(A)
- Aṅnual Turnover as per Appendix-I(B)
- Sélf-Certification of No Barr/non-failure/blacklisted as per Appendix-VII.
- Inśtallation and Performance Credentials
- Experience for installation and commissioning of SPV power plants as per Appendix-IV.
- Product technical specifications
- Standards maintained for various components to be used in the project.
- Safety consideration for system protection
- Warranty certification of equipments/components
- Certification of authorization for submitting the bid
- Bidder's Banker Details of payment as per Appendix-III
- Declaration (Power of Attorney) as per Appendix-VI
- Undertaking on Rs.100/- stamp paper as on Page 42
- Commitment from the Tenderer on Rs.100/- stamp paper as on Page 43
- Affidavit on Rs.100/- stamp paper as on Page 44
- Undertaking on Rs.100/- stamp paper as on Page 45
- Site Visit Report Letter as per Appendix-V
- Tender Fee and EMD is part of technical bid

The Bidder is expected to verify all instructions, forms, terms and specifications in the Tender Document. Failure to furnish all information required in the tender document will be at the Bidder's risk and may result in rejection of the bid.

Part-II- Financial Bid:

The cover superscribed with ″Financial Bid″ shall have the Price Bid enclosed in it in the very same format prescribed in the tender.

Sealed covers superscribed with ″Technical Bid″ and ″Financial Bid″ should be enclosed in an outer cover superscribed with tender reference number and due date.

EARNEST MONEY DEPOSIT (EMD), SECURITY DEPOSIT (SD) & FORFEITING OF EMD:

A. **EARNEST MONEY DEPOSIT:**

EMD must be submitted through Demand Draft favoring ITI Limited. The DD must be in favor of ITI Limited, payable at Palakkad with validity of **Six (06) months** from the last date of submission of tender. The EMD amount must be submitted by the bidders along with the technical bids. No interest shall be payable on the EMD.

EMD shall be returned to unsuccessful Bidders after acceptance of work order by successful Bidder and EMD of successful Bidder shall be returned after submission of Performance security deposit (SD).

FORFEITURE OF EMD:

The EMD paid or submitted by the Bidder shall be forfeited if:

1. The Bidder withdraws his tender before finalization of work order.
2. The Bidder does not accept work order.
3. The Bidder violates any of the terms and conditions of the tender.
4. The bidder fails to deposit requisite Security deposit.
5. The Bidder fails/refuses to execute the contract, in this case ITI shall have full right to claim damages thereof in addition to the forfeiture of EMD.

B. **PERFORMANCE SECURITY DEPOSIT:**

1. **The Bidder shall furnish Performance Security Deposit (SD) @5% of total Contract Value on issue of LoI, before issuing of Work Order. Work order will be issued only after submission of SD.** SD must be submitted by Demand Draft/Bank Guarantee of nationalized/scheduled bank in favour of ITI Limited, Palakkad.
2. The security deposit shall be released to the Bidder within two month only after completion of warranty/AMC duration to the satisfaction of the ITI.
3. Failure to comply with the terms of security deposit shall result to forfeit of EMD.
4. The security deposit shall be liable to be forfeited wholly or partly at the sole discretion of the ITI, if the Bidder either fails to execute the work of above projects or fails to fulfill the contractual obligations or fails to settle in full his dues to the ITI.
5. In case of premature termination of the contract, the security deposit will be forfeited and the ITI will be at liberty to recover the losses suffered by it & if additional cost is to be paid, the same shall be recovered from the Bidder.
6. The ITI is empowered to recover from the security deposit for any sum due and for any other sum that may be fixed by the ITI as being the amount or loss or losses or damages suffered by it due to delay in performance and/or non- performance and/or partial performance of any of the conditions of the contract and/or non-performance of guarantee obligations.

8. PRICE VARIATION

Under any circumstances & for any reasons, escalation in the contract value will not be considered by ITI.

9. JURISDICTION

In case of any dispute, in the documentation and during implementation, commissioning, completion and CMC period, all the matter will be resolved under Palakkad Jurisdiction only.

10. TIME FRAME

Time is the essence of the contract. The time frame for the completion of work is **8 Months** from the date of issue of work order unless otherwise an extension is provided in writing by ITI.

11. PERIOD OF VALIDITY OF BID

A. Bids shall remain valid for 120 days after the date of opening of Technical Bid. A Bid valid for a shorter period shall be rejected by ITI as non-responsive.

B. In exceptional circumstances, ITI may solicit the Bidder's consent to extend the period of validity. The request and the responses thereto shall be made in writing. The EMD provided shall also be suitably extended. A Bidder granting the request will not be required nor permitted to modify its bid.

12. MODE OF SUBMISSIONS OF BID

The Bids shall be submitted Off Line only along with original bid documents duly signed and seal by authorized representative of the bidder.

13. DEADLINE FOR SUBMISSION OF BIDS:

Bids shall be submitted physically by the bidder not later than the time and date specified in the invitation for Bids. The ITI may, at the discretion, extend this deadline for submission of bids by issuing an addendum/ corrigendum, in which case all rights and obligations of ITI and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

14. CLARIFICATION OF BIDS:

During evaluation of Bids, ITI may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in prices or substances of the Bid shall be sought, offered or permitted.

15. PRELIMINARY EXAMINATION:

A. The ITI will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

B. Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between words and figures, word will prevail. If the Bidder does not accept the correction of errors, its bid will be rejected

C. The Bidder is required to carefully examine the Technical Specification, terms and Conditions of Contract, and other details relating to supplies as given in the Bid Document.

D. The Bidder shall be deemed to have examined the bid document including the agreement/contract to have obtained information on all matters whatsoever that might affect to execute the project activity and to have satisfied himself as to the adequacy of his bid. The bidder shall be deemed to have known the scope, nature and magnitude of the supplies and the requirements of material and labour involved, etc. and as to all supplies he has to complete in accordance with the Bid document.

E. Bidder is advised to submit the bid on the basis of conditions stipulated in the Bid Document.

F. Bidder's standard terms and conditions if any will not be considered. The cancellation/alteration/amendment/modification in Bid documents shall not be accepted by ITI.

G. Bid not submitted as per the instructions to bidders is liable to be rejected. Bid shall confirm in all respects with requirements and conditions referred in this bid document.

16. ACCEPTANCE OR REJECTION OF BIDS:

A. ITI reserves the right to accept or reject any bid or all the bids and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability or any obligation to inform the affected bidder or bidders of the grounds for the said action.

B. Any Bid with incomplete information is liable for rejection.

C. For each category of pre-qualification criteria, the documentary evidence is to be produced duly attested by the authorized representative of the bidder and serially numbered. If the documentary proof is not submitted for any/all criteria the Bid is liable for rejection.

D. If any information given by the bidder is found to be false/fictitious, the Bidder will be debarred for 3years from participating in any other tenders of ITI and will be black listed.

17. CRITERIA FOR BIDS EVALAUTION

Bids will be evaluated as following

Technical Bid Evaluation:

Only Technical Proposals conforming to minimum eligibility criteria and found to be responsive will be taken up for detailed technical evaluation. A technical/tender committee shall evaluate the Bids submitted by bidders for a detailed scrutiny. During evaluation of Bids, ITI, may, at its discretion, ask the bidders for clarification of their Proposals.

A. Financial Bid Evaluation:

The price bids of the technically eligible bidders will then be evaluated in the manner provided below;

1. At the outset, the price bids of all the Bidders who are technically qualified in technical evaluation shall be opened in the presence of the Bidders Representatives.
2. The bidder's names, the Bid Prices, total amount of each bid and other details as ITI may consider appropriate, will be announced and recorded by ITI at the opening. The bidder's authorized representatives will be required to sign this record.
3. Bidder that has quoted the lowest price (inclusive of all the taxes/duties) without breach any technical specification as per terms and condition shall be declared as the preferred Bidder.
4. The work order shall be issued to the successful bidder who qualifies in the process as mentioned above.

18. AWARD CRITERIA AND AWARD OF CONTRACT:

ITI will award the contract to the successful bidder whose bids has been determined to be substantially responsive and has been determined as the lowest evaluated bid as per the criteria mentioned above, provided further that the bidder is determined to be qualified to perform the contract satisfactorily.

19. CORRUPT OR FRAUDULENT PRACTICES:

ITI requires that Bidders shall observe the highest standard of ethics during the execution of contracts. In pursuance of this policy, ITI Defines, for the purposes of this provision, the terms set forth as follows:

A. Corrupt practice means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

B. fraudulent practice means a misrepresentation off acts in order to influence a procurement processor the execution of a contract to the detriment of the Government, and includes collusive practice among Bidders (prior to or after tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition:

1. Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
2. will declare a firm ineligible for a period of 3years, if it at any time it determines that the firm has engaged in corrupt or fraudulent practices in competing for awarded work at Government financed contract, or in executing, a contract.

20. CONDITIONS FOR ISSUING WORK ORDER TO LOWEST BIDDER:

A. If declared L1, as per financial bid evaluation, the bidder has to submit description and physical specification of materials in detail along with Single Line Diagram (SLD) of solar plant duly certified by chartered engineer which will be used in project. Also a letter of undertaking on the letter head of bidder's company mentioning similar material (with same specification and description) will be used/replicated at all awarded project sites needs to be submitted.

B. The bidder has to submit documents related to labour insurance and material insurance.

21. TERMS OF PAYMENT:

A. PAYMENT SCHEDULE:

1. **40% Payment-** Payment of 40% of contract value shall be released to contractor after supply of complete material at site (as per detailed BOQ) required for installation-commissioning of 1200kWp Grid Connected SPV Power Plant duly certified by ITI, submission of final drawings and get and approval of drawings from ITI Engineer-In-charge.
2. **30% Payment –** Payment of 30% of contract value shall be released to contractor after erecting the complete Mechanical structures & fixing of all SPV Modules of 1200 KWp grid connected solar plant.
3. **20% Payment–** Payment of 20% of contract value shall be released to contract or after successfully installation and commissioning of complete 1200kWp Grid Connected SPV Power Plant along with photographs of the installation, Sanction order for Energisation of solar power plant issued by the Electrical Inspectorate and approval of NET METER/ZERO EXPORT DEVICE from DISCOM.

Note: Release of payment as per payment Schedule for clause 1, 2 & 3 above will be within 30 days of verification & acceptance by ITI.

4. **10% Payment–** 2% Payment shall be released at the end of each year of completion of successful Operation &maintenance for a period of 5years.

The Works related to SPV Power Plant shall be carried out under the supervision of certified electrical contractor.

B. <u>DEDUCTION:</u>

1. The TDS at the source will be deducted as per the Govt. rule and regulations.

2. ITI will issue necessary certificates of TDS deduction

3. Note that if bidder does not provide insurance against Labour and Material ITI will process insurance at **Director of Insurance** and will deduct 1% of contract value against insurance claimed by them and 1% of contract value deduction against **Labour Welfare Cess** from payment towards successful bidder.

22. PROJECT TIME LINES:

The time frame for the completion of work is 8 Months from the date of issue of work order.

Sl. No.	Description	Timeline
1.	Issuance of Letter of Award	Zero date
2.	Signing of Agreement with ITI Limited	within15calendar days after Issuance of Letter of Award (LOA)
3.	Registration of Solar Power Project with DISCOM	Within 30 calendar days after Issuance of Letter of Award (LOA)
4.	Installation of Solar Power Projects	within180 calendar days or 6Months after Issuance of Letter of Award (LOA)
5.	Commissioning and Acceptance of Solar power project	Within 240calendar days or 08Months after Issuance of Letter of Award (LOA)

Bidder should follow the project timelines after receipt of Work order/LOA from ITI and also bound to complete the progress of project work as per given below milestones or else he will be liable for Penalty against in complete milestone.

Sl. No.	Milestone	Work Schedule
1	In Two Month	>20% Completion of work of Solar power project
2	In Four Month	>50% Completion of work of Solar power project
3	In Six Month	80% Commissioning, testing, Acceptance and handing over the project to ITI Ltd
4	In Eight Month	100% Commissioning, testing, Acceptance and handing over the project to ITI Ltd

23. TIME EXTENSION

A. Time is the essence of the contract. No extension for completing the work will normally be permissible. Any delay will attract penalty as per ―PENALTY CLAUSE.

B. From date of issue of work order, every 15days report of work progression needs to be submitted to ITI. The review of work progression will be taken and necessary alteration can be suggested, delay in work progression or failure to fulfill required alteration may lead to cancellation of work order. The rights for decision will be reserved by ITI.

24. PENALTY CLAUSE

A. If the systems are not installed and commissioned within the stipulated period as mentioned in the work order the Bidder shall be required to pay penalty of 0.5% (half percent) of tender amount per week limited to a maximum of 10% of the total work order value and the amount shall be recovered either from the amount due to the Bidder or from Security Deposit.

B. If Successful bidder is not able to complete the project in due time the same shall be got done through other contractor and the Successful bidder has to bear all the cost incurred against the balance work left by him for the completion of project.

C. Cancellation of work order shall be executed if the progress of the project is not satisfactory. ITI at their will reserves right to levy penalty or take any other appropriate action against the contractor

SECTION–III

GENERAL TERMS AND CONDITIONS

1. GENERAL CONDITIONS OF CONTRACT (GCC)

A. General Terms and Conditions:

The following are the General Terms and Conditions of Contract for Supply, Testing, Installation and commissioning of SPV Power Plant, as per the specifications given in the document.

i. Bidder shall be responsible for any damage occurred, if any, at the site during the execution of work.

ii. The Bidder should provide appropriate tools and equipments to the workmen and ensure that those are in proper working condition and the workmen use the appropriate tools and take precaution**—PLEASE NOTE THAT ANY ACCIDENT TO THE WORKMEN/PUBLIC/ANIMALS/PROPERTY BOTH MOVABLE AND IMMOVABLE SHALL BE ENTIRE AND SOLE RESPONSIBILITY OF THE BIDDER AND ANY PROCEEDING ARRISING OUT OF THE SAME SHALL BE AT THE BIDDER'S RISK AND COST, ITI OR ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR ANY SUCH INCIDENT.**

iii. Bidder should provide necessary manufactures test certificates for materials being used for the work. Power curve of all the panels will be provided by ITI Limited.

iv. The selected Bidder is bound to work on the guideline provided by ITI from time to time. Guidelines if issued in future by ITI, the changes proposed will also be applicable without augmentation in project cost till the completion of 5 years CMC period.

v. The Bidder shall carry out the work strictly according to the specifications as per given in Section-IV and complete the work within stipulated time.

vi. It is the responsibility of Bidder to submit the reports for systems installed & commissioned and certificates for undertaking the responsibility of maintenance of the systems.

vii. Bidder shall also impart training to the ITI personnel's for regular Operation & Maintenance of the systems and certificate in this respect should be submitted.

viii. Bidders should give Guarantee against any manufacturing defects from the date of commissioning up to 5years CMC period. For any manufacturing defects, Bidder shall replace defective parts at free of cost during the CMC period and shall keep the system functional

ix. ITI officials will do inspection as and when necessary, during the execution of work and thereafter subsequent to installation and commissioning of the work for the purpose of issuing final completion certificate.

x. In the event of any discrepancy observed in specifications, the specifications given by ITI will be final. In the event of dispute arising any time, related to this work and document, decision of **ITI** shall be final.

xi. ITI at its discretion may visit supplier's factory for testing/inspection at any time during the period of supply and installation of the systems.

xii. ITI will not pay any interest on any amount, due to the Bidders.

xiii. During the inspection, if any deviations in Technical Specifications are observed, ITI reserves right to test any solar module/system at any authorized test center of MNRE. Bidder shall provide the facilities for getting the sample tested & the supplier shall bear the cost for the same.

xiv. If the supplier fails to execute the work completely in time, ITI reserves the right to cancel the work order and get it done through any other means at the bidder's risk and cost and any loss due to this shall be recovered either from any amount due to the bidder or from their Security Deposit.

xv. The Wiring must be carried out as per standard in casing-capping/conduit which are suitable as per site condition.

xvi. It will be responsibility of the Bidder for procurement and installation of Net Meter in the system.

xvii. It will be responsibility of the bidder to provide required WI-FI system through any network for real time monitoring of the system using internet and downloading of data for initial one year period, later the bidder/supplier may handover the WI-FI system to ITI for its maintenance.

xviii. It will be responsibility of the Bidder to ensure the satisfactory performance of the system.

xix. The Bidder shall provide the display board of size 3ftx3ft that gives detailed information of system along with the contact details of manufacturer. This will help the beneficiary during 5 years CMC period.

xx. The Bidder shall comply with the provision of contract labour (Regulation and Abolition) Act 1970, minimum wages Act 1948, payment of the wages Act 1963 Workmen's Compensation Act 1961, the contract labour (Regulation and Abolition) Act 1979 and all other related Acts and any modification thereof or any law relating thereto and rules made thereunder from time to time.

xxi. If any information/confirmation on any point of these tender conditions are required Bidder may contact/write to DGM(CENTRAL SERVICES), ITI Limited, Palakkad giving tender reference no., etc.

xxii. In the event of dispute during installation & commissioning of the systems related to the work and documents, decision of the ITI shall be final.

xxiii. The successful bidder shall ready to sign the Integrity Pact with ITI.

xxiv. Once the Bidder submit his offer and subsequently if not interested to work, in such case ITI will forfeit his EMD amount.

xxv. At the time of placing work order and during the implementation ITI can revise the technical terms and conditions if revised by MNRE, which will be binding on the Bidder.

xxvi. ITI, reserves the right to select L-2 Bidder i.e. second lowest Bidder to complete the work, if L1 i.e. lowest Bidder fails to fulfill tender conditions or fails to complete the work.

xxvii. It is binding on the successful Bidder to submit Price bill of Quantity, make and Model of components, test certificates/reports and other original certificates, documents required by ITI.

xxviii. The company shall deduct the TDS as per the Income Tax Act.

xxix. The bidder must acknowledge that all the work of the project must be carried out under the supervision of licensed electrical contractor. The responsibility of electrical works, safety precautions and safety parameters of the project shall be ensured by the bidder.

xxx. The Bidder shall sign these conditions on each page at the end in token of acceptance of all the terms and it would be attached with the bid along with the declaration mentioned in above. Bidder should also sign at the bottom of each of the pages of his bid to be submitted.

xxxi. **Other Terms & Conditions:**

a. Compliance with Regulations and Indian Standard:-All works shall be carried out in accordance with relevant regulations, both statutory & those specified by the Indian standard related to the works covered by this specification. In particular the equipment and installation will comply with the following:-

b. Workman's compensation Act.

c. Minimum wages Act.

d. Payment wages Act.

e. Contact Labour regulation & abolition Act.

f. ESI, PF & Bonus Act.

g. Regulation under Indian Electricity Rules,

h. Safety & Electrical Standard as applicable

i. The contractor shall supply material (including ITI SPV Modules) from his godown for installation work at site, shall continue to be responsible for their safe custody till they are installed in position, tested, commissioned and handed over to ITI.

j. The contractor shall arrange for compliance with statutory provision of safety regulation and departmental requirements of safety codes in respect of labour employed on the work by the Bidder. Failure to provide such safety requirements would make the contractor liable for penalty. ITI will make arrangement for the safety requirements at the cost of the contractor & recover the cost thereof from him.

xxxii. All Bidders shall therefore, furnish declaration that their firm is not involved in any litigation that may have an impact of affecting or compromising the delivery if services as required under this assignment. It is also to be declared that their firm has not been blacklisted by any Central/State/Public Sector Undertakings in India. The declaration should be verified by the Notary Public.

2. AMENDMENT

Except as otherwise provided herein, no addition, amendment to or modification of the Contract shall be effective unless it is in writing and signed by and on behalf of both parties.

3. SEVERABILITY

In the event that any or any part of the terms, conditions or provisions contained in the Contract shall be determined invalid, unlawful or unenforceable to any extent such term, condition or provision shall be served from the remaining terms, conditions and provisions that shall continue to be valid and enforceable to the fullest extent permitted by law

4. CONFIDENTIAL TREATMENT

It is understood and agreed that data, know-how and other such proprietary information that was provided or will be provided by either party, will remain confidential.

5. RELATIONSHIP OF THE PARTIES

ITI relationship with the contractor will be that of a Business Associate, and nothing in this Contract shall be construed to create a relationship, joint venture, partnership.

6. INDEMNITY

ITI and the contractor will indemnify, defend, and hold harmless each other and its divisions, successors, subsidiaries and affiliates, the assigned of each and their directors, officers, agents and employees from and against all liabilities, claims, losses, and damages of any nature, including, without limitation, all expenses (including attorney's fees), cost, and judgments incident thereto ITI and ITI's obligations under this indemnity will survive the expiration, termination, completion or cancellation of this Contractor an order hereunder.

7. RESTRICTION ON EMPLOYMENT

Both the parties have agreed that they will not recruit any members of staff of other party directly or indirectly.

8. ARBITRATION

A. Any dispute, difference or claim arising out of or relating to this Project shall be in the first instance, endeavor to be settled amicably within 30 days of communication thereof, by negotiation between the parties hereto and failing which the same shall be settled by following arbitration clause pursuant to the ICADR Arbitration Rules,1996 and subsequent amendments thereto.

a. If a dispute arises out of or in connection with this Project, or in respect of any defined legal relationship associated therewith or derived therefrom, the parties agree to submit that dispute to arbitration under the ICADR Arbitration Rules, 1996.

b. The authority to appoint the Arbitrator(s) shall be International Center for Alternative Dispute Resolution (ICADR).

c. The International Center for Alternative Dispute Resolution will provide administrative Services in accordance with the ICADR Arbitration Rules, 1996.

d. The language of the Arbitration Proceedings shall be English.

e. ***The place of Arbitration Proceedings shall be Palakkad, India.***

f. The above clauses on Arbitration shall survive for five (05) years even after the expiry/termination of Project.

g. It is expressly understood and agreed by and between BIDDER and ITI that BIDDER is entering into this Tender solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed between the Parties that the Government of India is not a party to this Project and has no liabilities, obligations or rights hereunder. It is hereby expressly understood and agreed that ITI is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable Laws of India and general principles of Contract Law. ITI represents and Bidder expressly agrees, acknowledges and understands that ITI is not an agent, representative or delegate of the Government of India. It is further understood and agreed between the Parties that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the contract. Accordingly, Bidder hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this contract and covenants not to sue the Government of India as to any manner, claim, and cause of action or thing whatsoever arising of or under this Project.

9. FORCE MAJURE

If at any time, during the continuance of this Project, the performance in whole or part, by either Party, of any obligation under this is prevented or delayed, by reason of war, or hostility, acts of public enemy, civic commotion, sabotage, act of State or direction from Statutory Authority, explosion, epidemic, quarantine restriction, strikes and lockouts (as are not limited to the establishments and facilities of ITI), fire, floods, natural calamities or any act of God (here in after refer to as event), provided notice of happenings of any such event is given by the affected Party to the other, within 21calendar days from the date of occurrence thereof, neither Party shall, by reason of such event, be entitled to terminate the Project, nor shall either Party have any such claims for damages against the other, in respect of such non-performance or delay in performance. Provided duties under the Scope of Work shall be resumed as soon as practicable, after such event comes to an end or ceases to exist. However, the Force-Majeure events noted above will not in any way cause extension in the period of Project execution

10. RISK AND COST

In the event of failure on the part of the contractor in the supply, installation and commissioning of goods and services required for completing execution of the work awarded, ITI shall be entitled to cancel the remaining order and procure the outstanding quantity through other sources at risk and costs of the contractor.

11. TERMINATION OF CONTRACT

ITI shall be entitled to terminate this Contract, in the event of any or all or any of the following events with a written notice of 15days with due consent of the contractor:-

- Has abandoned the Contract
- Has without valid reason failed to complete the projects in respect of the contract.
- Persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just and proper cause.

12. DURATION OF CONTRACT

This contract shall take effect on the day of execution of this contract and shall endure until commissioning and handover the Power Plant to ITI as per mutual agreement.

13. GOVERNING LAW

This contract and its validity, interpretation and performance will take effect and be governed under the laws of India. Venue in any action in law or equity arising from the terms and conditions of this contract shall be the court of appropriate jurisdiction in Palakkad (India).

14. CONTRACT

Before execution of the work, security deposit is be submitted and a contract agreement for execution of the work shall be signed by the contractor with ITI within 7days of LOA from ITI. In case agreement is not executed within the stipulated time, earnest money will be forfeited.

15. COMMUNICATIONS

Wherever provision is made for the giving or issue of any notice, instruction, consent, approval, certificate or determination by any person, unless otherwise specified such communication shall be in writing and shall not be unreasonably withheld or delayed.

Project review coordination meetings between the ITI's Representative and Contractor shall be conducted on a regular basis or as and when required by the ITI, at locations decided by the ITI, for Contractor's progress and plans for completing the remaining Works, to deal with matters affecting the progress of the Works, and to decide on responsibility for actions required to be taken. Decisions taken and instructions issued during the coordination meetings, as recorded in the Minutes, shall have the same force and effect as if they were written communications issued in this accordance.

16. MANNER OF EXECUTION

Execution of work shall be carried out in the approved manner as outlined in the technical specifications or where not outlined, in accordance with relevant MNRE/BIS/Indian Standard Specifications, to the reasonable satisfaction of ITI Limited, Palakkad. The Contractor should successfully complete the project within timeframe set out by the ITI Limited and mutually agreed between Contractor and ITI.

ITI shall not be responsible for any loss or damage of any material when installing SPV power plants.

17. APPLICATION

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

18. STANDARDS

The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/BIS/Indian Standards and as detailed in the Technical specifications Section as per the MNRE/ITI requirements of the bid document and Annexure-A. The goods supplied under this contract shall confirm to the Standards mentioned, where appropriate Standards and Codes are not available, other suitable standards and codes as approved by the authoritative Indian Standards shall be used.

19. INSPECTION

A. The projects will be inspected for quality at any time during commissioning or after the completion of the project by ITI Officials.

B. Bidder shall inform ITI in writing when any portion of the work is ready for inspection (site wise) giving sufficient notice to enable ITI to depute officials to inspect the same without affecting the further progress of the work. The work shall not be considered in accordance with the terms of the contract until the competent person from ITI certifies in writing to that effect.

C. The cost of Inspection shall be borne by Bidder only.

D. Bidder has to strictly follow the specifications given in the work order while carrying out the execution of work. During inspection if it is found that Bidder has deviated from the specifications, Bidder has to do the alteration/modification/reconstructions as per the given specifications at his own cost & risk.

20. TRANSPORTATION

Where the Contractor is required under the contract to transport the goods to specified locations defined as Project sites, transport to such places including insurance, as shall be specified in the contract, shall be arranged by the Contractor, and the contract price shall include transportation costs.

21. ASSIGNMENT

The Contractor shall not assign, in whole or in part to any third party, its obligations to perform under the contract, except with ITI's prior written consent.

22. SUB-CONTRACTS

Subcontracting is strictly prohibited.

23. TERMINATION FOR DEFAULTS

ITI without prejudice to any other remedy for breach of contract, by written notice of default sent to the Contractor, terminate the contract in whole or part:

A. If the Contractor fails to deliver any or all the goods within the period(s) or within any extension thereof granted by the ITI or

B. If the Contractor, in the judgment of ITI has engaged incorrupt or fraudulent practices in competing for or in executing the contract.

In the event ITI terminates the contract in whole or in part, ITI may procure, upon such terms and in such manner as it deems. Appropriate goods or services similar to those undelivered and the Contractor shall be liable to ITI for any excess costs for such similar goods or services. However, the Contractor shall continue the performance of the contract to the extent not terminated.

24. APPLICABLE LAW

The contract shall be interpreted in accordance with the laws of the Union of India.

25. NOTICES

Any notice given by one party to the other pursuant to this contract shall be sent to other party in writing or by cable, telex or facsimile and confirmed in writing to the other party's address specified. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

26. PACKING

A. The Bidder shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the contract.

B. The packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures during transit and open storage.

C. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods final destination and the absence of heavy handlings facilities at all points in transit.

D. The packing, marking and documentation within and outside the item shall comply strictly with such special requirements as shall be provided for in the contract including additional requirements, if any and in any subsequent instructions ordered by the ITI.

27. DANGER PLATES

The bidder shall provide Danger Notice Plates at each project site near Inverter and Panel of 200mmX150mm made of mild steel sheet, minimum 2mm thick and vitreous enameled white on both sides and with inscription in signal red colour on front side as required. The inscription shall be in English and local language.

28. INSURANCE

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

ii. The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and

representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy, etc., shall be the responsibility of bidder.

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

iv. The bidder shall provide insurance coverage of Complete Project documents effective from date of commissioning of the project for period of 05years covering damage by force majeure, fire, force full damage of project, theft, etc.

29. WARRANTIES AND GUARANTEES

The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 5years from the date of commissioning of project. The successful bidder has to transfer all the Guarantees/Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/Settlement of issues arising out of said clauses shall be joint responsibility of the Successful bidder and the owner of the project and ITI will not be responsible in any way for any claims whatsoever on account of the above.

30. SAFETY EQUIPMENT

The awarded bidder must provide fire extinguisher and other safety equipment as per tender/asked by ITI official.

Undertaking

(On Rs.100/- Stamp Paper)

I……Age……. years Occup.……Address…… ……..the Authorized Signatory of M/S……..(Company) hereby state that, I/my company is intending to participate for TENDER NO.…… *for Survey, Design, Supply, Installation, Testing and Commissioning of 1200 KWp Solar PV Power Plant under Grid Connected* ROOFTOP/GROUND MOUNTED *Net-Metering Policy* with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.

I have read all the terms & conditions mentioned in the Tender document of the ITI. I hereby further undertake and declare that all the terms & conditions mentioned in each and every page of the said tender document along with the clarifications released, if any, are binding on me /my company and I am fully aware that, in case of breach of any term or condition of the said Tender document, I am/my company is liable to be disqualified from the said tender process.

Sign:

Name of authorized Signatory:

Name of Company with Stamp:

Format:

Commitment from the Tenderer

(To be submitted separately on Rs.100/- stamp paper)

We hereby confirm that the from proposed Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Solar PV Power Plant under Grid Connected ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.

We will provide the assured minimum generation of 4.0 units per day per kW calculated as
4.0 units x 300 days x 1200 kW=1440000 units/year. Units per year at energy meter in control cabin/room as certified by joint meter reading of manufacturer's representative and user's representative.

However for 5years we hereby commit to pay an amount of Rs.6/-per unit as compensation to ITI Limited for the amount of units unable to supply against the guaranteed generation.

Date :

Place:

Signature of the Tenderer

Seal

Affidavit

(To be submitted on Rs.100/-stamp paper)

I M/s.....(Name of bidder) shall do the project of..... kW for M/s..... (Beneficiary Name), Tender No.....
Hereby declare that the above mentioned project shall be commissioned by a biding the following:

The standards and norms set by Ministry of New and Renewable Energy (MNRE) is maintained while installation of project.

The project has been installed under the supervision of electrical contractor/supervisor, the electrical parameters involved in the project have been considered under supervision of electrical contractor/supervisor.

All electrical norms are followed, electrical safety measures are taken in consideration and the project is electrically safe. All electrical work will be carried out under the supervision of certified Electrical contractor/supervisor with all electrical safety measures and norms.

The mechanical safety norms while designing and installation of structure are strictly followed. The solar hot dip structure is tested, approved from engineer and is capable of bearing the load of solar panels, withstand natural parameters (wind, rain) over the duration of project life.

The roof of the building is capable of bearing the load of hot dip galvanized structure and solar panel over the period of project life.

I will be responsible for maintenance of the project over the period of Comprehensive Operation & Maintenance Contract (COMC) i.e.,5years and for the remaining 20years the beneficiary is responsible for undertaking the maintenance work of the project.

In case of any mishap from the solar project with the parameter mentioned above, I will be responsible. I hereby undertake for the above.

Sign of Project Developer:.....

Stamp: .....

Undertaking

(On Rs.100/- Stamp Paper)

I……...Age……..years Occup.……..Address…… ……..the (Authorized Signatory of M/S…….(Company) hereby state that, I/my company is intending to participate for TENDER No..……... for Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Solar PV Power Plant under Grid Connected ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WSET (P.O.), PALAKKAD, KERALA 678623.

Sr.No	Component	Make(Only-1)	Certification
1	Inverter		
2	DC Cable		
3	AC Cable		
4	Net Meter/Solar		
5	ABT Meter		
6	Transformer		
7	HT Panel		
8	VCB		
9	SF6 Circuit Breaker		
10	EHT CT, PT, LA		
11	SCADA		
12	LT Panel		

In case of breach of any component of the said Tender document, I am/my company is liable to be disqualified from the said tender process.

Here, I declare that document which I attached for technical scrutiny; I will provide that company's component at actual site also

Sign:

Name of authorized Signatory:

Name of Company with Stamp:

SECTION-IV

TECHNICAL SPECIFICATION

1. TECHNICAL SPECIFICATION OF SPV POWER PLANT

(Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O), PALAKKAD MAIN RD, KERALA 678623.)

DEFINITION

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

i. GENERAL SYSTEM:-

1. The operating life of the plants shall be minimum 25years.
2. The Solar power plant shall feed AC power to the EHT power grid in the existing 66KV substation yard.
3. The plants shall monitor solar generated energy using plant DC/AC energy meter/Bidirectional energy meter independent of load energy monitoring. Remote monitoring facility must be made available.
4. The plant shall consist of PV array, fixed PV array support structure, String/Array combiner boxes, DC cabling, DC distribution box with SPD, Inverter, AC cabling, AC distribution box with SPD, plant AC energy meter, load energy meter and data acquisition system.
5. If SPD is already inbuilt in inverter but also bidders need to install extra SPD & MCB in AC DB&DC DB.
6. Protection for Inverter provided by Mesh type box of GI.
7. The individual Solar PV array shall be installed on existing rooftop of the building using fixed PV array support structure.

8. The individual string/array combiner boxes and DC cabling shall be installed on roof top of the building.
9. The inverter shall be installed in the control room/open space provided in the building.
10. The DC and AC distribution boxes, DC and AC cabling, energy meters and data acquisition system shall be installed in the control room/open space provided in (or near) the building.

ii. PV ARRAY

The total grid Connected Solar roof top solar PV array capacity shall not be less than 1200KWp comprising of solar polycrystalline modules with minimum capacity of.325Wp.

1. The PV modules used should be made in India.
2. **It is mandatory for the bidder to use ITI make 325Wp Polycrystalline Solar modules in the project. ITI will make available the respective quantity of 325W solar module at site at its own cost whenever required by the qualified bidder. Bidder shall quote the total cost of the project without Solar module.**
3. The peak power rating of the Solar PV array under Standard Temperature Conditions (STC) shall be equal to the peak power rating of the plant**. (ITI Ltd will provide PV Curve and Specifications)**
4. The PV array shall consist of framed Poly-crystalline.
5. Individual PV modules rating should be of minimum 325Wp at STC.
6. The rated maximum power rating of PV modules should have positive tolerance in range of 0 to +2%. And negative temperature co-efficient of power for PV modules should be less than or equal to 0.45% per degree C. The peak power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary more than 3(three) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
7. A suitable number of Solar PV modules shall be connected in a series string. A suitable number of series strings shall be connected in parallel to formulate a series parallel array.
8. The PV Array shall be designed to match the inverter input specifications.

9. The module shall be provided with junction box with provision of min.3Nos.of by-pass diodes and external MC4 type or equivalent plug-in connectors. The junction box should have hinged, weatherproof lid with captive screws and cable gland entry points & should be IP65 rated.
10. The front surface of the module shall consist of impact resistant, low iron and high transmission toughened glass.
11. The module frame shall be made of corrosion resistant material electrically compatible with structural material used for mounting the modules.
12. Each PV module manufactured in India must have RF identification tag(RFID) compatible with MNRE requirements.(Traceability requirement)
13. DC negative conductor shall be bonded to the ground via Ground Fault Detector Interrupter (GFDI).The grounding point shall be as close as possible to the PV Array.
14. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weatherproof lid with captive screws and cable gland entry points or may be of sealed type and IP65 rated.
15. The PV module must have warranty of 25years with not more than 20% degradation in performance/output over 25years.
16. The PV module must have 10years free replacement guarantee against material defect or craftsmanship.

Warranties:

Material Warranty:

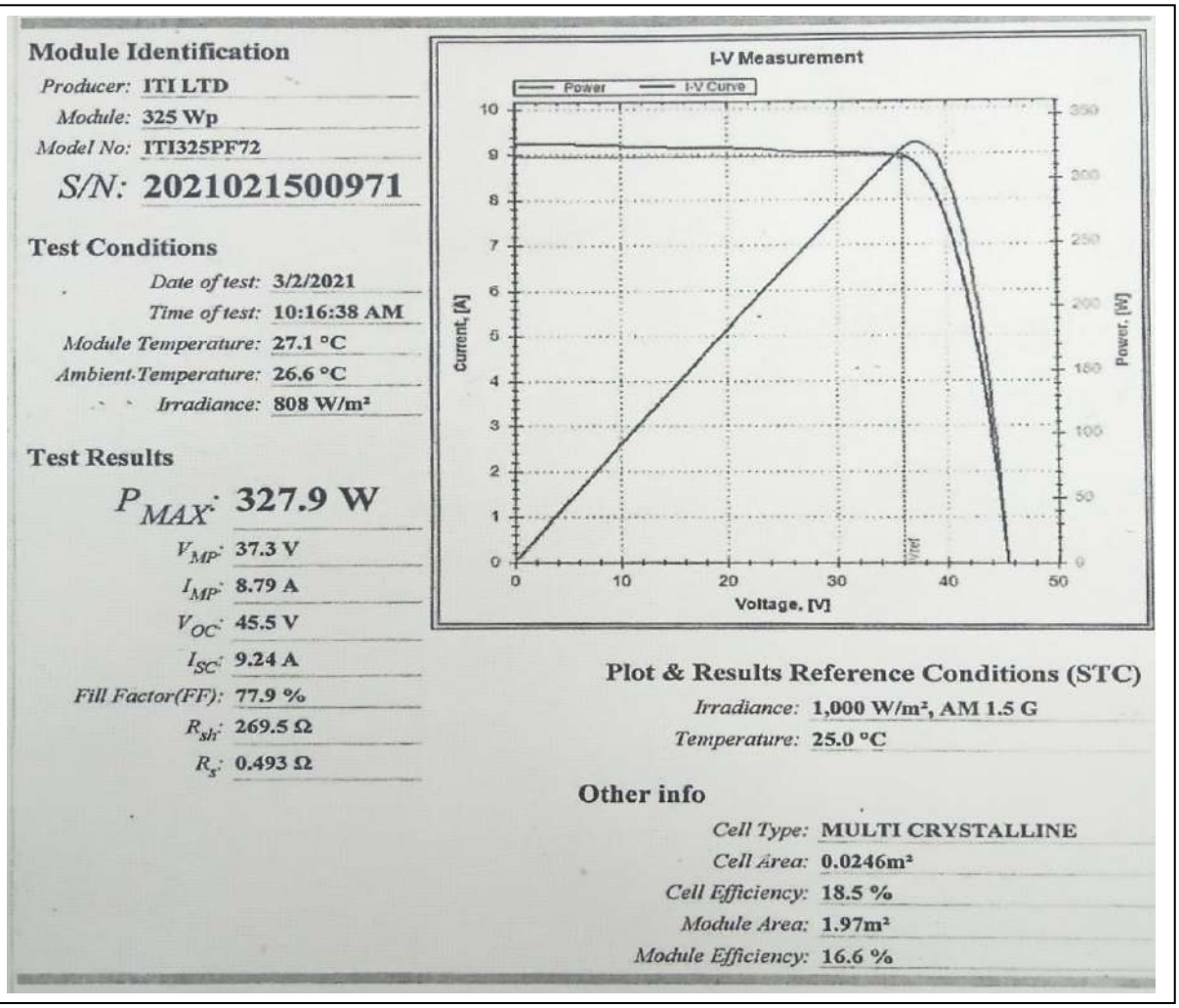
i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five(05)years from the date of sale -.the original customer("ITI")
ii. Defects and/or failures due to manufacturing.
iii. Defects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

Performance Warranty:

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

Since it is mandatory for the bidder to employ the ITI 325Wp polycrystalline solar module in the project, ITI will ensure all performance requirements cited above with respect to PV modules. Every other requirements including system performance requirement also taking into account technical characteristics of PV modules need to be ensured by the bidder without fail.

I-V curve of the PV module being provided by ITI is reproduced below for design considerations of the Solar PV power plant.



iii. STRING INVERTER/PCU

The PCU required shall be of 1200kW to convert DC power produced by SPV modules into AC power and adjust the voltage & frequency levels to meet the local grid conditions. The use of String Inverters of cumulative capacity 1200kW must be preferred.

a) **Common Technical Specification:**

Control Type: Voltage source, microprocessor assisted, output regulation.

Output voltage: 3 phase, 415VAC (+12.5%,-20%VAC)

Frequency: 50Hz (+3Hz, -3Hz)

Continuous rating: 1200 kW Grid connected Normal Power: 1200KW

Total Harmonic Distortion: less than 3%

Operating temperature Range: 0 to 55degC

Humidity: 95% Non-condensing

Housing cabinet: PCU to be housed in suitable switch cabinet, IP-20 (Minimum) for indoor IP-65(Minimum) for outdoor

PCU efficiency: 98% and above at full load.

PF: >0.9

b) **Other important Features/Protections of PCU**

i. Mains (Grid) over-under voltage and frequency protection.
ii. Over load capacity (for10sec) should be 200% of continuous rating.
iii. The PCU shall be self-commuted and shall utilize a circuit topology and components suitable for meeting the specifications listed above at high conversion efficiency and with high reliability.
iv. The PCU shall be provided with MPPT (Maximum Power Point Tracing) features, so that maximum possible power can be obtained from the PV module.
v. The PCU shall be self-commuted and shall utilize a circuit topology/DSP technology to meet the specifications listed above at high conversion efficiency and with high reliability. The PCU shall be String type and shall give the preference to feed the Loads from Solar Energy being produced and shall draw the additional power from mains to meet the load requirements in the case load is more than solar energy being produced. Conversely it should feed the solar power to the Grid if the load is less than the solar energy generated.
vi. Full proof protection against grid islanding which ensures that the PV power and the grid power get disconnected immediately in the event of grid failure.
vii. The power conditioning units/inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2(1,2,14,30)/Equivalent BIS Standard.
viii. The charge controller (if any)/MPPT units environmental testing should qualify IEC 60068-2(1,2,14,30)/Equivalent BIS standard. The junction boxes/enclosures should be IP65 (for outdoor)/IP 54(indoor) and as per IEC 529 specifications.
ix. The PCU/inverters should be tested from the MNRE approved test centers/NABL/ BIS/IEC accredited testing-calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.
x. The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents.
xi. The PCU shall be able to withstand an unbalanced output load to the extent of 50%.

xii. The PCU shall go to the shutdown/standby mode with its contacts open under the following conditions before attempting and automatic restart after an appropriate time delay in insufficient solar power output.

(a) Utility-Grid Over or Under Voltage- The PCU shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for a minimum of two minutes.

(b) **Utility-Grid Over or Under Frequency-** 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. The permissible level of under/overvoltage and under/over grid frequency is to be specified by ITI.

xiii. 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.

xiv. Communication Modbus protocol with LAN/WAN options along with remote access facility and SCADA package with latest monitoring systems.

xv. The inverter with MPPT shall be used with the power plant.

xvi. The sine wave output of the inverter shall be suitable for connecting to 415V, 3phase AC LT voltage grid.

xvii. The inverter shall incorporate transformer isolated output (transformer-less inverters shall be used with suitable external transformers), grid islanding protection disconnection of grid & PV power in case of failure of Grid supply suitable DC/AC fuses/circuit breakers and voltage surge protection. Fuses used in the DC circuit shall be DC rated.

xviii. The inverter shall have internal protection against any sustained faults and/or lightning in DC and mains AC grid circuits.

xix. The peak inverter efficiency inclusive of built-in isolation transformer shall exceed 94%. (Typical commercial inverter efficiency normally more than 97% and transformer efficiency is normally more than 97%)

xx. The kVA ratings of inverter should be chosen as per the PV system wattage.

xxi. The output power factor should be of suitable range to supply or sink reactive power.

xxii. Inverter shall provide panel for display of PV array DC voltage, current and power, AC output voltage and current (All 3phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3phases and cumulative) and frequency. Remote monitoring of inverter parameters should also be available.

xxiii. The inverter shall include adequate internal cooling arrangements (exhaust fan and ducting) for operation in a non-AC environment.

xxiv. The preferred brands of On-grid string Inverters are DELTA/Schneider/ABB/SMA. Bidder can quote any one make of the inverter.

c) **Factory Testing:**

i. The PCU shall be tested to demonstrate operation of its control system and the ability to be automatically synchronized and connected in parallel with a utility service, prior to its shipment.

ii. Operation 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.

iii. Special attention shall be given to demonstration of utility service interface protection circuits and functions, including calibration and functional trip tests of faults and isolation protection equipment.

iv. Operation of start-up, disconnect and shutdown controls shall also be tested and demonstrate. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

v. Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25%, 30%, 75% & 100% of the rated nominal power.

vi. A Factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted.

d) **PROTECTIONS:**

i. Lightning protection (ECE Type)

The SPV power plants shall be provided with lightning &over voltage protection. The

main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other subsystem components. The source of over voltage can be lightning, atmosphere disturbances, etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per NFC17-102:2011 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

ii Surge protection

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

e) **Cables & wires**

Cabling in the yard and control room: Cabling in the yard shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.

i. Wires: Only FRLS copper wires of appropriate size and of reputed make shall have to be used.

ii. Cables Ends: All connections are to be made through suitable cable/lug/

iii. Terminals; Crimped properly & with use of Cable Glands.

iv. Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. Any change in cabling schedule/sizes if desired by the bidder/supplier be got approved after citing appropriate reasons,

v. All cable schedules/layout drawings have to be got approved from the purchaser prior to installation. All tests and measurement methods should confirm to IEC 60189.

f) **Electrical Safety, Earthing Protection**

i. **Electrical Safety**

- Internal Faults: Inbuilt protection for internal faults including excess temperature, commutation failure and over load and cooling fan failure (if fitted) is obligatory.
- Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations and internal faults in the power conditioner, operational errors and switching transients.
- 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.
- 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.
- Fast acting semiconductor type current limiting fuses at the main bus bar to protect from the grid short circuit contribution.
- The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- The PCU shall include ground lugs for equipment and PV array grounding.
- All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30years design life of the unit. weatherproof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The INVERTER shall be located indoor and should be either wall/pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.
- 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.
- All doors, covers, panels and cable exits 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 not larger than 0.95cm (about 3x8 inch).

- In the design and fabrication of the PCU the site temperature (5°to55°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.

ii. **Earthing Protection**

Earthing

1. PV array, DC equipment, Inverter, AC equipment and distribution wiring shall be earthed as per IS: 3043-1987.
2. Equipment grounding (Earthing) shall connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV panel mounting structures in one long run. The grounding wire should not be switched, fused or interrupted.
3. The complete earthing system shall be electrically connected to provide return to earth from all equipment independent of mechanical connection.
4. The equipment grounding wire shall be connected to PV power plant.
5. A separate grounding electrode shall be installed using earth pit per power plant. Test point shall be provided for each pit.
6. An earth bus and a test point shall be provided inside each control room.
7. Earthing system design should be as per the standard practices.

Each array structure of the PV yard should be grounded properly. 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. Earth resistance should be tested in presence of the representative of ITI after earthing by calibrated earth tester. PCU, AC DB & DC DB should be earthed properly.

Danger boards should be provided as and where necessary as per IE Act/IE rules as amended up to date. Three signage shall be provided one each at control room, solar array area and main entry from administrative block.

iii **Balance of Systems (BoS)**

i. String/Array combiner boxes shall incorporate DC string circuit breakers, DC array disconnect switch, lightning and over voltage protectors, any other protection equipment, screw type terminal strips and strain-relief cable glands.

ii. All DC and AC cables shall be terminated using suitable crimped cable lugs/sockets and screw type terminal strips. No soldered cable termination shall be accepted.

iii. Only terminal cable joints shall be accepted. No cable to cable joint of cable ends shall be accepted.

iv. Suitable Ground Fault Detector Interrupter (GFDI) shall be incorporated either with the inverter or with the array combiner box.

v. String/Array combiner boxes shall be secured on to walls or metal structures erected separately in the terrace.

vi. Conduits/concealed cable trays shall be provided for all DC cabling on the Roof top. Conduits/concealed cable trays shall be adequately secured on to the rooftop/wall.

vii. The AC cable type shall be PVC/XLPE insulated, suitably aluminium armored, 1100V grade multi-stranded copper conductor. Appropriate colour coding shall be used.

viii. For the DC cabling, XLPE or, XLPO insulated and sheathed, UV-stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.

ix. The DC and AC cables of adequate electrical voltage and current ratings shall be also rated for wet and outdoor use.

x. The total DC cable losses shall be maximum of 2% of the plant rated DC capacity over the specified ambient temperature range.

xi. The DC and AC cable size shall be selected to maintain losses within specified limits over the entire lengths of the cables.

xii. DC cables from array combiner box on the rooftop to DC distribution box in the control room.

xiii. DC/AC cabling between inverter and distribution boxes shall be laid inside cable duct where available or secured with conduits/concealed cable trays where duct is not available.

xiv. The DC and AC distribution boxes shall be wall mounted inside control room/open space.

xv. DC distribution box shall incorporate DC disconnect switch, lightning surge protectors, any other protection equipment, screw type terminal strips and strain- relief cable glands.

xvi. AC distribution box shall incorporate AC circuit breaker, surge voltage protectors, any other protection equipment, plant energy meter, screw type terminal strips and strain-relief cable glands.

xvii. The total AC cable losses shall be maximum of 1% of the plant AC output over the specified ambient temperature range.

xviii. All cable conduits shall be GI/HDPE type.

xix. All cable trays shall be powder coated steel or GI or equivalent.

2. CIVIL

1. For structural purpose, the panels plus support system that works as a distortion-free integral structural unit.
2. The panel assembly should at most 5m x 5m in plan area. The maximum height of panel above roof surface does not exceed 1.2m.
3. The vertical projection area of the longer side of the panels does not exceed W/100insq m where W is the gross load of the panel assembly in kg (weight of panels, connections, frames, bracings, pedestals, wiring, circuitry, etc.).
4. PV array shall be installed in the space free from any obstruction and/or shadow.
5. Drainage and roof treatment should not affected by the installation.
6. PV array shall be installed utilizing maximum space to minimize effects of shadows due to adjacent PV panel rows. The gross weight of the panel assembly should atmost 45 kg/sqm (W divided by the plan area).
7. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection ease of installation, replacement, cleaning of panels and electrical maintenance. There is at least 1m clear spacing all around the panel assembly (panel edge to panel edge between assemblies, and panel edge to parapet wall/room on sides).

8. The column spacing shall be appropriate and shall be easily accessible for maintenance point of view. The pedestal is placed directly on the roof, over existing roof treatment, without making any structural connection to the roof surface.

9. The panel assembly should have at least 4 pedestal supports. The minimum spacing between pedestals is 2.0m c/c in any direction. Each pedestal is made of cement concrete. Each pedestal can transmit at most 200kgload on roof. The plan dimension of pedestal does not exceed 450mmx450mm, and height does not exceed 300mm.

10. Ample clearance shall be provided in the layout of the inverter and DC/AC distribution boxes for adequate cooling and ease of maintenance.

11. The Supplier will supply and install required size of Water Tank, Water pump, pipe, etc. for cleaning the PV modules.

12. The supplier shall specify installation details of the PV Panel assembly 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;

b) Inter connection details inside the junction/terminal boxes;

c) Structure installation details and drawings;

d) Electrical grounding (earthing);

e) Inter-panel/Inter-row distances with allowed tolerances; and

f) Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop columns properly. All nuts and bolts shall be of very good quality stainless steel. The panel support and panel-to-support connection both must be designed to withstand adequately high wind forces. Civil Works permission does not guarantee safety against flying/falling panels in the event of a storm or any other accident.

3. MECHANICAL

1. PV panel assembly may consist of different number of modules with maximum of 10 PV modules.
2. Each panel assembly shall incorporated one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.
3. Support structure of panel assembly shall be fabricated using corrosion resistant GI or anodized aluminium or equivalent metal sections.
4. Array support structure welded joints and fasteners shall be adequately treated to resist corrosion.
5. The support structure shall be free from corrosion when installed.
6. PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Screw fasters shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames. Module fasteners/clamps shall be adequately treated to resist corrosion.
7. The support structure shall withstand wind loading of upto150km/hr. Bidder shall provide the test Certificate complying with the requirement.
8. Adequate spacing shall be provided between any two modules secured on panel assembly for improved wind resistance.
9. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25years.
10. It is required to design the grid structure (on which PV module will be installed) in such a way that all loads are transferred to the existing columns of the buildings. Such grid design should be presented to ITI, which will be certified by structural engineers.
11. The panel assembly structure should be installed in a manner to leave sufficient space for repair and maintenance aspects of the rooftops, particularly for leakages.
12. Installation of panel assembly should not tamper with the water proofing of roofs.

Array structure

1. Hot dip galvanized (minimum of 80Microns) MS mounting structures may be

used for mounting the modules/panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum isolation. However to accommodate more capacity the angle of inclination may be reduced until the plant meets the specified performance ratio requirements.

2. The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
3. The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be incompliance of latest IS4759.
4. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, and nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone.
5. Necessary protection towards rusting need to be provided either by coating or anodization.
6. The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
7. The bidder need to supply suitable structures based on the quality of roof and considering the load bearing capacity of the roof/civil structures of the proposed building.

4. ELECTRICAL:

1. LT distribution grid specifications 230V +/-5%, 50Hz and frequency variation as per IE rules.
2. The output of the inverter shall be fed into 415V, 3phase AC LT grid supplied via LT Air-circuit Breaker.
3. The inverter output shall be connected to LT line prior to the LT/DG change over switch. The mandatory islanding protection provided by inverter shall isolate the Solar PV power plant.
4. The time of day (TOD) 3phase, digital AC load energy meter shall be installed in the Main Distribution Box to monitor energy drawn by building load and in the AC distribution box to monitor energy generated by Solar PV power plant.

5. The load energy meter operation shall be completely independent of the plant AC energy meter.
6. The energy meters shall be provided with communication interface and necessary data cables for remote monitoring.

5. DATA ACQUISITION SYSTEM (SCADA)

1. Data Acquisition System (SCADA) shall be provided for both Grid connected Solar PV power plants.
2. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
3. String and array DC Voltage, Current and Power, Inverter AC output voltage and current, AC power, Power Factor and AC energy and frequency shall be monitored.
4. The time interval between two sets of data shall not be more than 3minutes. Data Acquisition System shall have real time clock, internal reliable battery backup and data storage capacity to record data round the clock for a period of minimum one year.
5. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
6. The date shall be recorded in a common worksheet chronologically datewise.

   The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
7. All instantaneous data shall be shown on the computer screen.
8. Software shall be provided for USB download and analysis of DC and AC parametric data for the plant.
9. A desktop computer with latest configuration along with LED Display (32″ Min) shall be provided
10. Provision for internet monitoring and download of data shall be also incorporated.
11. Software for centralized internet monitoring system shall be also provided for download and analysis of cumulative data of the plant and the data of the solar radiation and environment monitoring system.
12. A data logging system (Hardware and Software) for plant control and monitoring shall be provided.

13. Remote Supervisory Control and data acquisition through SCADA or equivalent software at the purchasers location with latest software/hardware configuration and service connectivity for online/real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier.

14. **Disconnection and Islanding:** Disconnection of the PV plant in the event of loss of the main grid supply is to be achieved by inbuilt protection within the power conditioner; this may be achieved through rate of change of current, phase angle, unbalanced voltage or reactive load variants.

15. Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are: Neutral voltage displacement, Over current, Earth fault and reverse power.

    In case of the above cases, tripping time should be less than 15seconds. Response time in case of grid failure due to switch off or failure based shutdown should be well within seconds. In case of use of two PCUs capacity, suitable equipment for synchronizing the AC output of both the PCUs to the AC DB/Grid should be provided.

16. Automatic reconnection after the grid failure should restore: PCU shall have the facility to reconnect the PCU automatically to the grid, following restoration of grid, subsequent to grid failure condition. And also the facility to connect the system with load at grid failure condition for essential power supply.

17. ITI must be provided with access to online monitoring of the system along with user authority.

18. Suitable equipment for DG synchronizations shall be provided.

6. OPERATING ENVIRONMENT

a. Temperature: 5 to 55Deg.C.

b. Relative Humidity: 100% @ 40 Deg.C

c. Precipitation: 2.46mm per day(Annual average)

d. Clearness Index: 0.62 (Annual average)

e. Wind Speed: up to 150km/hr.

f. Corrosion: high

g. Dust: moderate to high
h. Bird Interference: high
i. Bird Droppings: frequent and large
j. Trees: large and in abundance.

7. CONNECTIVITY

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

Plant Capacity	Connecting voltage
Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Solar PV Power Plant under Grid Connected ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.	3 Phase/415V/11KV/66KV

Utilities may have voltage levels other than above; DISCOMS may be consulted before Finalization of the voltage level and specification is made accordingly.

8. TESTING, CERTIFICATION AND APPROVAL SCHEDULE

All components, sub-assemblies and system test parameters shall be verified onsite to ensure they meet the specifications.

A. Plant Power Performance Ratio Testing

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance to qualify for release of applicable incentive. Minimum CUF of 15% should be maintained for a period of 5 years. Correction shall be applied based on available solar radiation.

B. Plant Energy Performance Ratio Testing

The overall energy performance ratio of the system shall exceed 75%.(Sum total of the system energy losses shall not exceed 25%). For global solar insolation in the Plane of Array (PoA) of 5kWh/m^2(5 Peak Sun Hours) for the day.1200kWp PV power plant AC energy output shall be minimum of 4500kWh(1200kWx0.75x5hrs.) for the day.

9. OPERATION AND MAINTENANCE (O&M) SCHEDULE

i. Cleaning of Solar PV modules with softwater, wet and dry mops: Weekly

ii. DC String/Array and AC Inverter monitoring: Continuous and computerized.

iii. AC Energy monitoring: Continuous and computerized.

iv. Visual Inspection of the plant: Monthly

v. Functional Checks of Protection Components and Switchgear: Quarterly.

vi. Spring Clean PV Array and Installation Area: Quarterly.

vii. Inverter, transformer, data acquisition, energy meters and power evacuation checks: Half Yearly.

viii. Support structure and terrace water-proofing checks: Yearly.

ix. O&M log sheet shall be provided and maintained.

x. The repair/replacement work shall be completed within 48 hours from the time of reporting the fault.

xi. A half yearly performance report of the plant inclusive of energy generation data shall be provided as per approved format. All recorded data for the first 5 years shall be preserved in both manual and computer format and submitted and handover.

10. COMPREHENSIVE MAINTENANCE CONTRACT (CMC)

(i) The complete Solar PV Power Plants must be guaranteed against any manufacturing/ design/ installation defects for a minimum period of 5years.

(ii) PV modules used in Solar PV Power Plants must be guaranteed for their output peak watt capacity, which should not be less than 90% at the end of 12years and 80% at the end of 25years.

(iii) During the CMC period, ITI will have all the rights to cross check the performance of the Solar PV Power Plants. ITI may carry out the frequent inspections of the Solar PV Power Plants installed and randomly pickup its components to get them tested at Govt./MNRE approved any test center. If during such tests any part is not found as per the specified technical parameters, ITI will take the necessary action. The decision of ITI in this regard will be final and binding on the bidder.

a. Warranties and Guarantees

1. **Inverter:** Workmanship/product replacement for 5 years,
2. **Power Evacuation and Metering Equipment:** Workmanship/product replacement for 10 years,
3. **BoS:** Parts and Workmanship for10 years,.
4. **Power Plant Installation:** Workmanship for 10years,
5. **PV Array Installation:** Structural for 30years.
6. **Power Plant Power Performance Ratio:** min. 75%
7. **Power Plant Energy Performance Ratio**: min. 75%

APPENDIX-I(A)

Bidder's Information Sheet

Bidder shall provide the information requested in the corresponding Information Sheet included here under.

Sr. No.	Particulars	
1.	Name & Mailing Address of firm	
2.	Contact Person Name, Designation & Contact No.	
3.	E-mail Address for correspondence	
4.	Firm Website Address	
5.	Firm Status (Private / PSU / Incorporate /Proprietor)	
6.	Establish Year of firm	
7.	PAN/TAN No.	
8.	Firm Registration No/ROC	
9.	STR/VAT/TIN No	
10.	Turnover 2017-18, 2018-19 &2019-20 (in Lakhs)	
11.	Company Profile (<100 words)	
12.	Skilled manpower	
13.	Experience in SPV Power Plant (<100 words)	
14.	Experience in other solar projects (<100words)	
15.	Solar related Product Range	
16.	Experience in Guarantee, Maintenance & After Sales Services (Years)	
17.	Accreditation	
18.	List of ISI, ISO, Other certificate.	
19.	Technical specification for solar photovoltaic cell/panel/module-make	
20.	Technical specification for Battery-optional–quantity and make	
21.	Technical specification for Junction boxes-quantity and make	
22.	Technical specification for Inverter/ Controller quantity and make	

Sr. No.	Particulars	
23.	Technical specification for Cables- Quantity and make	
24.	Other Technical specification, if any	
25.	Has any Govt./Undertaking ever Debarred the company/firm. If so, provide the details	
26.	Special Remarks, if any	
27.	Attached are copies of the necessary original documents.	
I.		
II.		
III.		

It is certified that the information provided above is true to the best of my knowledge and belief. If any information found to be concealed, suppressed or incorrect at later date, our tender shall be liable to be rejected and our company may be debarred from executing any business with ITI.

Date:

Signature of Bidder:

Name:

Designation:

APPENDIX-I(B)

Annual Turnover

Each Bidder must fill in this form including private/public limited company.

Annual Turnover Data for last3 Years (FY2017-18,2018-19&2019-20)	
Year	Rs in Lac
2017-18	
2018-19	
2019-20	
Total	

The information supplied should be the Annual Turnover of the Bidder in terms of the amounts billed to clients for each year for work in progress or completed.

Signature &Seal of Practicing Chartered Accountant

Signature of Applicant:

Membership No.:
UDIN No:

APPENDIX-II

PERFORMA (EMD) BANK GUARANTEE TOWARDS EARNEST MONEY DEPOSIT

Bank Guarantee No.
Date:

To,

DGM (CENTRAL SERVICES)
ITI Limited, PALAKKAD PLANT,
KANJIKODE WEST (P.O.), PALAKKAD,
KERALA 678623

Dear Sir

In accordance with Invitation for Bids under your Bid Document No…….. (Bid Document no.), M/s. **…… (Bidder's Name)** having its registered office at

…….....(here in after called the bidder) wish to participate in the said Bid for — Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Solar PV Power Plant under Grid Connected ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WSET (P.O.), PALAKKAD, KERALA 678623.

As an irrevocable bank guarantee against Bid Security for an amount of……(Amount of EMD in Rs.) valid upto……required to be submitted by the Bidder as a condition precedent for participation in the said Bid which amount is liable to be forfeited on the happening of any contingencies mentioned in the Bidding Documents.

We, the **……(Bank Name & address)** guarantee and undertake to pay immediately on demand by M/s ITI Ltd, the amount of ……(Amount of EMD in Rs.) without any reservation, protest, demand and recourse. Any such demand made by the ITI shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder.

This Guarantee shall be irrevocable and shall remain valid upto…….(date of expiry of Guarantee). If any further extension of this guarantee is required, the same

shall be extended to such required period (not exceeding one year) on receiving instructions from **M/s.**

…….(Bidder's Name) on whose behalf this guarantee is issued.

This guarantee will remain inforce upto and including……..(date of expiry of Guarantee), and any demand in respect thereof must reach the Bank not later than the above date.

Notwithstanding anything contained herein above:

i) Our liability under this guarantee shall not exceed……(Amount of EMD in Rs.)

ii) This bank guarantee shall be valid up to…….(date of expiry of Guarantee).

iii) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if we receive from you a written claim or demand on or before…….(date of expiry of Guarantee).

The said letter of guarantee has been transmitted through SFMS gateway to your bank. It is advised that in your own interest, you may verify the genuineness of above letter of guarantee from your bank/branch.

Dated the…….date of …… 2021.

Bank Name
(Sealed &signed)

APPENDIX-III

Bidder's Banker details of Payment

1. Name & Address :

2. Contact No. :

3. Name of the bankers :

4. MICR Code No.:

5. Bank Account No.:

6. RTGS/IFSC Code No. :

7. PAN No. :

8. Service Tax No. :

9. TIN No/VAT No. :

10. G.S.T. No. :

APPENDIX- IV

Experience for Supply and Commissioning of Solar Power Plants

Sr. No.	Name of Project& WO/PO/LOA Number	Plant Capacity	Year of Work	Current Status of Project/Client's Certificate

Note : Self-attested copy of work order needs to be attached

Signature of Bidder

Signature &Seal of Practicing Chartered Accountant

Name Membership No.:

Designation UDIN No:

Company

Date

APPENDIX- V

SITE VISIT REPORT LETTER

Date:_____

To,
DGM (CENTRAL SERVICES)
ITI Limited, PALAKKAD PLANT,
PALAKKAD MAIN RD, KANJIKODE,
KERALA 678623

Sub. : Site Visit Report for Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.

Ref.: ITI's Tender No.----------

This has reference to above referred tender of electrification at ITI Limited, PALAKKAD PLANT, KANJIKODE WSET (P.O.), PALAKKAD, KERALA 678623 to be electrified through Solar Power.

I/We hereby declare that we have visited site.

I/We made ourselves acquainted with site conditions, approach to site, requirement of land, soil conditions, availability of water, requirement of tender conditions, etc. I/We verified all details required to execute the projects. I/We have no problems in undertaking the projects and complete them in the given time period.

Thanking you,
Yours faithfully

(Signature of Bidder) (Signature ITI authorities)

Name of Bidder- Designation

APPENDIX-VI

DECLARATION
(Power of Attorney)

(To be submitted on Rs.100/- stamp paper)

I/We,……..

M/s.....having Permanent address.....is interested in participating tender for Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.

I/We authorized following person to participate in the tender floated by ITI Limited.

I/We here by authorize following person from our company to quote in the tender for this project.

1.
2.

I/We will be fully responsible for all aspects of tender for the total work executed by our company in the above project during the tenure of the project inclusive of 5years Operation & Maintenance period. And also in case if our company does not complete the work in stipulated time, then we shall be responsible.

(Signature of Tenderer

Company Head) Name: _

_____

Date :

Designation:_____

Place :

Seal:

APPENDIX-VII

Tender Ref.:

CERTIFICATE FOR NON-BLACKLISTING

Date

To
DGM (CENTRAL SERVICES)
ITI Limited, PALAKKAD PLANT,
KANJIKODE WEST (P.O.), PALAKKAD,
KERALA 678623

Dear Sir,

We, M/s……..confirm that we are not blacklisted in any PSUs/Government/Semi Government/Quasi Government department in India, as on date of submission of bid. This undertaking is submitted to the best of my knowledge. If at any stage it is found wrong, then ITI may take necessary action against us.

On behalf of company……

Name and Designation

Signed and sealed (who has signed the tender)

APPENDIX-VIII

PRICE BID FORMAT

I/We, M/s.....having permanent address.....is please to quote our minimum rate for Survey, Design, Supply, Installation, Testing and Commissioning of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623.

Sl. No.	Description of Work	Qty	Basic Price In Rs	GST (%)	Total Value in Rs
1	Survey, Design, Supply, Installation, Testing of 1200KWp Grid Connected Solar PV Power Plant under ROOFTOP/GROUNDMOUNTED Net-Metering Policy with 05Years of Comprehensive Operation & Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623 **(Without Solar Module)**	One Set		18	
2	Installation and Commissioning of complete 1200KW Grid Connected Solar PV Power Plant under ROOFTOP/GROUND MOUNTED Net-Metering Policy with 05Years of Comprehensive Maintenance Contract at ITI Limited, PALAKKAD PLANT, KANJIKODE WEST (P.O.), PALAKKAD, KERALA 678623 **(Including Solar Module)**	One Job		18	

(Signature of Tenderer Company Head)

Name:_____

_____

Date :

Designation:_____

Place :

Seal:

Appendix-IX

DETAILS OF SPV MODULES

SOLAR PHOTOVOLTAIC MODULE

Poly-Crystalline Series **(40Wp-325Wp)**

AAn ISO 9001-2015, ISO 14001-2015 & ISO 45001-2018 Certified Company

ITI offers high efficiency Solar Photovoltaic module for long and consistent performance & Reliable operation for both On- Grid and Off-Grid Power Systems. Our manufacturing facility is accredited with MNRE Guideline; hence they comply with Global Standards.

Highlights

- **Super Module Efficiency as per International Benchmark**
- **Positive Power Tolerance upto + 2%**
- **Anti Reflective Coated Toughened Glass**
- **Sustain Heavy Wind & Snow Loads**
- **Sand and Dust Storm Resistant**
- **System Voltage- 1500 VDC to Reduce BOS Cost**
- **IP 65 Junction Box with MC-4 Connectors**

ITI Limited
Mirzapur Road
Naini, Prayagraj (UP)
Pin-211010

ISO 9001 2015 ISO 14001 ISO 45001 BIS

Phone: 0532-268-6008
M. No. : 6307182604/9450605406
E-mail: atul_nni@itiltd.co.in
Web : www.itiltd.in

ITI Limited

Solar Photovoltaic Module

Poly-Crystalline Series **(40Wp - 325Wp)**

ITI offers high efficiency Solar Photovoltaic modules for long and consistent performance & reliable operations for both On- Grid and Off-Grid Power Systems.

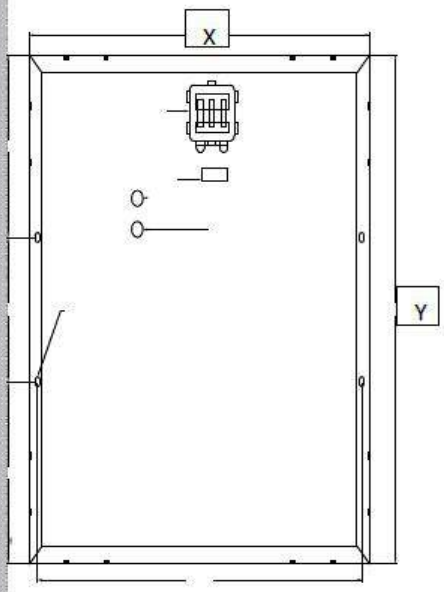
Salient Features

- High power modules precisely manufactured to achieve better module conversion efficiency in the industries.
- High efficiency Polycrystalline Silicon Solar Cells.
- Lamination using multi layered BACK SHEET, Toughened glass and EVA to provides environmental protection.
- Rugged & weather-proof Junction box for output connections.
- Anodized aluminum frame provides structural support for mounting and shock resistance.

Power Warranty: 90% for first 10 years and 80% for 25 years.

Specifications:

- Glass Type : 3.2mm thick (Low Iron & Tempered, ARC)
- Operating Temperature : -40° C to +85° C
- Storage Temperature : -40° C to +85° C
- Coefficient α (I_{sc}) [%/°C] : 0.040 or better
- Coefficient β (V_{oc}) [%/°C] : -0.320 or better
- Coefficient Ɣ (P_{mp}) [%/°C] : -0.390 or better



An ISO 9001-2015, ISO 14001-2015 & ISO 45001-2018 Certified Company

Typical Electrical Characteristics:

Model No.	ITI325 PF72	ITI320 PF72	ITI305 PF72	ITI250 PF60	ITI075 PC36	ITI060 PC36	ITI050 PC36	ITI040 PC36
Nominal Power (Wp)	325	320	305	250	75	60	50	40
Maximum Power Voltage (V_{mp}) (V)	38.95	38.80	38.23	31.86	19.12	19.12	19.12	19.48
Maximum Operating Current (I_{mp}) (A)	8.45	8.39	8.10	8.10	4.05	3.24	2.70	2.11
Open Circuit Voltage (V_{oc}) (V)	45.72	45.58	45.00	37.50	22.50	22.50	22.50	22.86
Short Circuit Current (I_{sc}) (A)	8.95	8.91	8.80	8.80	4.40	3.52	2.93	2.24
Efficiency (%)	>16			>15				
Maximum System Voltage	1500V DC				1000V DC			
Tolerance of Power	+ 2%							
Length of Module (mm) (X)	1979			1660	788	647	553	436
Width of Module (mm) (Y)	997				665			
Thickness of Module (mm)	35							

*I-V Parameters are Tested at STC (Irradiance of 1000W/m², AM 1.5G and Temperature 25°C)

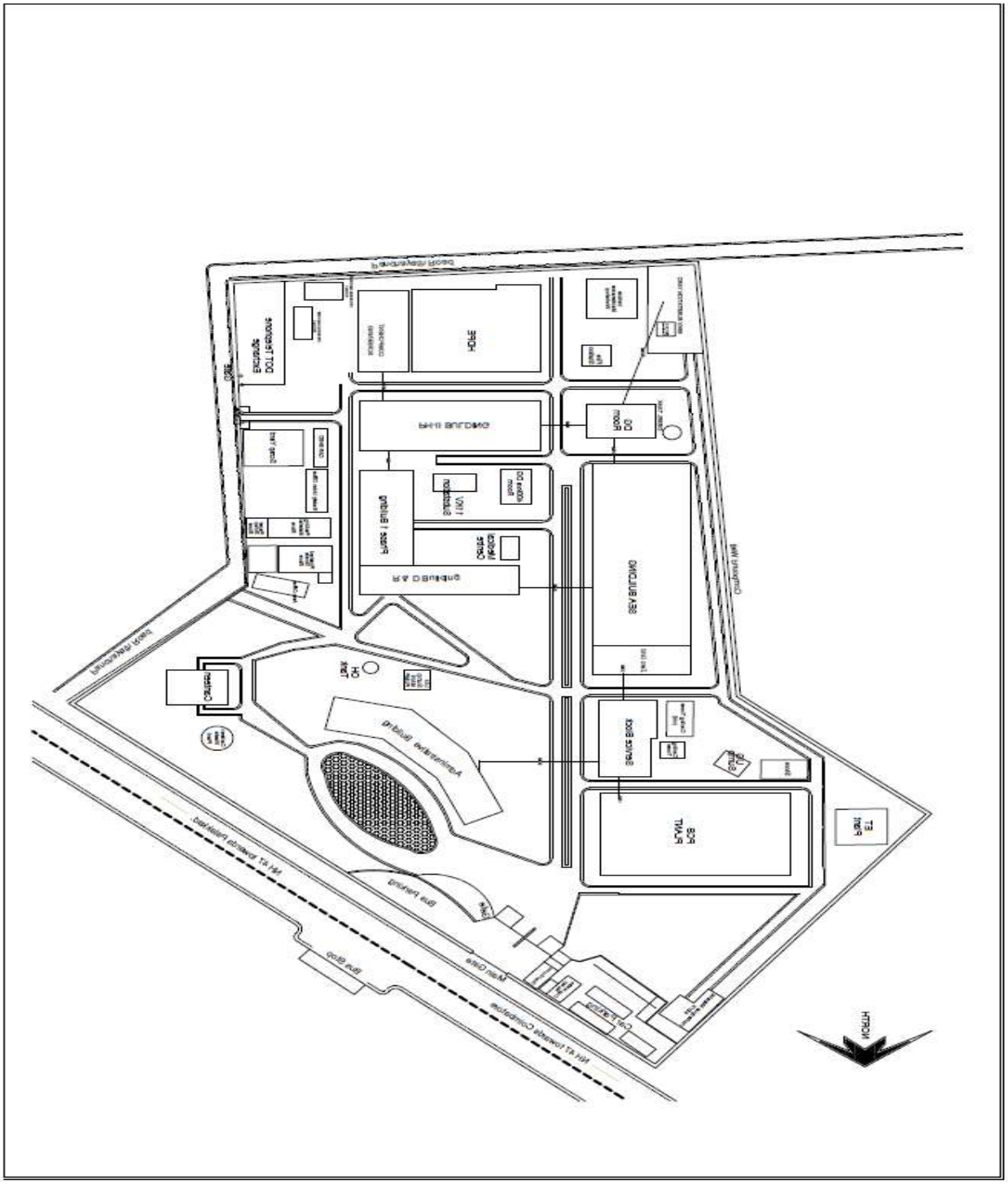
ITI Limited
Mirzapur Road,
Naini, Prayagraj (UP)
Pin-211010

BIS

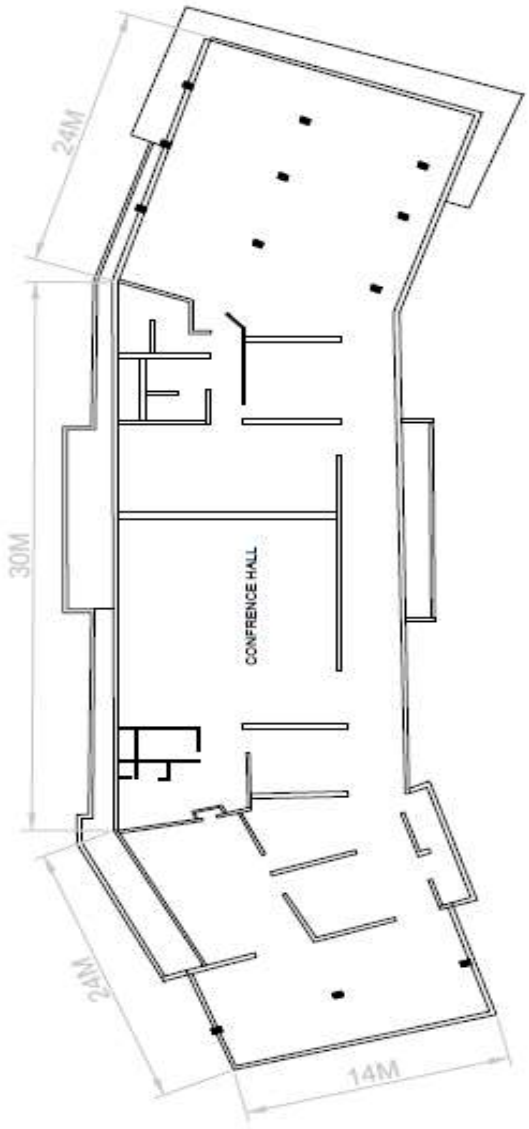
Phone : 0532-268-6008
M. No. : 6307182604/9450605406
E-mail : atul_nni@itiltd.co.in
Web :www.itiltd.in

Appendix-X

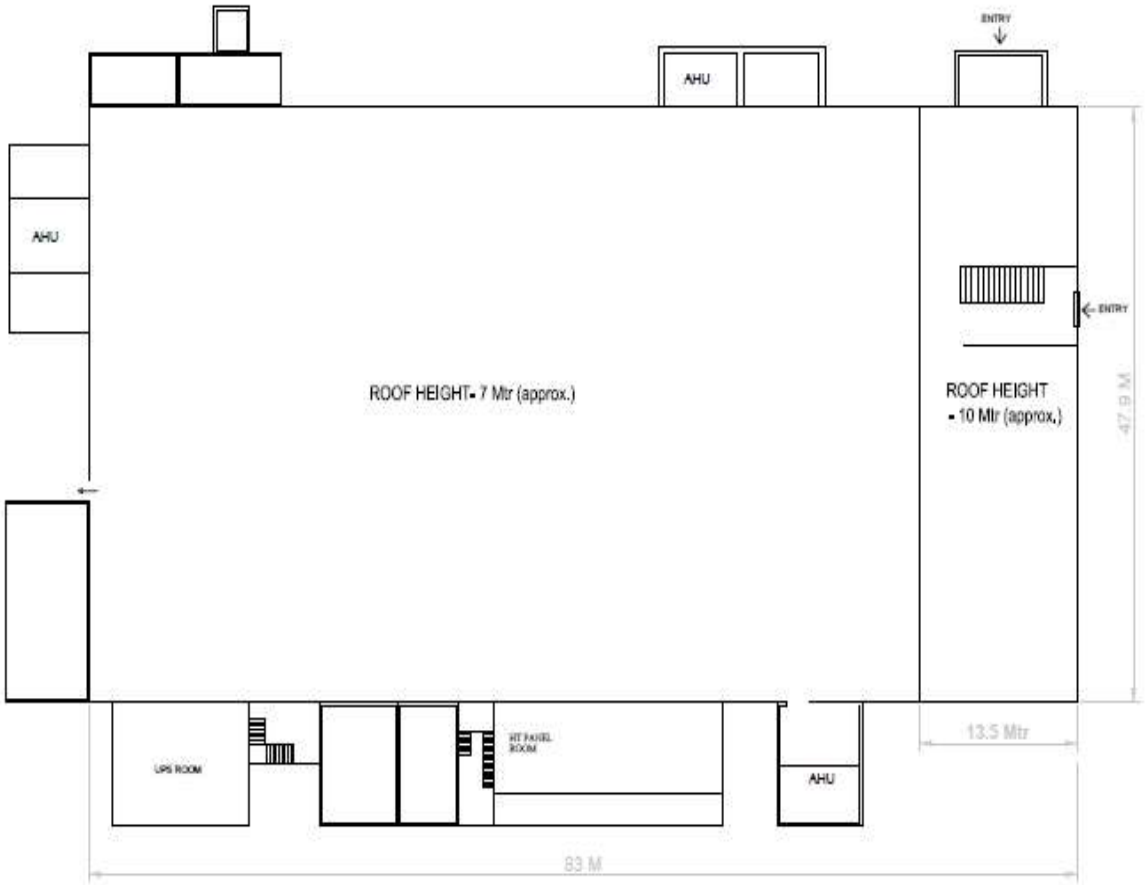
SITE AND BUILDING PLAN



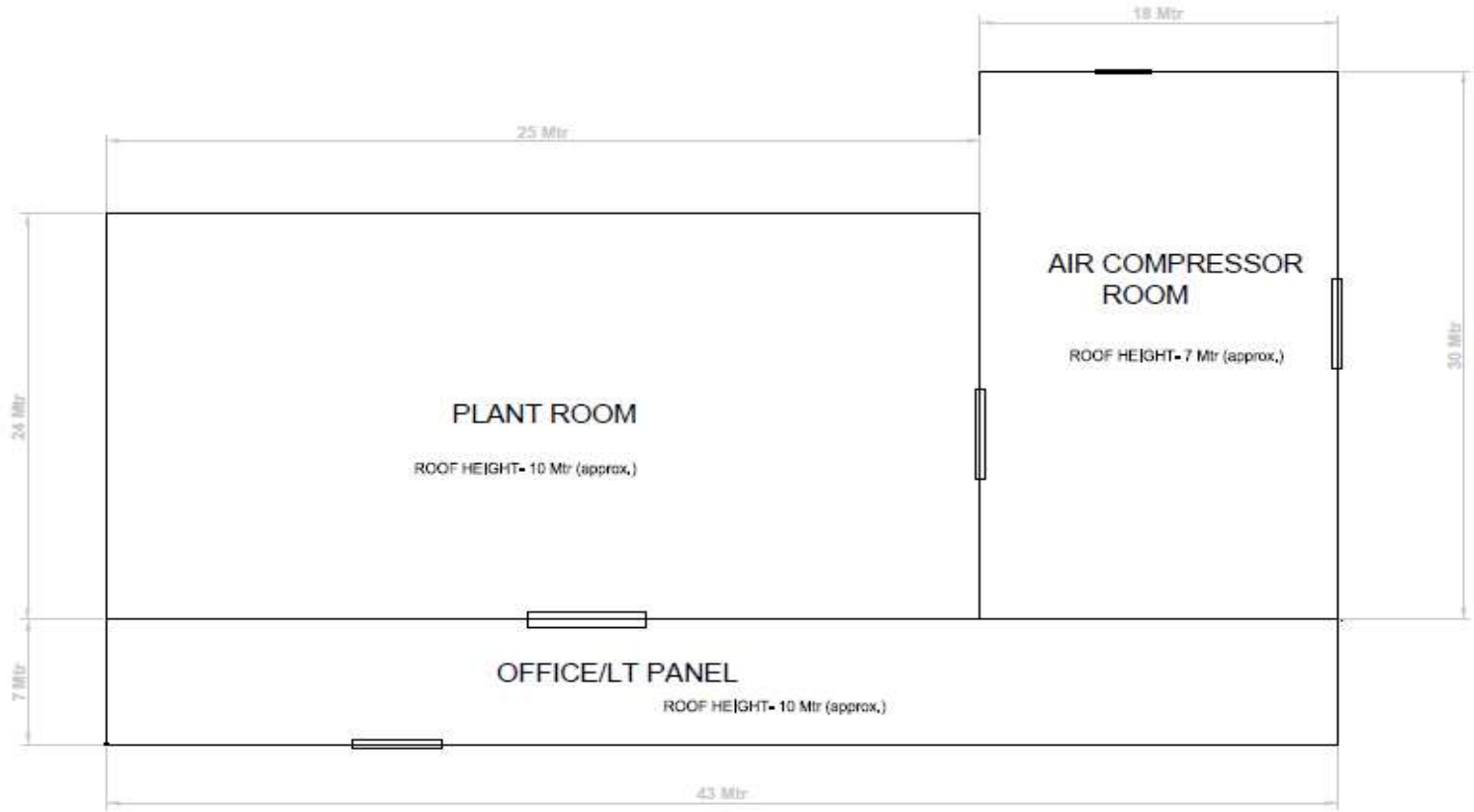
SITE PLAN



ADMINISTRATIVE BUILDING

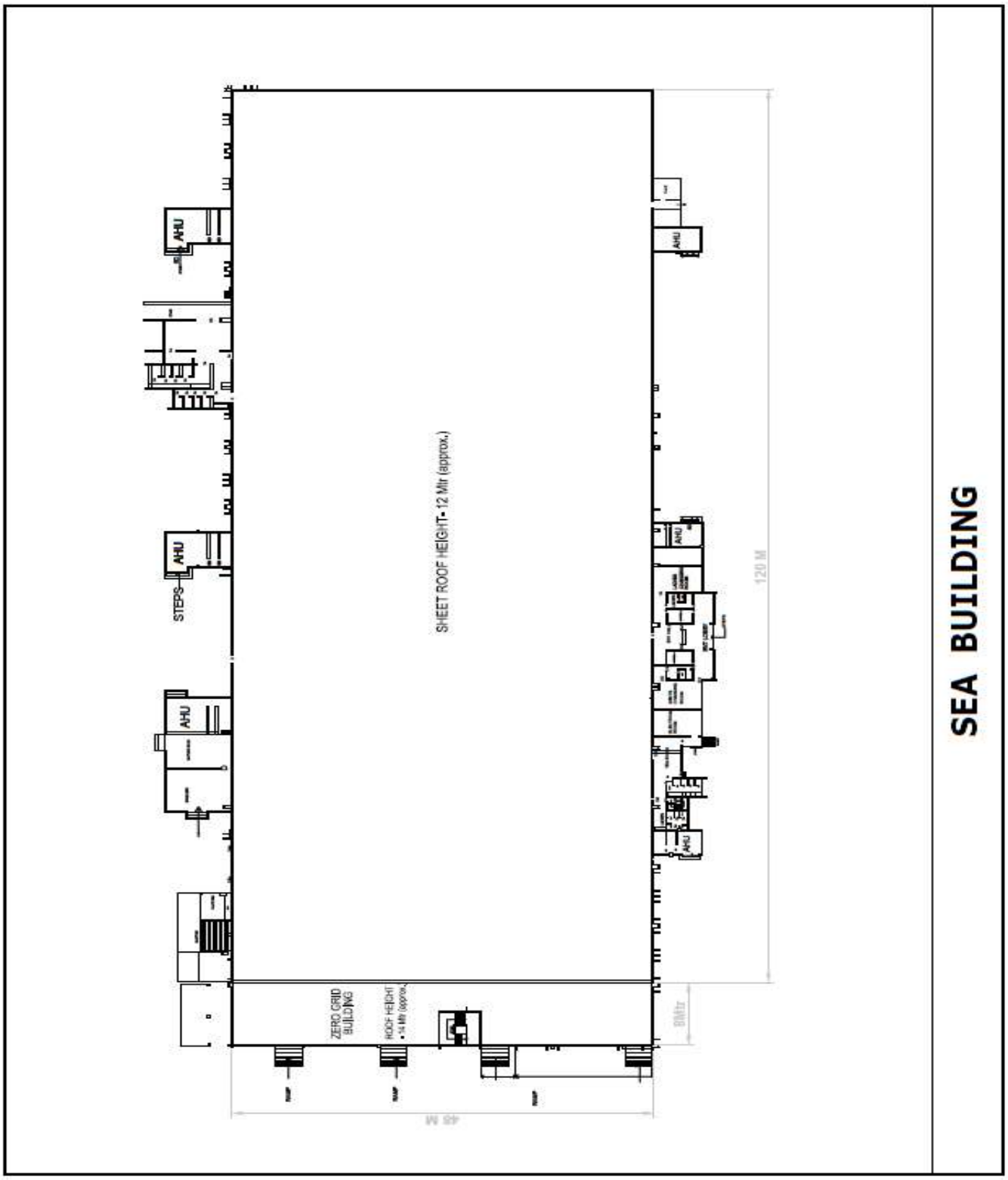


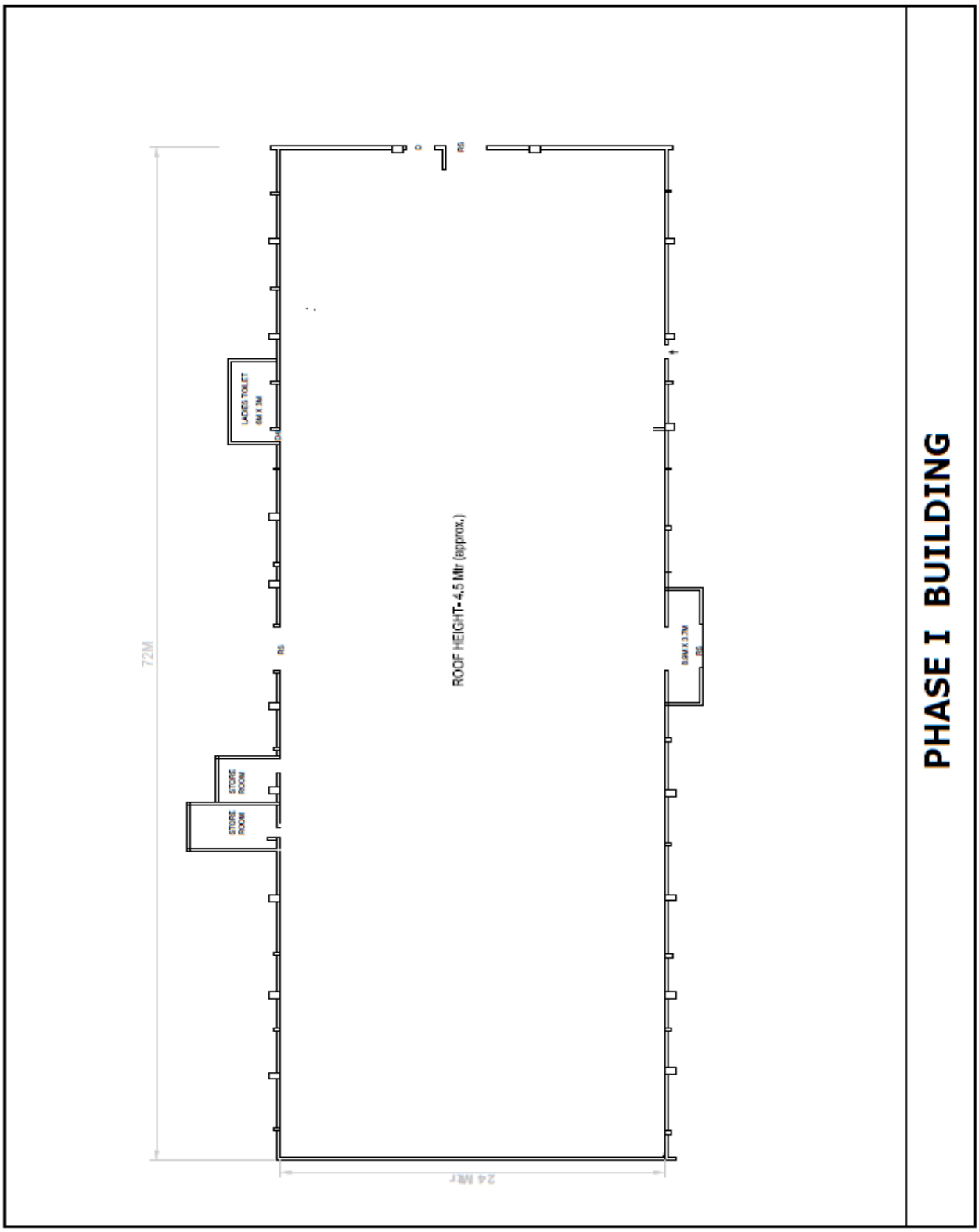
PCB BUILDING

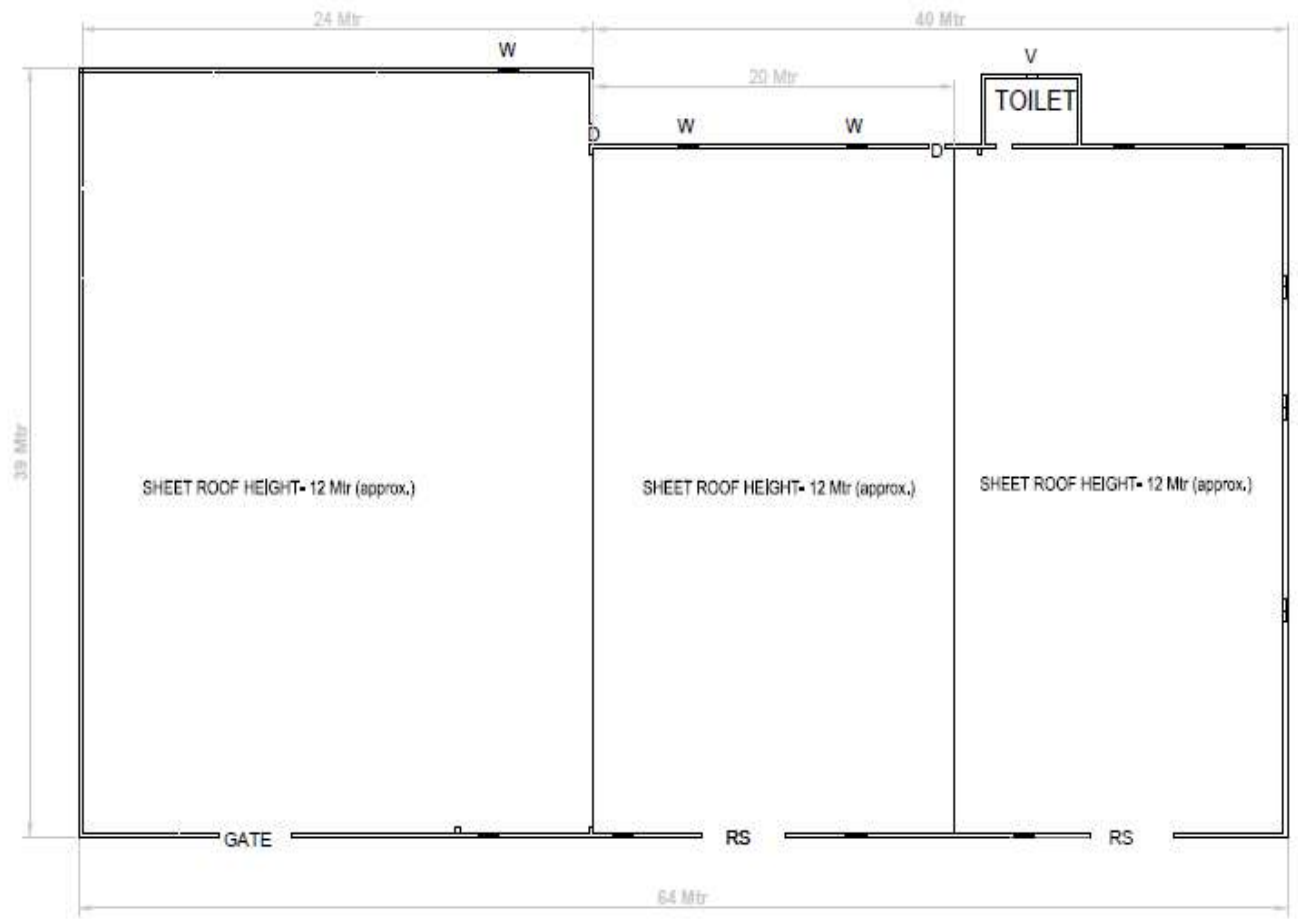


SERVICE BLOCK

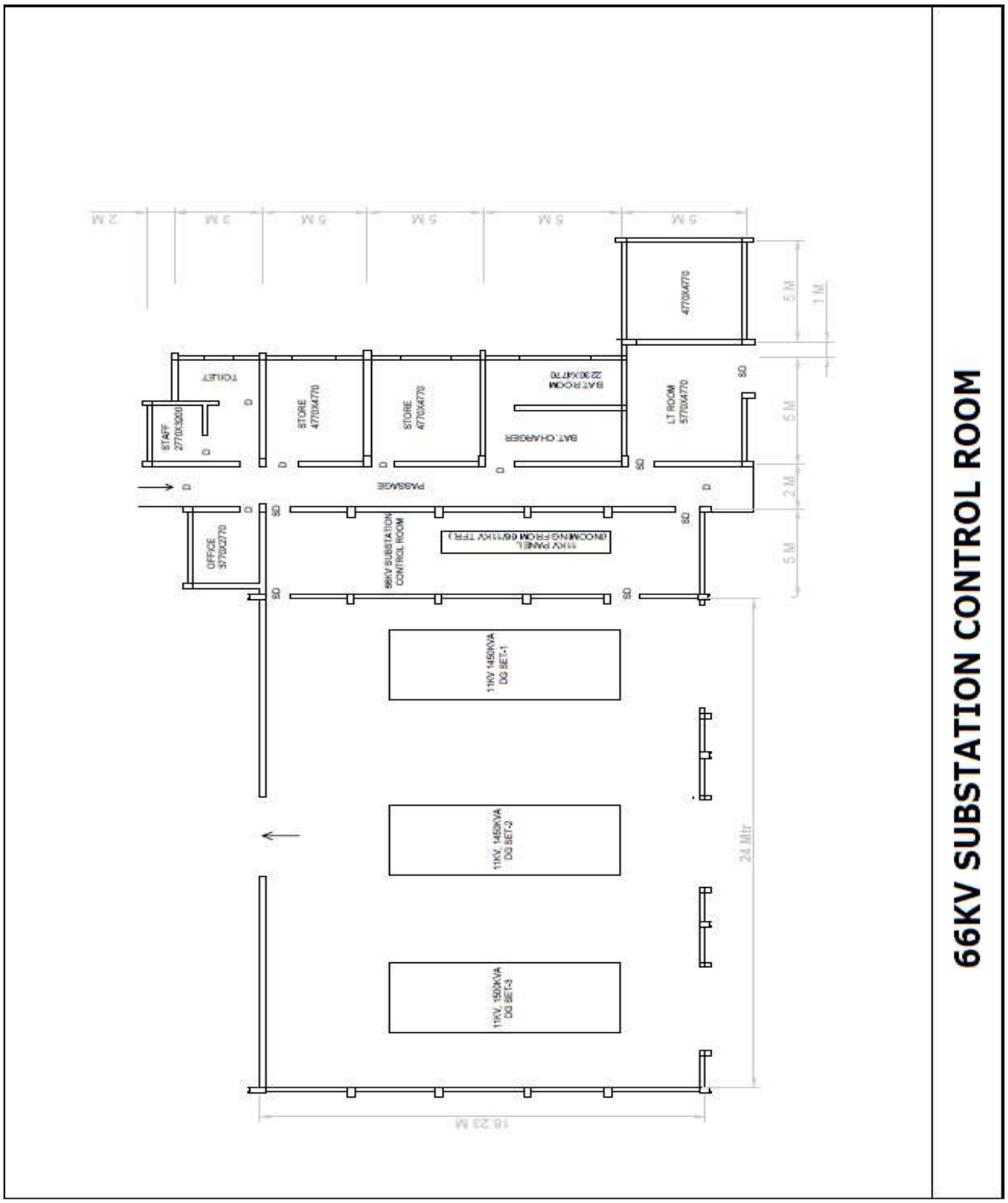
SEA AND ZERO RID BUILDING




PHASE I BUILDING
ROOF HEIGHT-4.5 Mtr (approx.)
LADIES TOILET
STORE ROOM
STORE ROOM
72M
24 Mtr



HDPE BUILDING


66KV SUBSTATION CONTROL ROOM
STAFF
STORE
STORE
BAT CHARGER
LT ROOM
OFFICE
11KV 1450KVA DG SET-1
11KV, 1450KVA DG SET-2
11KV, 1500KVA DG SET-3
24 Mtr

Appendix-XI

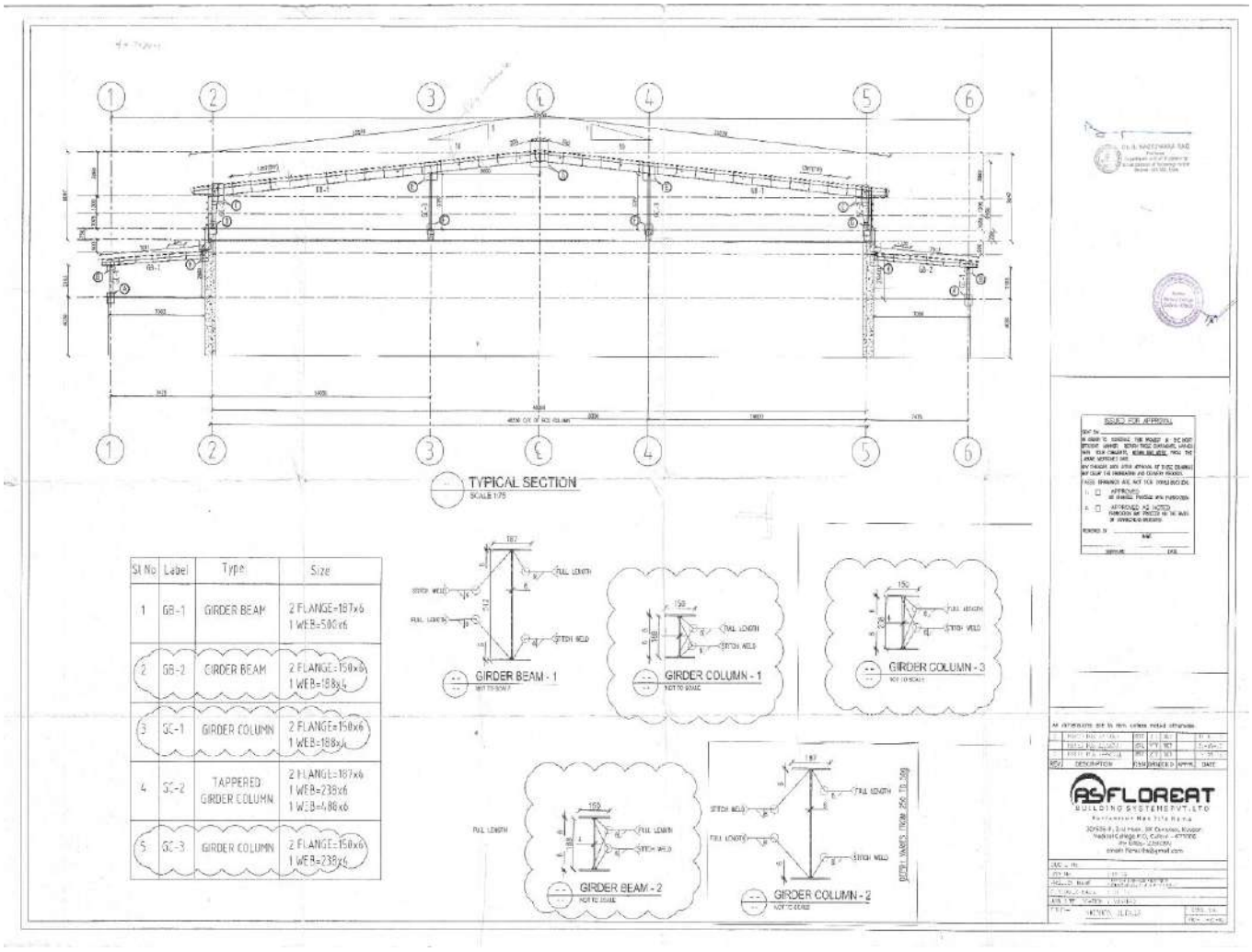
Geo Location and Roof top area of Buildings

Sl. No.	Site Details	*Geo location*	*Roof top Capacity*
1	Administration Building	10°47'42″N 76°44'15″E	450sq.m
2	PCB Building	10°47'43″N 76°44'20″E	2500sq.m
3	Service Block	10°47'41″N 76°44'18″E	1200sq.m
4	Zero grid	10°47'39″N 76°44'18″E	270sq.m
5	SEA Building	10°47'37″N 76°44'18″E	5750sq.m
6	Phase-I Building	10°47'37″N 76°44'14″E	1320 sq.m
7	HDPE Building	10°47'33″N 76°44'14″E	2700sq.m
TOTAL ROOF TOP AREA			**14190Sq.m**

Appendix-XII

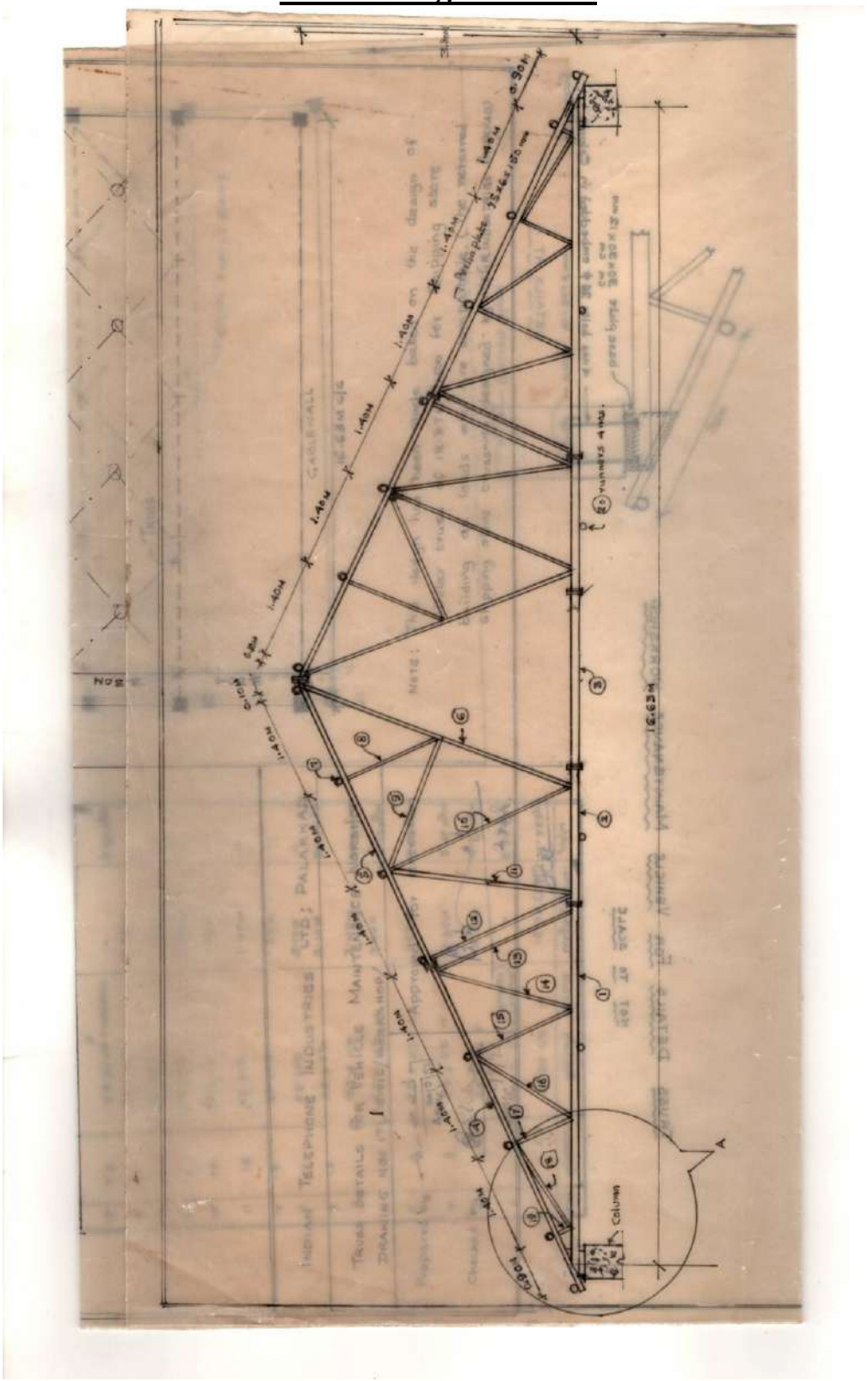
Structural Details of the Sheet Roof Buildings

SEA Building

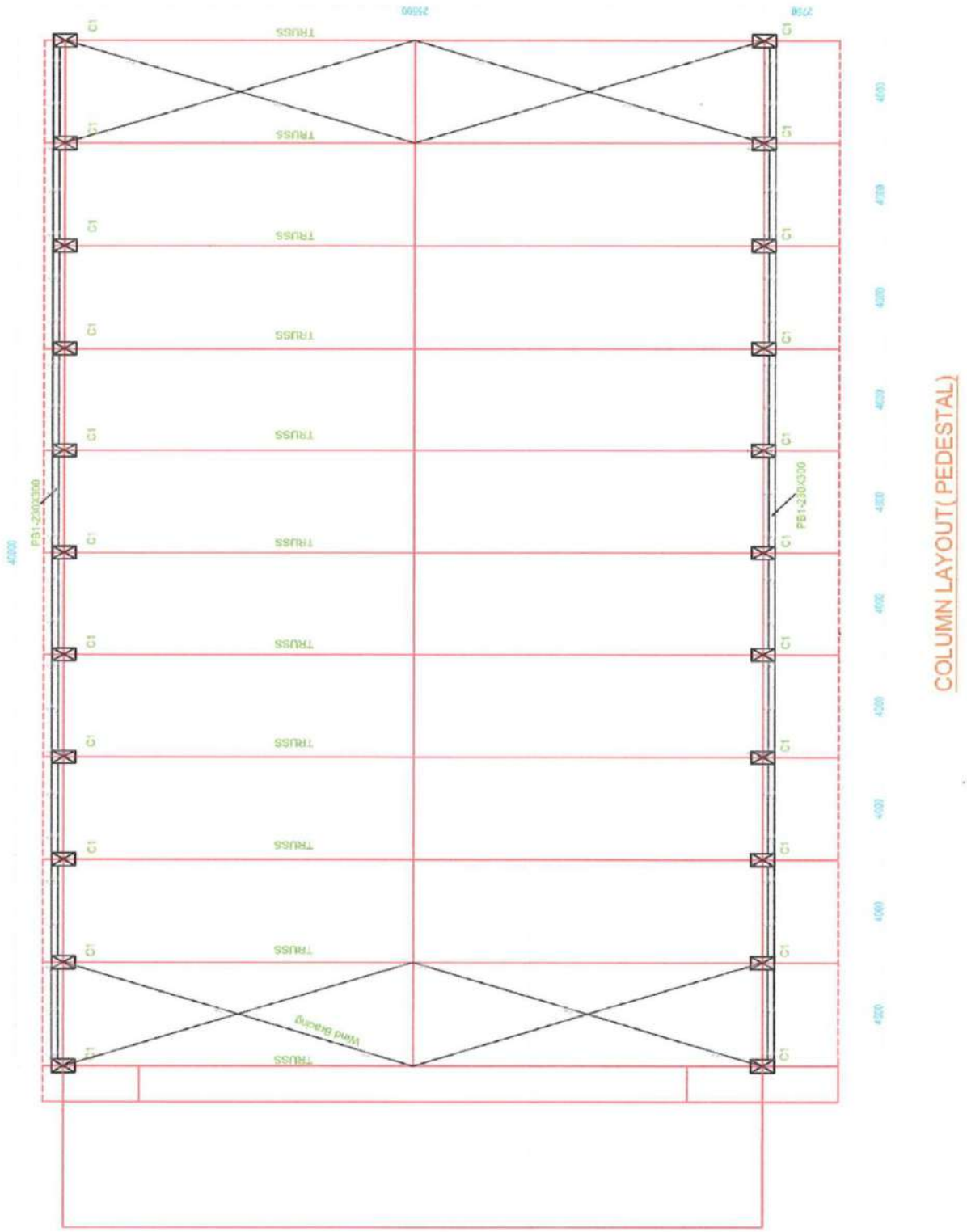


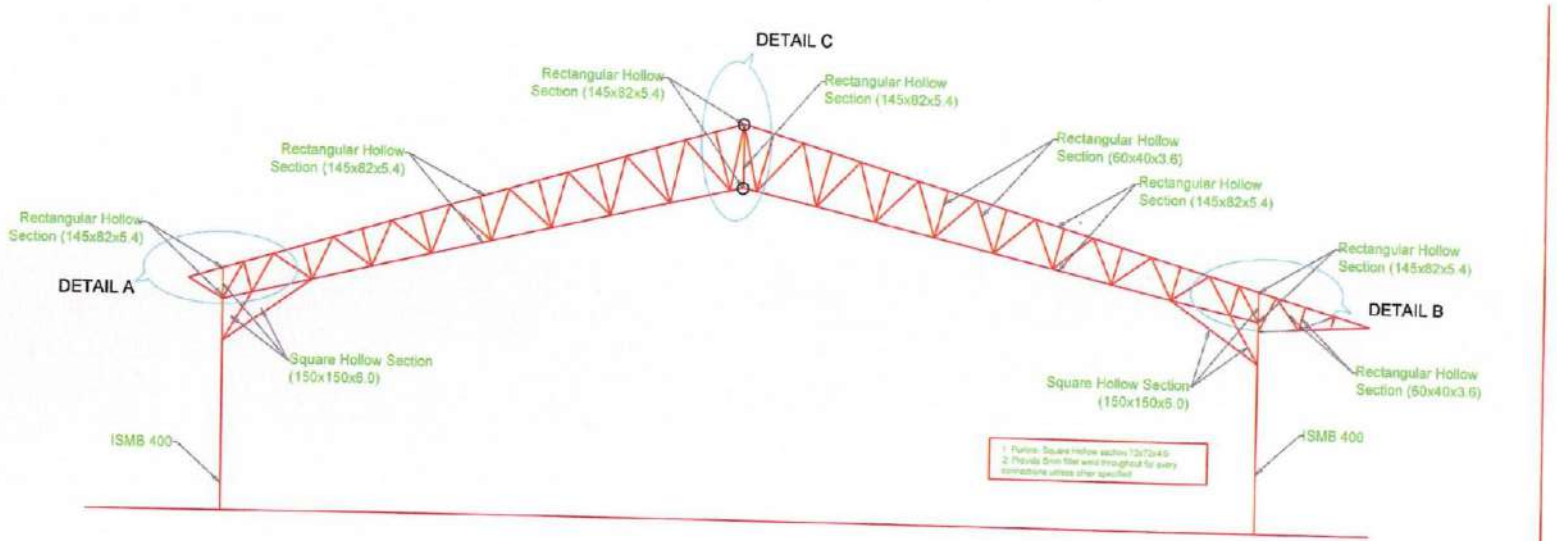
Sl No	Label	Type	Size
1	GB-1	GIRDER BEAM	2 FLANGE=187x6 1 WEB=500x6
2	GB-2	GIRDER BEAM	2 FLANGE=150x6 1 WEB=188x6
3	GC-1	GIRDER COLUMN	2 FLANGE=150x6 1 WEB=188x6
4	GC-2	TAPPERED GIRDER COLUMN	2 FLANGE=187x6 1 WEB=238x6 1 WEB=486x6
5	GC-3	GIRDER COLUMN	2 FLANGE=150x6 1 WEB=238x6

HDPE Hanger 1 and 2



HDPE Hanger-3





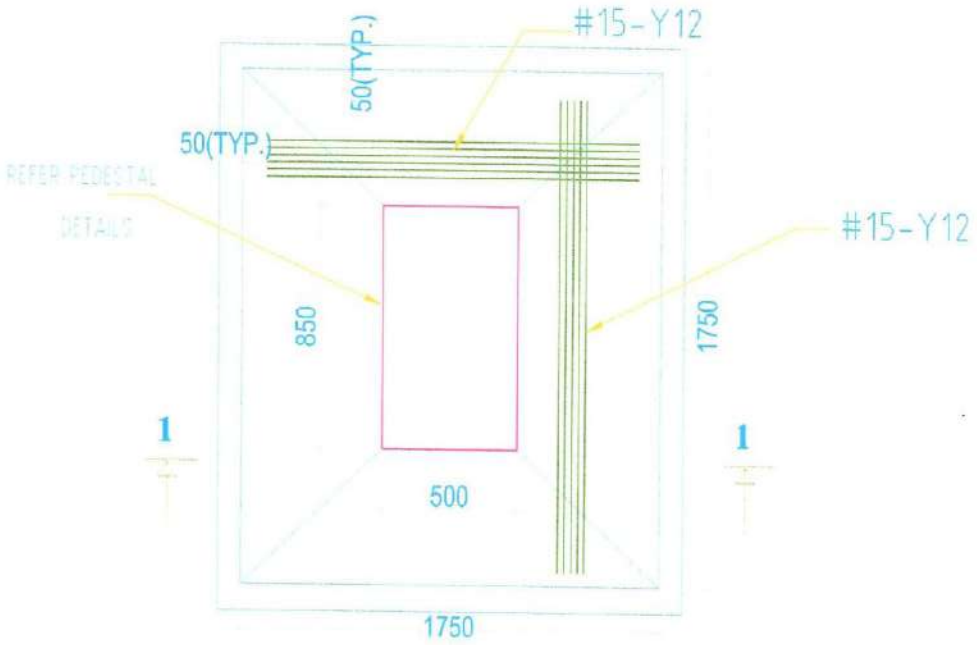
ELEVATION- STEEL MEMBERS

Wind Bracing: 72 x 72 x 2.6 SHS interconnected by 10mm dia bolts at crossings

2500
PEDESTAL
300
200
100
50
100
50MM(TYP)
SECTION - 1-1

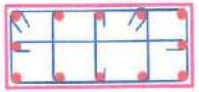
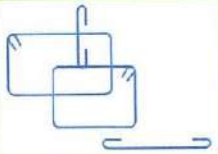
FOOTING SCHEDULE

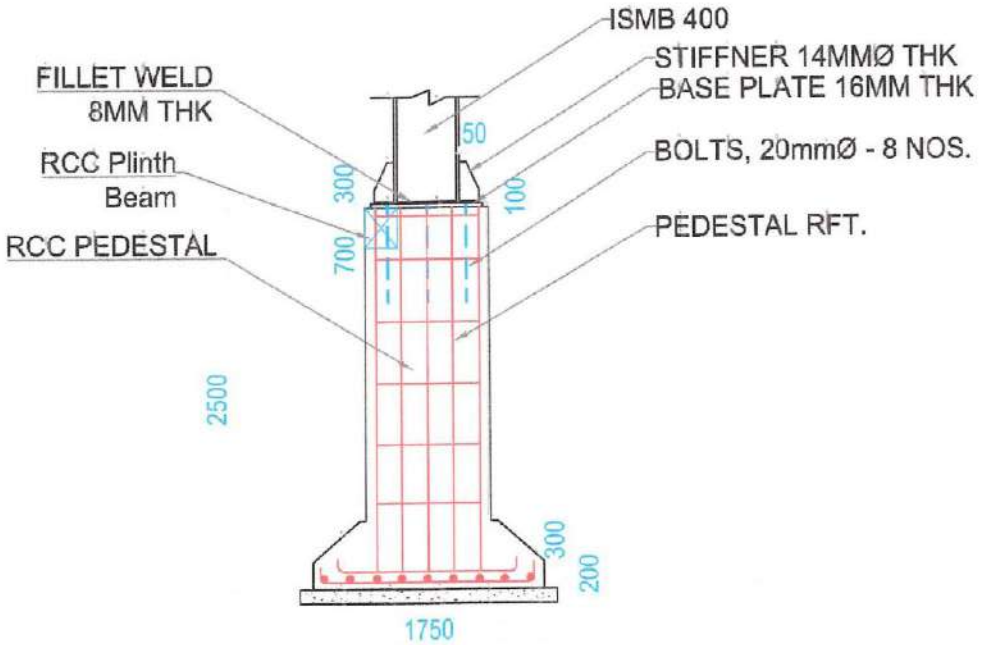
FOOTING MARK	A mm	B mm	REINFT. SPACING IN NOS: C mm	A	B
F1	1750	1750	500	#15-Y12	#15-Y12



FOOTING PLAN

RCC PEDESTAL DETAILS

SL.NO	Pedestal	Longitudinal Reinforcement	Ties	Column Section	Ties
1	C1	#12Y20	Y8-150 C/C	 [500X850]	



SECTIONAL DETAILS (A-A) AT COLUMN PEDESTAL

Appendix-XIII

Existing TOD meter details

Description	Details
Item	AC Statics Transformer operated Watt Hour Meter (EHT), 3Phase 4 Wire
Meter Make& Type	Secure, E3M024
Accuracy Class	0.2S
Voltage Ratio	66KV/√3 / 110/√3
Current Ratio	50A/1A

ANNEXURE-A

QUALITY CERTIFICATION, STANDARDS AND TESTING

FOR GRID-CONNECTED SOLAR ROOFTOP/GROUND MOUNTED PV SYSTEMS/POWER PLANTS

Quality certification and standards for grid-connected solar Roof–Top Net Metering PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected solar Rooftop/Ground Mounted Net-Metering PV systems/plant must conform to the relevant standards and certifications given below:

Solar PV Modules/Panels	
IEC 61215/ IS14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic(PV) Modules
IEC61701	Salt Mist Corrosion Testing of Photovoltaic(PV) Modules
IEC61853-Part1/IS 16170:Part1	Photovoltaic(PV) module performance testing and energy rating –: Irradiance and temperature performance measurements, and Power rating
IEC62716	Photovoltaic(PV) Modules–Ammonia(NH3) Corrosion Testing (As per the site condition like dairies, toilets)
IEC61730-1,2	Photovoltaic(PV) Module Safety Qualification–Part1: Requirements for Construction, Part2: Requirements for Testing
Solar PV Inverters	
IEC62109-1, IEC62109-2	Safety of power converters for use in photovoltaic powers sytems – Part1: General requirements, and Safety of power converters for use in photovoltaic power systems Part2:Particular requirements for inverters. Safety Compliance (Protection degreeIP65 for outdoor mounting, IP 54 for indoor mounting)
IEC/IS61683 (as applicable)	Photovoltaic Systems–Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100%Loading)
IEC 62116/UL1741/ IEEE1547(as applicable)	Utility-interconnected Photovoltaic Inverters-Test Procedure of Islanding Prevention Measures
IEC60255-27	Measuring relays and protection equipment–Part27: Product safety requirements

IEC60068-2 /IEC62093 (as applicable)	Environmental Testing of PV System–Power Conditioners and Inverters
Fuses	
IS/IEC 60947(Part1,2 &3),EN50521	General safety requirements for connectors, switches, circuit breakers(AC/DC): a) Low-voltage Switchgear and Control-gear, Part1:General rules b) Low-Voltage Switchgear and Control-gear, Part2:Circuit Breakers c) Low-voltage switchgear and Control-gear, Part3:Switches, dis-connectors, switch-dis-connectors and fuse-combination units d) EN50521:Connectors for photovoltaic systems–Safety Requirements and tests
IEC60269-6	Low-voltage fuses-Part6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
Surge Arrestors	
BFC17-102:2011	Lightening Protection Standard
IEC60364-5-53/IS15086-5	Electrical installations of buildings-Part5-53: Selection and erection of electrical equipment-Isolation, switching and control
IEC61643-11:2011	Low-voltage surge protective devices-Part11:Surge protective Devices connected to low-voltage power systems-Requirements
Cables	
IEC60227/IS694, IEC60502/IS1554 (Part1 &2)/IEC69947(as	General test and measuring method for PVC(Polyvinylchloride) insulated cables (for working voltages upto and including 1100V, and UV resistant for outdoor installation)
BSEN50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing/Lightning	
IEC62561Series (Chemical earthing) (as	IEC62561-1 Lightning protection system components(LPSC)-Part1:Requirements for connection components IEC62561-2

	Lightning protection system components (LPSC)-Part2: Requirements for conductors and earth electrodes IEC62561-7 Lightning protection system components(LPSC)-Part7:Requirements for earthing enhancing compounds
Junction Boxes	
IEC60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 protection for outdoor use, and IP54 protection for indoor use
Energy Meter	
IS16444 or as Specified by the DISCOMs	A.C. Static direct connected watt-hour SmartMeterClass1 and 2— Specification (with Import &Export/Net energy measurements)
Solar PV Roof Mounting Structure	
IS2062/IS4759	Material for the structure mounting

Note-Equivalentstandardsmaybeusedfordifferentsystemcomponentsoftheplants

ANNEXURE-B

Check List

All the necessary Documents/Certificates should be submitted as in proper sequence as mentioned below:

1. Original tender document duly signed and stamped on each page or Undertaking (Rs.100) and declaration that all the terms & conditions mentioned in each and every page of the said tender document with further clarifications released if any are acceptable. (As mentioned in tender document).
2. Registration Certificate of the firm.
3. Tender document fee and EMD.
4. Name of authorized person (power of attorney) for submitting the document on Rs.100/- stamp paper Appendix-V.
5. Banker's Detail
6. Turn Over certificate issued by registered CA.
7. Copy of the recently paid Income Tax Challan/Return, Latest CA certified balance sheet of last three years, PAN number, registration certificates of GST, ITR for last three years, etc.(Self Attested)
8. Information on Infrastructure for maintenance work.
9. Information of Electrical Contractor License (who is supervising the project).
10. Bidder's Information Sheet Appendix-I(A).
11. Annual Turnover Appendix-I(B). Duly certified by practicing CA with UDIN No
12. Experience for supply and commissioning of Solar Power Plants Appendix-III (along with the self-attested copies of work order).
13. Site Visit Report for the location Appendix-IV.
14. BIS/IEC61215 (revised) certificate for SPV module, IEC61683/IS 61683for Inverter as per Annexure-A. **(ITI will provide the Relevant Certificates of Solar Module)**
16. Commitment in respect of generation separate for Grid connected solar power plants in the prescribed format given the tender.
17. Non-Blacklist Undertaking by the Bidders.
18. Other, if relevant, If any of the documents is not submit by the bidder, the tender will be rejected.
19. Pre-contract Integrity Pact.

PRE CONTRACT INTEGRITY PACT

(To be executed on plain paper and submitted along with Technical Bid/Tender Documents having a value of Rs.....Or more to be signed by the bidder and same signatory Competent/Authorized to sign the relevant contract on behalf of the ITI Ltd).

Tender
No.....

THIS Integrity Pact is made on .....day of.....20…… .

BETWEEN:

ITI Limited ,.....having its Registered & Corporate Office at ITI Bhavan, Dooravaninagar, Bangalore - 560 016 and established under the Ministry of Communications & IT, Government of India (hereinafter called the Principal), which term shall unless excluded by or is repugnant to the context, be deemed to include its Chairman & Managing Director, Directors, Officers or any of them specified by the Chairman & Managing Director in this behalf and shall also include its successors and assigns) ON THE ONE PART

AND:

.....represented by ..... Chief Executive Officer (hereinafter called the Bidder(s)/Contractor(s)), which term shall unless excluded by or is repugnant to the context be deemed to include its heirs, representatives, successors and assigns of the bidder/contract ON THE SECOND PART.

Preamble

WHEREAS the Principal intends to award, under laid down organizational procedures, tender/contract ..... for (name of the Stores/equipments/items). The Principal, values full compliance with all relevant laws of the land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal has appointed an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles as mentioned herein this agreement.

WHEREAS, to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact the terms and conditions of which shall also be read as integral part and parcel of the Tender Documents and contract between the parties.

NOW THEREFORE, IN CONSIDERATION OF MUTUAL COVENANTS STIPULATED IN THIS PACT THE PARTIES HEREBY AGREE AS FOLLOWS AND THIS PACT W1THNESSETH AS UNDER:

SECTION 1 - COMMITMENTS OF THE PRINCIPAL

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a. No employee of the Principal, personally or through family members, will in connection with the tender for or the execution of the contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the personal is not legally entitled to.

b. The Principal will, during the tender process treat all bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all bidder(s) the same information and will not provide to any bidder(s) confidential/ additional information through which the bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employee, which is a criminal offence under IPC/PC Act or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action as per its internal laid down Rules/ Regulations.

SECTION 2 - COMMITMENTS OF THE BIDDERI CONTRACTOR

2.1 The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself observe the following principles during the participation in the tender process and during the execution of the contract.

a. The bidder(s)/contractor(s) will not, directly or through any other per son or firm offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The bidder(s)/contractor(s) will not enter with other bidders/contractors into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The bidder(s)/contractor(s) will not commit any offence under IPC/PC Act, further the bidder(s)/contractor(s) will not use improperly, for purposes of competition of personal gain, or pass onto others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign original shall disclose the name and address of the agents/representatives in India, if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any.

e. The Bidder(s)/Contractor(s) will, when presenting the bid, disclose any and all payments made, are committed to or intend to make to agents, brokers or any other intermediaries in connection with the award of the contract.

f. The Bidder(s)/Contractor(s) will not bring any outside influence and Govt bodies directly or indirectly on the bidding process in furtherance to his bid.

g. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or to be an accessory to such offences.

SECTION 3 - DISQUALIFICATION FROM TENDER PROCESS & EXCLUSION FROM FUTURE CONTRACTS

3.1 If the Bidder(s}/Contractor(s), during tender process or before the award of the contract or during execution has committed a transgression in violation of Section 2, above or in any other form such as to put his reliability or credibility in question the Principal IS entitled to disqualify Bidder(s)/ Contractor(s) from the tender process.

3.2 If the Bidder(s)/Contractor(s), has committed a transgression through a violation of Section 2 of the above, such as to put his reliability or credibility into question, the Principal shall be entitled exclude including blacklisting for future tender/contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the Principal taking into consideration the full facts and circumstances of each case, particularly taking into account the number of transgression, the position of the transgressor within the company hierarchy of the Bidder(s)/Contractor(s) and the amount of the damage. The exclusion will be imposed for a period of minimum one year.

3.3 The Bidder(s)/Contractor(s)with its free consent and without any influence agrees and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground including the lack of any hearing before the decision to resort to such exclusion is taken. The undertaking is given freely and after obtaining independent legal advice.

3.4 A transgression is considered to have occurred if the Principal after due consideration of the available evidence concludes that on the basis of facts available there are no material doubts.

3.5 The decision of the Principal to the effect that breach of the provisions of this Integrity Pact has been committed by the Bidder(s)/ Contractor(s) shall be final and binding on the Bidder(s)/ Contractor(s), however the Bidder(s)/ Contractor(s) can approach IEM(s) appointed for the purpose of this Pact.

3.6 On occurrence of any sanctions/ disqualifications etc arising out from violation of integrity pact Bidder(s)/ Contractor(s) shall not entitled for any compensation on this account.

3.7 Subject to full satisfaction of the Principal, the exclusion of the Bidder(s)/ Contractor(s) could be revoked by the Principal if the Bidder(s)/ Contractor(s) can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption preventative system in his organization.

SECTION 4 - PREVIOUS TRANSGRESSION

4.1 The Bidder(s)/ Contractor(s) declares that no previous transgression occurred in the last 3 years immediately before signing of this Integrity Pact with any other company in any country conforming to the anti-corruption/ transparency International (TI) approach or with any other Public Sector Enterprises/Undertaking in India of any Government Department in India that could justify his exclusion from the tender process.

4.2 If the Bidder(s)/ Contractor(s) makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Section-3 of the above for transgressions of Section-2 of the above and shall be liable for compensation for damages as per Section- 5 of this Pact..

SECTION 5 - COMPENSATION FOR DAMAGE

5.1 If the Principal has disqualified the Bidder(s)/Contractor(s) from the tender process prior to the award according to Section 3 the Principal is entitled to forfeit the Earnest Money Deposit/Bid Security/or demand and recover the damages equitant to Earnest Money Deposit/Bid Security apart from any other legal that may have accrued to the Principal.

5.2 In addition to 5.1 above the Principal shall be entitled to take recourse to the relevant provision of the contract related to termination of Contract due to Contractor default. In such case, the Principal shall be entitled to forfeit the Performance Bank Guarantee of the Contractor or demand and recover liquidate and all damages as per the provisions of the contract agreement against termination.

SECTION 6 - EQUAL TREATMENT OF ALL BIDDERS/CONTRACTORS

6.1 The Principal will enter into Integrity Pact on all identical terms with all bidders and contractors for identical cases.

6.2 The Bidder(s)/Contractor(s) undertakes to get this Pact signed by its sub- contractor(s)/sub-vendor(s)/associate(s), if any, and to submit the same to the Principal along with the tender document/contract before signing the contract. The Bidder(s)/Contractor(s) shall be responsible for any violation(s) of the provisions laid down in the Integrity Pact Agreement by any of its sub- contractors / sub-vendors / associates.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this Integrity Pact or violate its provisions.

SECTION 7 – CRIMINAL CHARGES AGAINST VIOLATING BIDDER(S)/ CONTRACTOR(S)

7.1 If the Principal receives any information of conduct of a Bidder(s)/Contractor(s) or sub-contractor/sub-vendor/associates of the Bidder(s)/Contractor(s) which constitutes corruption or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer of the Principal for appropriate action.

SECTION 8 - INDEPENDENT EXTERNAL MONITOR(S)

8.1 The Principal appoints competent and credible Independent External Monitor(s) for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extend the parties comply with the obligations under this pact.

Details of IEM appointed by ITI are as under:

Shri Javeed Ahmad, IPS(Retd.) M-1101, Shalimar Gallant Apartment, Vigyanpuri , Mahanagar, Lucknow-226006

8.2 The Monitor is not subject to any instructions by the representatives of the parties and performs his functions neutrally and independently. He will report to the Chairman and Managing Director of the Principal.

8.3 The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all product documentation of the Principal including that provided by the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The Monitor is under contractual obligation to treat the information and documents Bidder(s)/Contractor(s) with confidentiality.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the project provided such meeting could have an impact on the contractual relations between the Principal and the Bidder(s)/Contractor(s). As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in specific manner, refrain from action or tolerate action.

8.5 The Monitor will submit a written report to the Chairman & Managing Director of the Principal within……. to …….weeks from the date of reference or intimation to him by the principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.6 If the Monitor has reported to the Chairman & Managing Director of the Principal a substantiated suspicion of an offence under relevant IPC/PC Act, and the Chairman & Managing Director of the Principal has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

8.7 The word 'Monitor' would include both singular and plural.

SECTION 9 - FACILITATION OF INVESTIGATION

9.1 In case of any allegation of violation of any provisions of this Pact or payment of commission, the Principal or its agencies shall be entitled to examine all the documents including the Books of Accounts of the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) shall provide necessary information and documents in English and shall extend all help to the Principal for the purpose of verification of the documents.

SECTION 10 - LAW AND JURISDICTION

10.1 The Pact is subject to the Law as applicable in Indian Territory. The place of performance and jurisdiction shall the seat of the Principal.

10.2 The actions stipulated in this Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

SECTION 11- PACT DURATION

11.1 This Pact begins when both the parties have legally signed it. It expires after 12 months on completion of the warranty/guarantee period of the project / work awarded, to the fullest satisfaction of the Principal.

11.2 If the Bidder(s)/Contractor(s) is unsuccessful, the Pact will automatically become invalid after three months on evidence of failure on the part of the Bidder(s)/ Con tractor(s).

11.3 If any claim is lodged/made during the validity of the Pact, the same shall be binding and continue to be valid despite the lapse of the Pact unless it is discharged/ determined by the Chairman and Managing Director of the Principal.

SECTION 12 - OTHER PROVISIONS

12.1 This pact is subject to Indian Law, place of performance and jurisdiction is the Registered & Corporate Office of the Principal at Bengaluru.

12.2 Changes and supplements as well as termination notices need to be made in writing by both the parties. Side agreements have not been made.

12.3 If the Bidder(s)/Contractor(s) or a partnership, the pact must be signed by all consortium members and partners.

12.4 Should one or several provisions of this pact turn out to be invalid, the remainder of this pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

12.5 Any disputes/ difference arising between the parties with regard to term of this Pact, any action taken by the Principal in accordance with this Pact or interpretation thereof shall not be subject to any Arbitration.

12.6 The action stipulates in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pact at the place and date first done mentioned in the presence of the witnesses:

For PRINCIPAL	For BIDDER(S)/ CONTRACTOR(S)
……	……
(Name & Designation)	(Name & Designation)
Witness	Witness
1) …… .	1) ……..
2)……	2) ……