



STATE BANK OF INDIA
PREMISES & ESTATE DEPARTMENT, LHO MUMBAI METRO

3RD FLOOR, SYNERGY BUILDING, G- BLOCK,
BANDRA KURLA COMPLEX, MUMBAI-400 051

TENDER ID: MUM20210909

PART – A: TECHNICAL BID

TENDER FOR DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 145 KWP GRID CONNECTED ROOFTOP SOLAR POWER SYSTEM UNDER NET METERING POLICY INCLUDING 5 YEARS COMPREHENSIVE MAINTENANCE (FROM 2ND YEAR) AT VARIOUS BRANCHES UNDER LHO MUMBAI METRO, MUMBAI.

TENDER SUBMITTED BY:

NAME : _____

ADDRESS : _____

GSTIN NO : _____

E-MAIL ADDRESS : _____

DATE : _____

MOBILE NO. : _____



Note: - All pages of technical bid should be submitted in Hard Bond or Spiral Binding Tenders in loose pages will be disqualified. Price bid shall not be accepted offline

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NOTICE INVITING TENDERS

SBI invites "online item rate E-tender" from MNRE/MEDA approved channel partners/solar power plant OEMs/ authorized dealers having office in Maharashtra who qualify as per the eligibility criteria given elsewhere in the tender for Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at various branches under LHO Mumbai metro, Mumbai. As per the information and technical specifications details of the tender which are as under:

S.No.	Type	Description
(1)	Name of work	Tender for Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at various branches under LHO Mumbai Metro, Mumbai
(2)	Nature of Work	SOLAR ROOF TOP POWER PLANT.
(3)	Time allowed for completion	90 days from the date of issue of work order
(4)	Estimated cost	Rs.65,66,000/- Plus GST
(5)	Earnest Money Deposit	Rs.66,000/- (Rupees Sixty Six Thousand Only) in the form of Demand Draft issued by any Nationalised /Scheduled Bank drawn in favour of " State Bank Of India " payable at Mumbai.
	Date of availability oftender documents on Service Provider's website	
(6)	(a) Technical Bid	28.09.2021 to 20.10.2021 up to 3:00 P.M. Available at Bank's website https://sbi.co.in under <Link>procurement news
	Date and Time of opening of Tech Bid	20.10.2021 at 3:30 P.M

(7)	(b) Price Bid	Shall be communicated by e-mail (only to those bidders who qualify in Technical Bid.). Site- Available at M/s e-ProcurementTechnologies Ltd., our Service Provider's portal https://etender.sbi/
(8)	Last date & time for submission of Technical bid along with EMD, Valid MNRE / MEDA registration Certificate, Documentary proof of office in Maharashtra and other documents for eligibility as specified in the tender in sealed Cover-A super scribing "Tender for SITC of Solar photovoltaic panels on at SBI".	The signed and stamped copy of Technical bid along with EMD, in sealed envelope should reach to us on or before 20.10.2021 up to 03:00 PM. Note: 1).It is sole responsibility of the bidder to ensure submission of their bid by stipulated date and time at specified address failing which they will not be allowed to participate in E-Tendering. 2).The SBI shall not entertain bids received late due to any delay on account of delivery by the courier agency/speed post or any other mode for the reasons whatsoever.
(9)	Pre-bid meeting	12.10.2021 at 03.00 pm at The Assistant General Manager (P&E), LHO Mumbai Metro, State Bank of India, 3 rd Floor, Synergy Building, Bandra Kurla Complex, Mumbai - 51
(10)	Address for submission and	The Assistant General Manager (P&E), LHO Mumbai Metro, State Bank of India, 3 rd Floor, Synergy Building, Bandra Kurla complex, Mumbai- 51
	opening of Technicalbid EMD	
(11)	Intimation to Technically Qualified bidders	Shall be communicated by e-mail
(12)	Date & Time for submission of online price bid starts and close	Shall be communicated by e-mail (only to those bidders who qualify in Technical Bid.)
(13)	Opening of onlineprice bid	Shall be communicated by e-mail



(14)	Validity for Offer	3 (Three) Months from the Date of Opening of Price-Bid
(15)	Commencement of Work	7 th Day from the date of receiving of Work Order
(16)	Payment	<p>i) No advance payment shall be paid.</p> <p>ii) 60% of total project cost against all materials delivery at site and production of test certificates and with necessary documents showing requisite quality as mentioned in tender document.</p> <p>iii) 35% after installation, commissioning, testing, successful trail run including gridsynchronization along with supply and installation of net metering, generation meter and approvals from local electricity Board/Adani/Tata/ MSEDCL as required.</p> <p>iv) 5% will be held with us as SD for 6 yrs and could be release against submission of Performance Bank Guarantee from any scheduled/ commercial Bank, other than SBI</p> <p>v) Payment shall be made by way of Electronic fund transfer and the bill will be paid by the SBI. Firm should furnish details of the bank, A/c no, IFSC code.</p>
		vi) Payments towards the above work shall be made by respective Branches as listed in Price Bid
(17)	Initial Security Deposit (ISD)	2% of value of work awarded (No interest bearing ISD).



(18)	Total Security deposit	Bank will kept Security Deposit cum Performance Bank Guarantee of 5 % of the total contract value during the comprehensive warranty period of five years. After receiving the SD in the form of BG and authentication of BG from the issuing Bank, vendor's SD will be returned to them or vendor can deposit DD issued by any Nationalized/Scheduled Bank of 5% of the contract value as SD. No interest shall be paid by the Bank on SD
(19)	Defects Liability Period	72 months from the date of virtual completion of work
(20)	<u>warranted/guaranteed</u>	<p><u>1)Product warranty:</u></p> <p>A) The SPV panel shall carry a warranty of minimum 25 years from the date of Final Acceptance. This warranty shall be backed up in the form of manufacturer's warranty, 12 months from the date of virtual completion.</p> <p>B) The PCU/Solar Grid tie Inverter/MPPT shall carry a warranty of minimum 5 years.</p> <p>C) The mechanical structures, electrical works including distribution boards/digital meters/switchgear etc. and overall workmanship of the SPV rooftop systems must be warranted against any manufacturing/ design/ installation defects for a minimum period of 6 years from the date of Final Acceptance.</p>

		<p><u>2) PERFORMANCE WARRANTY:</u></p> <p>A) The SPV panel must have linear performance warranty for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.</p> <p>B) A linear performance warranty for a period of 6 years should be given for Inverter/PCU/MPPT and other components.</p> <p>3)The warranty will be against breakages, malfunctions, non-fulfillment of guaranteed performance and breakdowns due to manufacturing defects or defects that may arise due to improper operation of electrical /electronic components of the system but do not include physical damages by the end users.</p> <p>- The above warranty shall take effect from the date on which the system is taken over by the Bank after commissioning.</p> <p>-The successful bidder shall be liable to make good the loss by replacing the defective product during the warranty period for the entire system free of cost.</p> <p>- The warranty will cover all the materials and goods involved in the installation and Commissioning of 145Kwp SPV rooftop systems by the successful Bidder.</p> <p>- The data sheets showing all parameters for each components should provide (i.e. Solar PV Module, Inverter, MPPT, Cables, etc.).</p>
(21)	Period of Honoring Payment Certificate.	21 days from the date of receipt of bill (Excluding Sunday and Public Holidays).
(22)	Insurance	As per Insurance clause of the Tender Document.
(23)	Liquidated Damages for Delay	0.5 % Per week subject to total amount of 5% of Contract Value.



(24)	Distribution of Works	The Work will be distributed among L-1, L-2 & L-3 provided L-2& L-3 accepts the L1 Price (i.e. per Kwp price quoted by L-1). The details are as under;- (i) L-1: Industrial Estate Branch Wagle, Vashi Turbhe Branch/ SBLC, Chembur L-2: MIDC Andheri and IE Badlapur Branch L-3: IE Kandivali Branch (ii) If L-2 bidder does not accept for L-1 price, L-2 Branches will be shared to L-1 & L-3 bidders. (iii) If L-3 bidder does not accept for L-1 price L-3 Branches will be given to L-1 bidder.
<u>e-Tender Service Provider Contact persons:</u> Primary Contact Numbers: - M:- 9081000427, 9904507997 1.Jaymeet Rathod: 079-68136829, jaymeet.rathod@eptl.in 2.Vinayak Khambe: 079-68136835, vinayak.k@eptl.in Smt.Geeta Guatam - 079-68136814/ 7990334460 Shri. Vishal Tiwari - 09081000235 3 Nadeem Mansuri: 079-68136853, nadeem@eptl.in 4 Nandan Valera: 079-68136843, nandan.v@eptl.in 5 Hemangi Patel: 079-68136852, hemangi@eptl.in 6 Kanchan Kumari: 079-68136820, kanchan.k@eptl.in 7 Deepak Narekar: 079-68136863, deepak@eptl.in 8 Anshul Juneja: 079-68136850, anshul.juneja@eptl.in 9 Salina Motani: 079-68136831, salina.motani@eptl.in 10 Devang Patel: 079-68136859, devang@eptl.in Alternate Contact No.: Riddhi Panchal: 079-50270506, 8460518168, riddhi.panchal@auctiontigher.net		
<u>Note</u> -Tenderers are advised to Inspect the site in consultation with the Bank's Electrical Engineer before submission of the tender in order to get acquainted with the proposed work and Site condition and satisfy themselves before quoting the rate and clear doubts if any. No deviation in condition or Specification or additional items shall be entertained at a later date.		

25. Tenders can be downloaded from the bank's website www.sbi.co.in (link <Procurement News>. It shall be responsibility of the contractor to arrange and ensure that **all pages of technical bid should be submitted in Hard Bond or Spiral Binding Tenders in loose pages will be disqualified. Price bid shall not be accepted offline.**



26. The contractor shall sign and stamp each page of the tender document thereby ensuring the number and sequence of all pages.
27. No conditions other than mentioned in the tender will be considered. Conditional tenders shall be summarily rejected.
28. The SBI reserve their rights to accept or reject any or all the tenders, either in whole or in part without assigning any reason(s) for doing so and no claim / correspondence shall be entertained in this regard.
29. Tenders received without EMD, and supporting documents for pre-qualification shall be summarily rejected and such bidders **shall not be allowed to participate in the price bidding process.**
30. The information required should be neatly filled /typed in **each and every columns and row** of the Formats. The tender received with "partly filled formats" not containing desired information in each and every columns/points/row of various annexure shall be treated as INCOMPLETE and such applications shall be **summarily rejected without any reference to the bidder and at the bidder's risk and responsibility.**
31. The tenderers are categorically advised to refrain from mentioning the remark "AS PER ATTACHEMENT/ENCLOSURES" in their applications and annexures to avoid rejection of their applications.
32. In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.
33. Agencies/Companies which are registered as MSME with NSIC will be exempted from EMD amount. However vendor should register similar works/ same category.
34. For any clarifications regarding E-Tendering procedure, System requirements etc. please contact M/s E-Procurement Technologies Limited, Ahmedabad, whose address is mentioned in the NIT.

Yours faithfully,

Assistant General Manger (P&E)

LHO Mumbai Metro



ELIGIBLE CRITERIA:

The bidder should fulfill the following eligibility criteria. They are required to submit copies of documents to substantiate their qualifying criteria.

- 1) Bidder should be MNRE/MEDA approved channel partner (Validity period at least 2019) having 5 years experience in Grid connected (net metering) rooftop solar panels in Government/Semi Government /PSUs /office buildings /commercial premises / industrial houses /Large MNCs as on 30.09.2021.

Only those bidders who have at least 5 years' establishment in the Solar industry and undertaking similar works viz. Supply, Installation, Testing and Commissioning in Grid Connected SPV Based Solar Power System on CAPEX model and with related satisfactory work completion report. The Completion Certificate pertaining to irrelevant works will not be considered. The Bidder should be a body registered and incorporated in India under the Companies Act, 1956 or 2013, including any amendment thereto or a registered firm or a proprietary firm with an affidavit and engaged in the business of Solar Power. Firm should have valid ISO 9001:2008 & 15001 2004 or latest certification. ISO certificate shall be furnished.

(Bidder shall submit Certificate of incorporation in support to the above).

- 2) **Joint ventures and / or consortium are not allowed and acceptable.**
- 3) Vendor's experience of having successfully completed similar works during last 3 years ending 30.09.2021 should be either of the following:

(i) The bidder should have successfully executed minimum single work of similar type with minimum 60 Kwp during last three years (Proof of the same should be submitted for having successfully completed the work)



OR

(iii) The bidder should have successfully executed minimum two works of similar type, with minimum 37.5Kwp during last three years (Proof of the same should be submitted for having successfully completed the work)

OR

(iv) The bidder should have successfully executed minimum three works of similar with minimum 30Kwp during last three years (Proof of the same should be submitted)

- 4) O&M Certificate for at least one year for any type of solar project from any central / state Govt./ Public sector undertaking / Public Limited Company / Private Limited Company.
- 5) The bidder should have Minimum yearly turnover of **Rs.19.7 lakh** during last 3 financial years supported by audited financial statements during the last three financial years i.e. FY 2018-19, 2019-20 & 2020-21.
(Valid CA certificate to be enclosed).
- 6) The applicant should not have incurred any loss in three years or more during the last five years ending 31/03/2016, duly certified by a Chartered Accountant. The firm should not be under liquidation, court receivership or similar proceedings.
- 7) The applicant should have a solvency Certificate of minimum **Rs.20 Lakhs** certified by Scheduled Bank. The Solvency Certificate should not have been obtained earlier than 30.09.2020. In case, the applicant is not able to provide the solvency certificate in original, the certificate shall be attested by a Notary on a Letter Head of Nationalized Bank Format.



- 8) The applicant should own adequate tools and equipment's required for the proper execution of the work on a fast track basis and the details of the same shall be furnished, duly authenticated as per the format enclosed in annexure **Form "G"**.
- 9) The applicant should have sufficient number of Technical and Administrative personnel on their Rolls for proper execution of the contract, as per the format enclosed in annexure **Form "F"**.
- 10) **The Applicant should have full-fledged registered service setup at any town/city of Maharashtra State or nearest city for rendering after sales service of the plant. Tender will be reject if no details found for local office for service center of plant.**

Note: Tenderers should submit the following listed documents in respect of their eligibility

(a) Copy of the letter issued by MNRE/MEDA regarding registration with them to confirm about the category of their registration.

(b) Copies of detailed work order indicating scope and value of works for the qualifying works. Applicant should furnish the following:

- **Form "B"**- List of all "Similar" works successfully completed during the last three years

- **Form "B-1"** may be submitted project wise as supplementary information for the major projects only executed during the last three years ending 30.09.2021.

- **in Form "C"**- List of the "Similar" projects under execution or awarded

Copy of Work Order/Agreement /Scope of Work and its Completion Certificate. The Completion/ Execution Certificate shall clearly specify the following:

- i. Reference of relevant Work Order / Agreement.



- ii. Actual value of completed/ executed work (excl. GST).
- iii. Actual date of completion of work.

Full address of Client / Officer issuing Certificate.

(c) A Certificate issued by Chartered Accountant indicating turnover from similar works for the last three years along with audited financial statement for the same period.

(e) Performance Report For "Similar" Major Completed Works Referred To Form "B" (**in Form "D"**).

The Performance Certificate must have been issued for a minimum duration of one (1) year from the date of commissioning. The Performance Certificate/Joint meter reading (JMR) reports shall have been issued by any state/ central owned agencies or state power departments or authorized representative of Power off taker (MSEDCL /Private Power purchaser).

Bank reserves the right to accept or reject any or all tenders/proposal without assigning any reasons, whatever be the cause of cancellation. Only such contractors who fulfill the aforesaid eligibility criteria need to apply.

Yours faithfully,

Sd-

The Assistant General Manger (P&E)

LHO Mumbai Metro



LIST OF BRANCHES AND CAPACITY OF ROOF TOP SOLAR TO INSTALLED

S. No	Name of the Branch	Proposed Capacity
1	Mahul Road branch, Chembur	15 Kw
2	Vashi Turbhe Branch/ SBLC	20 Kw
3	Industrial Estate Branch, Wagle	40 Kw
4	MIDC Andheri Branch	20 Kw
5	Industrial Estate Branch, Badlapur	20 Kw
6	Industrial Estate Branch, Kandivali	30 Kw

EVALUATION OF PRICE BID:

Bidders are required to meet the Bid Evaluation Criteria (BEC). For the purpose of pre-qualification, applications will be evaluated in the following manner.

1. The initial eligibility criteria prescribed above (in respect of experience of similar nature of work completed) shall be first scrutinized and the applicant`s eligibility for pre-qualification for the work will be determined.
2. Only the applicants who meet the initial eligibility criteria specified as above will be further evaluated on the basis of details furnished by them.
3. If necessary, the authorized representatives of Consultants and Bank may visit few project sites which were recently executed or are being executed by the applicants, in order to evaluate the performance and quality of work. In such case, the applicant will be required to provide the Bank the necessary access/facilities and arrangements to visit the site as may found necessary.
4. On the basis of the pre-qualification criteria mentioned above and after evaluation of applicants based on site visit report, credentials submitted by the applicants, confidential reports obtained from various clientele (wherever necessary), applications will be short-listed. The short-listed applicants will be considered for pre-qualification subject to verification of relevant documents.



5. All bidders are required to qualify the above BEC [Technical and Financial]. The Bidders fulfilling the Technical Bid evaluation as per the eligibility criteria shall only be allowed to participate in the price bidding.

6. Bids submitted by the bidder who does not meet any of the above-mentioned criteria shall summarily be rejected without further reference to the bidder. Bidders should ensure submission of complete information/documents in the first instance itself. Evaluation may be done based on the details so furnished without seeking any subsequent additional information/document

The award of contract will be made to the bidder whose bid has been determined to be the lowest after arithmetic checking of calculations of all components of online price bid after e-reverse auction.

The SBI reserve its rights to accept any or to reject all the bids without assigning any reasons therefor and no correspondence shall be entertained in this regard.

We have read and understood the abovementioned prequalification criteria and shall abide by the same.

Signature of the Vendor with Seal

Name:

Place:

Date:



SAMPLE BUISNESS RULE DOCUMENT

Tender for Design, Supply, Installation, Testing and commissioning of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at various branches under LHO Mumbai metro, Mumbai.

(A) Business rules for E-tendering:

1. Only MNRE/MEDA approved vendors having valid registration for SITC of Solar system, Office in Maharashtra shall only be eligible to participate.
2. SBI will engage the services of an E-tendering service provider who will provide necessary training and assistance before commencement of online bidding on Internet.
3. In case of e-tendering, SBI will inform the vendor in writing, the details of service provider to enable them to contact and get trained.
4. Business rules like event date, closing and opening time etc. also will be communicated through service provider for compliance.
5. Vendors have to send by email, the compliance form in the prescribed format (provided by service provider), before start of E-tendering. Without this the vendor will not be eligible to participate in the event.
6. The Vendors will be required to submit the various documents in sealed Envelope to the office of SBI at the address mentioned herein before by the stipulated date i.e.
(1) Hard Copy of Technical Bid duly signed and stamped on each page (2) Demand Draft of specified amount of EMD **(3) valid MNRE/MEDA registration certificate and other necessary documents to fulfill eligibility criteria.** Vendors not submitting any one or more documents shall not be eligible to participate in the on-line price bidding.
7. E-tendering will be conducted on schedule date & time.
8. The e-tendering will be treated as closed only when the bidding process gets closed in all respects for the item listed in the tender

(B) Terms & conditions of E-tendering:

SBI shall finalize the Tender through e-tendering mode for which **M/s. e-Procurement Technology, Ahmedabad** has been engaged by SBI an authorized service provider. Please go through the guidelines given below and submit your acceptance to the same along with your Commercial Bid.



1. E-tendering shall be conducted by SBI through **M/s. E-Procurement Technology, Ahmedabad** on pre-specified date. While the Vendors shall be quoting from their own offices/ place of their choice, Internet connectivity and other paraphernalia requirements shall have to be ensured by Vendors themselves. In the event of failure of their Internet connectivity, (due to any reason whatsoever it may be) it is the bidders' responsibility.
2. In order to ward-off such contingent situation bidders are requested to make all the necessary arrangements/alternatives such as back-up power supply whatever required so that they are able to circumvent such situation and still be able to participate in the E-tendering successfully. Failure of power at the premises of Vendors during the E-tendering cannot be the cause for not participating in the E-tendering. On account of this the time for the E-tendering cannot be extended and SBI is not responsible for such eventualities.
3. **M/s. e-Procurement Technology, Ahmedabad** shall arrange to train your nominated person(s), without any cost to you. They shall also explain you all the Rules related to the E- tendering. You are required to give your compliance on it before start of bid process.
4. Bidding Currency and Unit of Measurement: Bidding will be conducted in Indian currency & Unit of Measurement will be displayed in Online E-tendering.
5. Bid Price: The Bidder has to quote the rate as per the Tender Document provided by SBI their appointed Architects/Engineer in-charge. E-tender will be conducted on line item wise and L1 vendor will be decided line item wise as mentioned in the BOQ.
6. Validity of Price Bid: The Bid price shall be for a period specified in the tender document and shall not be subjected to any change whatsoever.
7. Procedure of E-tendering:
 - i. Online E-tendering:
 - a) The hard copy of the Technical as well as Price Bid is available on the Bank's website during the period specified in the NIT.
 - b) Online e-tendering is open to the qualified bidders for participating in the price bidding as provisions mentioned hereinabove through SBI approved Service Provider.



- c) The Price-Bid shall be made available online by the Service Provider wherein the vendors will be required to fill-in their Item-wise rates for each item.
- d) The Vendors are advised not to wait till the last minute to submit their online item- wise quote in the price bid to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.
- e) It is mandatory to all the bidders participating in the price bid to quote their rates for each and every item.
- f) In case, vendor fails to quote their rates for any one or more tender items, their tender shall be treated as **"Incomplete Tender"** and shall be liable for rejection.
8. Log in Name & Password: Each Bidder is assigned a Unique User Name & Password by M/s. **e-Procurement Technology, Ahmedabad**. The Bidders are requested to change the Password after the receipt of initial Password from M/s. **e- Procurement Technology, Ahmedabad**. All bids made from the Login ID given to the bidder will be deemed to have been made by the bidder.
9. Bids Placed By Bidder: Bids will be taken as an offer to execute the work as specified. Bids once made, cannot be cancelled / withdrawn and the Bidder shall be bound to execute the work at the quoted bid price. In case the L-1 Bidder backs out or fail to complete the work as per the rates quoted, SBI shall at liberty to take action as deemed necessary including de-paneling such vendors and forfeiting their EMD.
10. At the end of the E-tendering, SBI will decide upon the winner. SBI decision on award of Contract shall be final and binding on all the Bidders.
11. SBI shall be at liberty to cancel the E-tendering process/tender at any time, before ordering, without assigning any reason.
12. SBI shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause.
13. Other terms and conditions shall be as per your techno-commercial offers and other correspondences till date.



14. Other Terms & Conditions:

- The Bidder shall not involve himself or any of his representatives in Price manipulation of any kind directly or indirectly by communicating with other suppliers / bidders.
- The Bidder shall not divulge either his Bids or any other exclusive details of SBI to any other party.
- SBI decision on award of Contract shall be final and binding on all the Bidders.
- SBI reserve their rights to extend, reschedule or cancel any E-tendering within its sole discretion.
- SBI or its authorized service provider M/s. **e-Procurement Technology, Ahmedabad** shall not have any liability to Bidders for any interruption or delay in access to the site irrespective of the cause.
- SBI or its authorized service provider M/s. **e-Procurement Technology, Ahmedabad** is not responsible for any damages, including damages that result from, but are not limited to negligence.
- SBI or its authorized service M/s. **e-Procurement Technology, Ahmedabad** will not be held responsible for consequential damages, including but not limited to systems problems, inability to use the system, loss of electronic information etc.

N.B.

- All the Bidders are required to submit the Process Compliance Statement (Annexure-II) duly signed to M/s. **e-Procurement Technology, Ahmedabad**.
- All the bidders are requested to ensure that they have a valid digital signature certificate well in advance to participate in the online event.



(C)PROCESS COMPLIANCE STATEMENT (ANNEXURE I)

(The bidders are required to print this on their company's letter head and sign,stamp before emailing)

To,

M/s. e-Procurement Technology,

B-705, Wall Street - II, Opp. Orient Club, Ellisbridge, Ahmedabad – 380006,
State Gujarat, India

Smt. Geeta Guatam - 079-68136814/ 7990334460

Shri. Vishal Tiwari - 09081000235

online e-tenders are invited from MNRE/MEDA approved channel partners vendors having office in Maharashtra for Tender For Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance(from 2nd Year) at various branches under LHO Mumbai Metro, Mumbai

Dear Sir,

This has reference to the Terms & Conditions for the E-tendering mentioned in the Tender document

This letter is to confirm that:

- 1) The undersigned is authorized representative of the company.
- 2) We have studied the Commercial Terms and the Business rules governing the E-tendering as mentioned in RFP of SBI as well as this document and confirm our agreement to them.
- 3) We also confirm that we have taken the training on the E-tendering tool and have understood the functionality of the same thoroughly.
- 4) We confirm that SBI and M/s. **e-Procurement Technology, Ahmedabad** shall not be liable & responsible in any manner whatsoever for my/our failure to access & bid on the e-E-tendering platform due to loss of internet connectivity, electricity failure, virus attack, problems with the PC, any other unforeseen circumstances etc. before or during the E- tendering event.
- 5) We confirm that we have a valid digital signature certificate issued by a Valid Certifying Authority.
- 6) We, hereby confirm that we will honor the Bids placed by us during theE-tendering process.



With regards, Date:

Signature with company seal Name: Company / Organization:

Designation within Company / Organization: Address of Company / Organization:

Scan it and send to this Document on -----



(D) Price Confirmation Letter (Annexure III)

(The bidders are required to print this on their company's letter head and sign, stamp before emailing)

To,

E-Procurement Technologies Ltd. (Auction Tiger)
B-704, Wall Street - II,

Opp. Orient Club,

Nr. Gujarat College, Ahmedabad - 380 006.
Gujarat State, India

Sub: Final Price Quoted During E-tendering for Tender For Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at Various branches under LHO Mumbai Metro, Mumbai

Online Price Bid Date:

Dear Sir,

We confirm that we have quoted.

Thanking you and looking forward to the valuable order from SBI.

Yours sincerely,

For _____

Name:

Company:

Date:

Seal:

Scan it and send to this Document on sujith@eptl.in



(E) Price break up (Annexure IV)

Detailed Price Break up as per tender document

LETTER OF DECLARATION

(To be submitted duly typed, signed with stamped by the Authorised Signatory on the Letter Head of the Bidder in Original along with Technical Bid document.)

To,

The Assistant General Manager (P&E),
LHO Mumbai Metro, State Bank of India,
3rdFloor, Synergy Building,
Bandra Kurla Complex, Mumbai - 51

online E-tenders are invited from MNRE/MEDA approved channel partners vendors having office in Maharashtra for Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at various branches under LHO Mumbai Metro, Mumbai

Dear Sir,

Having examined the terms & conditions, schedule of requirements, scope of work etc. of the tender for the captioned work and examined the site of the works specified in the said memorandum and having acquired the requisite information relating thereto and affecting the tender. I/We hereby offer to provide specified services in the said memorandum mentioned in the attached schedule and in accordance in all respect with the schedule of instructions, scope of work and instruction in writing referred to in conditions of Tender, the articles of agreement, conditions of contract and with such conditions so far as they may be applicable.



a	Description of work	Tender For Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance(from 2nd Year) at various branches under LHO Mumbai Metro, Mumbai
b	Earnest Money	Rs.66,000/- (Rupees Sixty-Six Thousand Only)
c	Validity of Rates	Rates will be valid for the period of three months from the date of approval of rates by the Bank.

2. Should this tender be accepted, I/we hereby agree to abide by and fulfill the terms and provisions of the said conditions of Contract annexed hereto so far as they may be applicable or in default thereof to forfeit and pay to SBI, the amount mentioned in the said contract.

3. I/we have deposited Demand Draft / Banker's Cheque for a sum of Rs.66,000/- (Rupees Sixty Six Thousand Only) as Earnest Money Deposit with SBI. Should I/We do fail to execute the contract when called upon to do so, I/We hereby agree that this sum shall be forfeited by me/us to SBI.

4. I/ We have read and understood various clauses of this tender and hereby submit our specific undertaking and concurrence in terms clause 7 of "Instruction to tenderer" to deposit Additional Security Deposit (ASD) of required amount as provided for in this tender and within the stipulated period, in case, my/our tender is found too low (i.e. beyond 10% of the estimated cost), as a performance guarantee for due fulfilment of our contractual obligation for the project.

5. I/ We understand that as per terms of this tender, the SBI may consider accepting our tender in part or whole or may entrust the various work proposed in phases. We, therefore, undertake that we shall not raise any claim/ compensation in the eventuality of SBI deciding to drop any of the work from the scope of work of this tender at any stage during the contract period. Further, we also undertake to execute the work entrusted to us in phases on our approved rates and within stipulated time limit without any extra claim for price escalation as also provided for in the clause 31(iv) "Instructions to Tenderers" of this tender.



6. I/ We, hereby, also undertake that, we will not raise any claim for any escalation in the prices of any of the material during the currency of contract/ execution /completion period including authorized extended contract period, if any.
7. We confirm that we are not debarred by the SBI for any of its projects.
8. Further, we confirm that we are eligible to quote this tender. In case any information is found incorrect at any subsequent point of time, our tender may be annulled / rejected by SBI, including taking any action against us as deemed fit. We have read and understood all the terms & conditions, schedule of requirement and scope of work of the tender and accept the same.

9. Our Bankers are:

I)

ii)

The names of partners of our firm are:i)

ii)

Name of the partner of the firm
Authorised to sign

Or

(Name of person having Power of Attorney to sign the Contract.

(Certified true copy of the Power of Attorney should be attached)

Yours faithfully,

Signature of Contractors.

Signature and addresses of Witnesses

i)

ii)



(A) Contact Information

E-Procurement Technologies Ltd.	State Bank of India
B-704, Wall Street - II,Opp. Orient Club, Nr. Gujarat College, Ahmedabad - 380 006.	Asst. General Manager (P&E) LHO MUMBAI
Tel.: +91 79 61200 579 580 567 569 566 Mr.Samjad Khan E-mail: samjad@auctiontiger.net	Officer Name :R K SINHA Department: Premise & Estt. Deptt, LHO ,Mumbai
Contact No : 9879996111 / 9265871720	Contact No:9158002461/ 02226445654 E-mail <u>ramkishan.sinha@sbi.co</u>



BASIC INFORMATION OF THE VENDOR

(Please strike-off which is not applicable)

1	a) Name of the applicant/Firm/Organization	
	b) Full Postal Address of Firm	
	c) Contact Details (i) Phone No. (ii) Mobile No. (iii) Fax No. (iv) e-mail Id (v) Web-site	
2	Year of establishment (Please enclose documentary evidence)	
3	Constitution of Firm (Enclose certified copies of documents as evidence)	Sole proprietorship /Partnership /Private Ltd. / Public Ltd. / Any other (Please specify)
4	Name of the Proprietor/Partners/Directors of the organization/firm	
5	a) Name/s of authorized signatory with designation b) Bio-data of Partners/Directors (Enclose separate sheet as)	



6	Mode of Authorization Enclose certified copies of documents as evidence.	Resolution / Partnership Deed / Registered Power of Attorney / Proprietor / Any Other (Please specify)
7	Whether registered with Govt./ Semi Govt./Banks /CPWD/Municipal Authorities or any other Public Organization and if so, in which class and since when? (Enclose certified copies of document as evidence). Name of Organization Category No. & Date of Registration Name of Organization Category No. & Date of Registration Name of Organization Category No. & Date of Registration	YES / NO
8	No. of years of experience in the field and details of work in any other field (Please enclose documentary proof)	
9	Yearly turnover of the organization during last 3 years (year wise) and furnish audited balance sheet and Profit & Loss A/c. (Audited) for the last 3 financial years certified by the auditor. (Please enclose CA Certificate)	2018-19 2019-20 2020-21 Average :



10	Banker's Details (i) Banker's Name (ii) Full Postal Address (iii) Telephone No. (iv) Account No. (v) Type of Account	
11	PAN No.	
12	GST No.	
13	Whether last three years IT returns filed (Pl. enclose certified copies of the I T return of 2018-19, 2019-20, 2020-21)	
14	Details of major works executed & completed during last 5 years.	(Please enclose separate sheet)
15	Details of major works on hand.	Please enclose copies of LOI /work order / agreement
16	Whether any Civil Suit/litigation arisen in works executed during the last 5 years. If yes, please furnish the name of the project, employer, and nature of work, contract value, work order and brief details of litigation. Give name of the Court, place and status of pending Litigation.	Attach a separate sheet if required.

(Signature of the authorized person)

Name: (Mobile No.):

E-mail ID:

Date:



ARTICLES OF AGREEMENT

This AGREEMENT is made at on this day of between SBI, a body Corporate created under SBI Act 1955, having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai 300 021, represented by authorized officer of SBI. (hereinafter called "the Employer") on the one part and M/s _____ (proprietorship/partnership firm/Company), incorporated under the provisions of the Companies Act and having its registered office at _____ (hereinafter called "the Vendor") represented by Shri who is authorized to enter this agreement by its Board of Directors on the other part.

AND WHEREAS the Employer has intention of engaging qualified channel partner of Ministry of New and Renewable Energy (MNRE)/MEDA for **Tender For Design, Supply, Installation, Testing And Commissioning of 145Kwp Grid Connected Rooftop Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (From 2nd Year) at various branches under LHO Mumbai Metro, Mumbai** as stated in the scope of work attached to the Tender Document to the Vendor.

AND WHEREAS the Employer had called for tenders from channel partners of Ministry of New and Renewable Energy (MNRE)/MEDA for the proposed work as indicated in the scope of work and other documents attached to the tender.

AND WHEREAS the Vendor and others submitted the tenders and the Employer has awarded the contract relating to Grid connected Roof top solar PV power plant, as per the information and technical specifications enclosed, at Under Net Metering Policy at 04 different Locations in Bank's Own Premises Maharashtra Under AO, Mumbai Capacity 145Kwp in CAPEX Model as stated in the scope of work attached to the Tender Document to the Vendor.

AND WHEREAS both the parties to this agreement are desirous of recording the terms and conditions upon which the said services are to be rendered by the Vendor.

NOW, therefore, it is hereby agreed to and between the parties as follows:

1) Contract documents:-

The following documents shall constitute the Contract Documents.

I. This Article of Agreement.

II. Tender Document submitted by the Contractor including the "said conditions", N.I.T and Schedule of quantities.

III. All correspondence between the Employer and the Contractor from the date of issue of N.I.T and the date of issue of work order.



IV. Work order no.dated.....

AND WHEREAS both the parties to this agreement are desirous of recording the terms and conditions upon which the said services are to be rendered by the Vendor.

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said Contract Amount to be paid at the times and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Conditions execute and complete the work shown upon the said Drawings and described in the said Specifications and the priced Schedule of Quantities.
2. The Employer shall pay to the Contractor the said Contract Amount, or such other sum as shall become payable, at the times and in the manner specified in the said Conditions.
3. The said Conditions and Appendix thereto shall be read and construed as forming part of this Agreement, and the parties hereto shall respectively abide by submit themselves to the said Conditions and perform the Agreements on their part respectively in the said Conditions contained.
4. The Plans, Agreements and Documents mentioned herein shall form the basis of this Contract.
5. This Contract is neither a fixed lump-sum contract nor a piece work contract but a contract to carry out the work as per enclosed schedule of Items and to be paid for according to actual measured quantities at the rates contained in the Schedule of Quantities or as provided in the said Conditions and approved by the SBI.
6. The Contractor shall afford every reasonable facility for the carrying out of all works relating to above Installation in the manner laid down in the said Conditions, and shall make good any damages done to walls, floors, etc. after the completion of his work.
7. The Employer reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract.
8. Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work soon after the Site is handed over to him or from 15th day after the date of issue of formal work order as provided for in the said Conditions whichever is later and to complete the entire work within 90 days subject to nevertheless the provisions for extension of time.



9. All payments by the Employer under this Contract will be made by State Bank of India.
10. All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen at Mumbai and only the Courts in Mumbai shall have jurisdiction to determine the same.
11. The said contract comprises the work of Design, Supply, Installation, Testing And COMMISSIONING OF 145Kwp Grid Connected Rooftop Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (From 2nd Year) at various branches under LHO Mumbai Metro, Mumbai and providing all-maintenance service including all spares during warranty period for all five Branches and all subsidiary works connected therewith within the same site as may be ordered to be done from time to time by the Contractor even though said works may not be shown on the drawings or described in the said specifications or the priced schedule of quantities.
12. Contractor shall be responsible for preventive maintenance of the system as per schedule for proper functioning of the system and its upkeep including fortnightly cleaning and wiping of solar panels using fresh water. Contractor shall provide necessary services for breakdown maintenance of the system for a period of 5 years from the date of commissioning.
13. That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor. The following documents shall be deemed to form and be read and constructed as part of this Contract.
 - a Technical Specifications
 - b Tender Terms and Conditions
 - c Detailed final offer of the Successful Bidder
14. **Guarantees/ warranty:** THE CONTRACTOR must guarantee the system/ equipment/ materials/ supplied against faulty design/ material/ components/ workmanship giving rise to breakdowns/ under efficiency, increase in power consumption/ reworks/ replacements etc. Comprehensive onsite warranty should be valid for a period of Five years from the date of handing over, irrespective of the date of deliveries shall be provided by THE CONTRACTOR. Failure to make-up the breakdowns for during the guarantee period shall automatically attract invocation of the Bank Guarantee/ or seizure of retention money
15. The Contractor agrees and hereby keeps the Bank indemnified against all claims, actions, loss, damages, reputation loss, costs, expenses, charges, including legal



expenses (Attorney, Advocates fees included) which the Bank may suffer or incur on account of any deficiency in Services rendered by The Contractor or breach of any obligations under this contract, including without limitation, breach of confidentiality obligations or any acts of commission / omission on the part of employees, agents, representatives or Sub-Contractors of the Contractor. The Contractor agrees to make good the loss suffered by the Bank.

IN WITNESS WHEREOF THE EMPLOYER and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written.

SIGNATURE CLAUSE

SIGNED AND DELIVERED by the

_____By the(Employer)

(Signature of Employer)

hand of Shri _____

(Name and Designation)In the presence of:

(Signature of Witness-1)

Shri / Smt. _____

Address _____

(Witness-1)

SIGNED AND DELIVERED by the

_____by the
(Contractor)

(Signature of Contractors)

in the presence of :

Shri / Smt. _____

Address _____

(Signature of Witness-2)



FORM A
FINANCIAL INFORMATION

I. Banker Details	
Name of the Bank :	
Branch with Address :	
City :	
Contact person in the Bank :	
Contact Details :	
II. Details of Chartered	
II. Accountant Name	
Address :	
Registration Details of accountant:	
Contact Number	
Email Address	

III. **Financial Analysis** – Details to be furnished duly supported by figures in Balance Sheet/Profit and Loss Account for the last Five Chartered Accountant and as submitted by the applicant to the Income-Tax Department (Copies to be attached).

	YEARS		
	2018-2019	2019-2020	2020-2021
Gross Annual turnover in PVSOLAR works			
Profit/Loss			
(iii) Financial position :			
(a) Cash			
(b) Current Assets			
(c) Current Liabilities			



(d) Working capital (b-c)			
(e) Current Ratio:			
(Current Assets/Current Liabilities (b/c))			

IV. Latest Income Tax clearance Certificate/Copy of Latest IT Return submitted.

V. Solvency certificate from Bankers (Schedule Bank) of Applicant.

VI. Financial arrangements for carrying out the proposed work

**Signature of Chartered Accountant
withseal**

Signature of Applicant(s)



FORM- B

DETAILS OF ALL "SIMILAR" WORKS COMPLETED DURING THE LAST THREE YEARS ENDING 30th September 2021

To,

State Bank of India, LHO, Mumbai

SUB:

TENDER NO:

Sl. No	Description of the Services	LOA No. /WO and date	Full Postal Address & phone nos. of Client. Name, designation and address of Engineer/ Officer-in Charge (for cases other than purchase)	Value of Contract/Order (<i>Specify</i> Currency Amount)	Date of Commencement of Services	Scheduled Completion Time(Months)	Date of Actual Completion	Reasons for delay in execution, if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Date & Place:

[Signature of Authorized Signatory of Bidder]
Name & Designation

FORM- B1

SUPPLEMENTARY INFORMATION ON COMPLETED MAJOR WORKS

1	Name of work	
2	Location	
3	Client's name and address	
4	Consultants name and address	
5	Scope of work	
6	Type of PV SOLAR system	
7	Time taken for completion of the work	
8	Specialised service, if any provided	
9	Specialised Tools &Plant deployed for the project	

Signature of Applicant

Note: Separate Sheets may be attached for each work/project.



FORM- C

DETAILS OF SIMILAR PROJECTS ON HAND - UNDER EXECUTION OR AWARDED

To,
State Bank of India, LHO, Mumbai

SUB:
TENDER NO:

Sl. No (1)	Description of the Services (2)	LOA /WO No. and date (3)	Full Postal Address & phone nos. of Client. Name, designation and Address of Engineer /Officer-in Charge (for cases Other than purchase) (4)	Value of Contract /Order (<i>Specify</i> Currency Amount) (5)	Date of Commencement of Services (6)	Scheduled Completion Time(Months) (7)	Percentage of work Completed (8)	Reasons for delay in execution, if any (9)

Place:

[Signature of Authorized Signatory of Bidder]
Date:
Name:
Designation: Seal:



FORM D

PERFORMANCE REPORT FOR "SIMILAR" MAJOR COMPLETED WORKS
(REFERRED TO FORM "B")

1	Name of the work/ :Project & Location	
2	Scope of work :	
3	Agreement No & Date	
4	Estimated Cost / Tendered Cost	
5	Actual Value of work done	
6	Date of commencement	
7	Stipulated date of commencement :	
8	Actual date of commencement:	
9	Date of completion	
10	Stipulated date of completion :	
11	Actual date of completion :	
12	Amount of compensation levied for delayed :Completion, if any	
13	Performance report based on	
14	Quality of Work	Very Good / Good / Fair / Poor
15	Time Management	Very Good / Good / Fair / Poor
16	Resourcefulness	Very Good / Good / Fair / Poor
17	Financial Soundness	Very Good / Good / Fair / Poor
18	Technical Proficiency	Very Good / Good / Fair / Poor

Superintending Engineer / Chief Project Manager or
Equivalent (Name of Organization),

1. The performance report is to be submitted separately for all major works mentioned in Form „B“.
2. The performance report is preferably to be submitted in the above Performa. In case, different proforma is **used, the applicant shall ensure that the report / certificate shall contain all the above in-formation / details.**

FORM "E"

DECLARATION

(To Be Given By the Applicant Who Have Downloaded the Tender Document from the Web-Site)

This is to certify that

- 1) I / We have submitted the Tender document in the proforma as **down-loaded directly from the web site & there is no change in formatting, number of pages etc.**
- 2) I / We have submitted TENDER document which **are same / identical** as available in the website.
- 3) I / We have checked that **no page is missing** and all pages as per the index and checklist are available & that all pages of TENDER document submitted by us are **clear & legible.**
- 4) I / We have **signed (with stamp) all the pages** of the TENDER document before submitting the same.
- 5) I / We have **sealed** the TENDER documents properly before submitting the same.
- 6) I / We have read carefully & understood the instructions to the applicants.
- 7) I / We have **not made any modification / corrections / additions / deletions etc.** in the TENDER documents downloaded from website by me / us. In case at any stage later, it is found there is difference in our downloaded TENDER documents from the originals and / or any documentation, SBI shall have the absolute right to disqualify / reject the application outright and also debar me / us in participating in any future tenders without any prior intimation to me / us

Signature of
Applicant Name:
Designation:

Form "F"

DETAILS OF KEY TECHNICAL AND ADMINISTRATIVE PERSONNEL EMPLOYED IN THE ORGANIZATION

Sr. No.	Designation	Total Number	Names	Education al Qualification	Professional Experience	Length of continuous service with the organization in years
1	2	3	4	5	6	7

Signature of Applicant

Note:

1. Details of Technical personnel shall be provided qualification-wise
2. Organization chart of the company, additional information about Technical and administrative personnel, if any, may be submitted on separate sheet
3. Professional experience in terms of KWp solar power shall be mentioned separately.

FORM "G

DETAILS OF PLANT & MACHINERY, MANUFACTURING UNITS, TOOLS AND EQUIPMENTS LIKELY TO BE USED IN CARRYING OUT THE WORK.

Sr. No	Name of Tools / Machinery / Equipment	Unit	Make / Model / Capacity or Type	Age in years	Condition of the unit	Ownership Status (mention the quantity)			Current location	Remarks
						Presently owned	To be purchased	Leased		

Signature of Applicant

INSTRUCTIONS TO BIDDERS

Sealed Tenders are invited by SBI for Tender For Design, Supply, Installation, Testing And Commissioning of 145Kwp Grid Connected Rooftop Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (From 2nd Year) at various branches under LHO Mumbai Metro, Mumbai as described in the Bidding Data under single point responsibility under Tender No: .- MUM 20210802

1. Site and its location:

The proposed work is to be carried out at various branches under LHO Mumbai Metro, Mumbai with minimum Generation of 1440KWH/ Kwp/ Year:

S.No	Site-Name of the Branch	Capacity Kwp	Mini KWH
1.	various branches under LHO Mumbai Metro, Mumbai	145Kwp	1,440KWH/ Kwp/ Year

2. Tender documents:

i The applicants who have down-loaded the Tender document from the website **LINK: <https://sbi.co.in/web/sbi-in-the-news/procurement-news>**, should read the following important instructions carefully before submitting the Tender:

- a) The applicants should go through carefully & ensure that the **complete TENDER document** contains all pages of the document & ensure that **no page** in the down-loaded Tender document is **missing**.
- b) The applicant should ensure that **every page** of the down-loaded Tender document is **signed by applicant with stamp (seal) of the applicant company and all the blanks are filled by them, suitably**. Any tender with any of the documents not so signed will be liable to be rejected.
- c) The applicant should ensure that the down-loaded Tender document is properly **bound and sealed** before submitting the same and any correction / addition / alteration / omission, made in the Tender document by the applicant, shall be treated as non-responsive and the application shall be summarily rejected.
- d) The applicant shall furnish a declaration as per the format to the effect that no addition / deletion / corrections have been made in the Tender document submitted and it is identical to the Tender document appearing on Website.
- e) The applicant who has downloaded the Tender document from website should read carefully & **sign the declaration** given on the Form before submitting the same.

In case of any doubt in the down-loaded Tender document, the same should get clarified from SBI or Consultant in pre-bid meeting before submitting the final Tender **document.**

- f) The tender submitted on behalf of a firm shall be signed by all the partners of the firm or by a partner who has the necessary authority on behalf of the firm to enter into the proposed contract. Otherwise the tender may be rejected by the Bank.
- g) The bidder should visit the site & carry out the survey before quoting their rates and considering wide variation of site conditions, variation in price, logistics and distribution needs, and keeping the quantum and quality of work in mind.
- h) A tender that is not accompanied by EMD, Valid MNRE/MEDA registration certificate and other required necessary documents shall be rejected.
- i) The SBI does not bind itself to accept the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so.
- j) All the firms are required to submit the prequalification documents in the enclosed formats. On opening of envelope-I (Technical bid), the prequalification documents would be examined and the firms who meet the prequalification criteria would be eligible for the ON-LINE price bidding conducted by SBI through our service provider **M/s. E-Procurement Technology, Ahmedabad** on pre-specified date.
- k) On receipt of intimation from the SBI of the acceptance of his / their tender, by way of Work Order, the successful tenderer shall sign an agreement in accordance with the agreement in the format prescribed herein Bid. A work order by the SBI of a tender will constitute a binding contract between the SBI and the bidder so tendering, whether such formal agreement is or is not subsequently executed. The cost of necessary stamp paper for execution of the agreement shall be borne by the successful tenderer.
- l) The tenderer shall not assign the contract and shall not sublet any portion of the contract except with the written consent of the SBI. In case of breach of these conditions, the SBI may serve a notice in writing on the tenderer rescinding the contract whereupon the security deposit shall stand forfeited to the SBI, without prejudice to his other remedies against the tenderer.
- m) The Tenderer shall carry out all the work strictly according to the conditions stipulated in the tender and in accordance with details and instructions of the Bank's concerned Officials. If in the opinion of the Bank's Officials, changes have to be made in the design and with the prior approval in writing of the SBI they desire, the Tenderer shall carry out the same. The Bank's Officials decision in such cases shall be final.

- n) The tenderer shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause of delays may be including delays arising out of modifications to the work entrusted to him or in any subcontract connected therewith or delays in awarding contracts for other trades of the project or in commencement or completion of such works or in procuring governmentcontrolled or other building materials or in obtaining water and power connections for construction purpose or for any other reason whatsoever and the SBI shall not be liable for any claim in respect thereof. The SBI does not accept liability for any sum besides the tender amount, subject to such variations as are provided for herein. The SBI will not entertain any claim at any stage from the successful bidder on the plea of not having sufficiently acquainted himself as to the site conditions.

3. Site Visit

- I. The tenderer must obtain himself on his own responsibility and his own expenses all information and data that may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The tenderer is requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law and order situation, climatic conditions local authorities requirement, traffic regulations etc.

4. Earnest Money Deposit:

- I. The tenderers are requested to submit the Earnest Money of Rs.66,000/- (Rs. Sixty Six Thousand Seven Hundred And Fifty only) by means of Demand Draft / Pay Order (Valid for a period of 90 Days from the last date of submission of the tender) from any Scheduled/ Nationalized Bank drawn in favour of State Bank of India and payable in Mumbai.
- II. EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD shall be rejected.
- III. No interest will be paid on the EMD.
- IV. EMD of unsuccessful tenderer will be refunded within 30 days of award of Contract.
- V. EMD of successful tenderer will be retained as a part of security deposit.

VI. Forfeiting Of EMD:

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

- i The Bidder withdraws his tender before finalization of work order.
- ii The Bidder does not accept work order.

- iii The Bidder violates any of the terms and conditions of the tender.
- iv The Bidder fails to deposit requisite Security deposit.
- v The Bidder fails to comply with any of the conditions of the Contract /TenderDocument

5. Initial/ Security Deposit:

A sum equivalent to 2% of contract sum is required to be deposited by the firm within 7 (seven) days from the date of issue of work order.

6. Security Deposit cum Performance Bank Guarantee:

Total security deposit cum Performance Bank Guarantee shall be 5% of the final value of the work and 2% tender value (i.e. tender amount) is in the form of initial security deposit (ISD) .Bank will deduct total 5% of the final value of the work from Final/running bill and the ISD shall be returned to the L1 vendor. 5% of the retention money shall be paid after the defects liability period of 5 Year as specified in the contract. The retention money will be interest free. No interest shall be paid to the amount retained by the Bank as Security Deposit.

I. Forfeiting Of Security Deposit :

- a) The security deposit shall be liable to be forfeited wholly or partly at the sole discretion of the SBI, if the Bidder either fails to execute the work of above projects or fails to fulfil the contractual obligations or fails to settle in full his dues to the SBI.
- b) The SBI is empowered to recover from the security deposit for any sum due and for any other sum that may be fixed by the SBI 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.

7. DEFECT LIABILTY PERIOD:

60 (sixty) months from the date of completion. The contractor has undertaken to attend repairs/rectifying the defects within 48 hours whatsoever during the defects liability period. Any defects or shortcomings found during execution of work and during the defects liability period from the completion of the entire work shall be attended/rectified by the tenderer without any extra cost to the SBI. In case of failure to do so within 10 days from such notice from the Bank, the SBI may get suchrectification works carried

out through any other firm and expenditure incurred by the Bank shall be recovered from any money due to the Vendor.

8. Liquidated damage:

If the work is not completed in the specified time the contractor will be levied liquidated damages @**0.5%** of the quoted value per week subject to maximum of **5 %** of the contract value will be applied for delay in completion of the work.

9. Labour License:

The vendor shall adhere to various provision of the contract Labour (Regulation & Abolition) Act 1970, if applicable under the said contract, and fulfill all the statutory requirements. The contractor is required to comply withal acts of Government relating to labour and the rules and regulation made there under from time to time and submit at the times all particulars and settlements required to be furnished to the labour authorities.

10. Terms of Payments:

- I.** No advance payment shall be paid.
- II.** 60% of total project cost against all materials delivery at site and production of test certificates and with necessary documents showing requisite quality as mentioned in tender document such as Manufacture's Inspection and Test certificate.
- III.** 35% released after:
 - a)** Installation, commissioning, testing, successful trail run.
 - b)** Including grid synchronization along with supply and installation of net metering, generation meter.
 - c)** Approvals from local MSEDCL as required.
 - d)** Submission of Insurance policy documents effective from date of commissioning for CMC period.
 - e)** On receipt of one month successful performance report generated automatically through Remote Monitoring System as well as manually.
- IV.** 5% will be held with us as SD for 6 yrs and could be release against submission of Performance Bank Guarantee from any scheduled/ commercial Bank, other than SBI
- V.** Payment shall be made by way of Electronic fund transfer and the bill will be paid bythe SBI. Firm should furnish details of the bank, A/c no, IFSC code.
- VI.** Payments towards the above work shall be made by SBI.
(The TDS at the source will be deducted as per the Govt. rule and regulations.)

11. Signing of contract Documents

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within **7 days** from the receipt of intimation of acceptance of the tender by the Bank. However, the written acceptance of the tenders by the Bank will constitute a binding agreement between

the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

12. Completion Period

Time is essence of the contract. The work should be completed in all respect accordance with the terms of contract within a period of 90 days from the date of award of work.

13. Validity of tender

Tenders shall remain valid and open for acceptance for a period of **90 days** from the date of opening price bid. If the tenderer withdraws his/her offer during the value period or makes modifications in his/her original offer which are not acceptable to Bank without prejudice to any other right or remedy the Bank shall be at liberty forfeit the EMD.

14. Delay and Extension of Time:

If in the opinion of Bank's Officials, works be delayed by force majeure such as (a) war / hostilities, (b) riots or civil commotion, (c) earthquakes, fire tempest, lightening or other natural / physical disasters, etc., (d) restrictions imposed by the Government which prevent or delay the execution of the order or by any other reasons, a suitable extension of time will be given and no extra claim will be paid by the SBI whatsoever.

15. Standards:

The Vendor shall use all materials conforming to relevant BIS/ relevant Code and will use the best materials of approved manufacture. The goods supplied under this contract shall conform to the Standards mentioned in the Technical specification Section as per the MNRE / MEDA requirements.

16. Inspection:

The vendor shall at the instructions of the SBI within such time as notified, open up for inspection any work and should the vendor refuse or neglect to comply with such instructions, the SBI may employ other workman to open of the same. Such work if it is found not in accordance with approved specifications, or the instructions, expenses of opening up and redoing if required shall be borne by and recoverable from the Vendor from any money due or which may become due to the vendor. Bidder has to strictly follow the specifications given in the work order while carrying out the execution of work.

17. Transportation:

Where the Vendor/ Contractor / Agency 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 Vendor/ Contractor / Agency, and the contract price shall include transportation costs.

No mobilization advance shall be paid to the Vendor.

18. Packing

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

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 SBI.

19. Danger plates:

The bidder shall provide at least 8 Danger Notice Plates of 200mm X 150 mm 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. Out of eight, four danger notice shall have to be provided at PV Yard & Four-danger notice at Control Room & Battery room.

20. Storage space:

Storage space may be allowed at site as per the availability. The Vendor will have to make his own arrangement for security and locking arrangement of the storage space. The Vendor may be required to vacate the storage space as per SBI's exigency without any extra cost.

21. Staying Arrangements:

The vendor has to make his own arrangement of stay for his employees. Bank will not allowed to stay in Bank Premises.

22. Vendor's Representative on Works:

Vendor shall maintain at site responsible, efficient, qualified and well experienced in-charge during the contract period. Any clarifications, explanation, instructions or notices



given by the SBI to such in-charge shall be deemed to be given to the vendor and shall be binding on the vendor.

23. Dismissal of Workman:

Vendor shall, on the request of the SBI, immediately dismiss from the work any person in the opinion of SBI be unsuitable or incompetent or who may be guilty of misconduct.

24. Notices:

Notices of the SBI, to the vendor may be served personally or by being left at or sent by registered post to the last known place of the business of the party to whom the same is given or in the case of the vendor by being left on the works. Notices may be served at or sent by registered post to the registered office of the vendor. Any notice sent by registered post shall be deemed to be served at the time when in the ordinary course of post, it would be delivered.

25. Sub-contracts:

Subcontract is strictly prohibited.

The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges as instructed.

26. TERMINATION OF CONTRACT BY THE SBI:

If the vendor being an individual or a firm, commit any "Act of Insolvency" or shall be adjudged an insolvent or being an incorporated company shall have an order for compulsory winding up or applies for voluntary winding up or subject to the supervision of the court and of the official assignee or the liquidator, in such acts of insolvency or winding up shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the SBI that they are able to carry out and fulfill the contract, and to give security, therefor, if so required by the SBI.

OR

if the vendor (whether an individual Firm or Incorporated Company) shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the vendor, or shall assign or sublet the contract without the consent in writing of the SBI first obtained.

OR

shall charge or encumber this contract or any payments due or which may become due to the vendor there under.

OR

if the vendor

- a. has abandoned the contract or
- b. has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for seven days after receiving from the SBI written notice to proceed, or
- c. has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or
- d. has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the SBI written notice that the said materials of work were condemned and rejected by the SBI under these conditions or
- e. has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the vendor for seven days after written notice shall have been given to the vendor requiring the vendor to observe or perform the same, or
- f. has to the detriment of good workmanship or in defiance of the SBI's instructions to the contrary sublet any part of the contract.

Then and in the event of any of the aforesaid cases, the SBI may, notwithstanding any previous waiver, after giving seven days notice in writing to the vendor, determine the contract but without thereby affecting the powers of the SBI or the obligations and liabilities of the vendor, the whole of which shall continue in force as fully as if the contract has not been so determined and as if the works subsequently executed has been executed by or on behalf of the vendor.

And further, the SBI may enter upon and take possession of the work and all plant, tools, scaffolding, sheds, machinery and materials lying upon the premises or the

adjoining lands or roads and use the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other vendors or other persons to complete works, and the vendor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other vendor or other person or persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter as convenient, the SBI shall give a notice in writing to the vendor to remove his surplus materials and plant, and should the vendor fail to do so within a period of 14 days after the receipt thereof by him, the SBI shall sell the same by public auction, and shall give credit to the vendor for the amount realised on deducting there from the costs of removal and sales.



If any sum shall be due or payable to or by the SBI for the values of the said plant and materials so taken possession of by the SBI and the expense of loss which the SBI shall have been put to in requiring the works to be completed, and the amount, if any, owing to the vendor and the amount which shall be so certified shall thereupon be paid by the SBI to the vendor or by the vendor to the SBI, as the case may be, and the SBI's certificate shall be final and conclusive between the parties.

On termination of the contract, the vendor shall forth with remove himself and his workmen from the work site.

27. Matters To Be Finally Determined By The SBI:

The SBI's decision, opinion, direction, with respect to all or any of the matter such as scope of work, vendor to provide everything necessary, materials and workmanship to conform the description, assignment of subletting, defects after completion, delay & extension of time, opened up works and the schedule of rates as contained in the Price Bid hereof and as to the exercise by them the right to have any works opened up shall be final and conclusive and binding on the vendor. SBI's instructions if any, in this regard in case of any urgency, shall also be complied immediately.

28. Insurance Contract Conditions Vendor's Liability And Insurance

- a. **The insurance shall be for an amount equal to 125 percent of the value of the contract on "All Risks" basis, valid until the Completion of the project or handing over whichever is later.**
- b. From commencement to completion of works, the Vendor shall take full responsibility for the care of the work and for taking precautions to prevent loss or damage to the works and to minimize the loss or damage to the greatest extent possible and shall be liable for any damage or loss that may happen to the works or any part thereof from any cause whatsoever, inherent defects and failures due to poor workmanship and causes such as fire, lightening, explosion, earthquake, storm, hurricane, floods, inundation, subsidence, landslides, rock slides, riots (excluding civil war, rebellion, revolution and insurrection) and shall at his own cost repair and make good the same so that at all times the work shall be in good order and condition and in conformity in every respect with the requirements of the Contract.
- c. Without limiting the obligations and responsibilities under this condition, the Vendor shall insure and keep insured the works from commencement to completion, as aforesaid, for their full value provided under this Contract, increased by 25% against the risk of loss or damage from any cause whatsoever including the causes enumerated in the Clause (a) above. In the event of there being a variation in the nature and extent of the work, the Vendor shall from time to time increase or decrease the value of the insurance correspondingly. The entire

premium shall be borne and paid by the Vendor. The said insurance shall also provide for the removal of debris of the lost or damaged works.

- d. The Vendor shall at all times indemnify the SBI against all losses, claims or damages or compensation under the provisions of the payment of Wages Act 1936, Minimum Wages Act 1948, Employees Liability Act 1938, Workmen's Compensation Act 1923, The Maternity Benefit Act 1961, Industrial Disputes Act 1947 and Contract Labour and Regulation and Abolition Act 1970, SBI State Insurance Act 1948 or any modification thereof or any other law relating thereto and rules made there under from time to time or as a consequence of any accident or injury to any workman or other persons in or about the work whether in the Employment of the SBI, or Vendor or not and also against all costs, charges and expenses of any suit, action or proceedings whatsoever out of such accident or injury or combination of any such claims.
- e. Before commencing the work, the Vendor shall without limiting his obligations and responsibilities under this condition, insure against any loss of life or injury to any personnel in the employment of Vendor/Sub- Vendor/Nominated Sub-Vendor. For this purpose, insurance shall be taken by the Vendor/Sub-Vendor. Such insurance shall be taken to include both employees/workmen covered by the Workmen's Compensation Act 1923, as well those employees/ workmen not covered by the said Act. Separate insurance policies may be taken for employees/workmen covered by Workmen's Compensation Act 1923, and employees workmen not covered by the said Act. All the premiums shall be paid by the Vendor.
- f. The Vendor shall at all times indemnify and keep indemnified the SBI against all losses and claims for injuries or damage to any person or any property whatsoever which may arise out of or in consequence of the construction and maintenance of the work and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto. Before commencing the execution of the works, the Vendor shall without in any way limiting his obligations and liabilities under this condition, insure at his cost and expense against any damage or loss or injury which may be caused to any person or property including the Employee or servants of the SBI and the Consultants and their property by or in the course of the execution of the works. Such insurance to be known as the Third Party Insurance shall be in a sum equivalent to two percent of the value of the accepted tender, subject to the minimum sum of Rupees Five Lakhs. The Insurance Policy to be so obtained by the Vendor shall be deposited by the Vendor with the SBI within seven days of its issue by the insurer.
- g. The Vendor shall ensure that similar insurance policies are taken out by his sub vendors or nominated vendors, if any, and shall be responsible for any claim or loss resulting from their failure to obtain adequate insurance protection in

connection thereof. While taking the insurance policies, vendor should indicate clearly to the insurance companies that policies issued shall cover their sub-vendors and nominated sub-vendors also.

- h. No work shall be commenced by the Vendor unless and until he has obtained the insurance or insurance required to be obtained by him under or by the foregoing clauses and no work shall be carried out or continued by the Vendor unless and until each insurance is current and valid at that time.
- i. In the event of any claim for insurance becoming due on account of any eventuality covered by the respective insurance policy/policies, the Vendor shall reinstate the installation, replace the materials or equipments or pay compensating to the affected personnel/Employees without waiting for settlement of the claim from insurance company.

GENERAL CONDITIONS OF CONTRACT

1.0 **Definitions:** -

“**Contract**” means the documents forming the tender and the acceptance thereof and the formal agreement executed between SBI and the contractor, together with the documents referred there in including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Architects / Bank and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 “**The Employer/ Bank**” means the State Bank of India (including branches and other offices) and any of its employees or representative authorized on their behalf, having its Local Head Office, Synergy, State Bank of India, C-6, G-BLOCK, BKC, BANDRA (EAST), MUMBAI-500051.

1.1.2 ‘**Architects/ Consultants**’ shall mean M/s

1.1.3 ‘**Site Engineer**’ shall mean an Engineer appointed by the SBI at site as their representative for day-to-day supervision of work and to give instructions to the contractors.

1.1.4 ‘**The Contractor**’ shall mean the individual or firm or company whether incorporate not, undertaking the works and shall include legal personal representative of individual or the composing the firm or company and the permitted assignees of individual or firms of company.

1.1.5 The expression ‘**Works**’ or ‘work’ shall mean the permanent or temporary work description in the “Scope of work” and / or to be executed in accordance with the contract includes materials, apparatus, equipment, temporary supports, fittings and things of kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.6 ‘**Engineer**’ shall mean the representative of the Consultants/ Architects.

1.1.7 '**Drawings**' shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer from time to time 'Contract value shall mean value of the entire work as stipulated in the letter of acceptance of tender subject such additions there to or deductions there from as may be made under the provide herein after contained.

1.1.8 "**Specifications**" shall mean the specifications referred to in the tender and modifications thereof as may time to time be furnished or approved by the Architect/ Consultant.

1.1.6 "**Month**" means calendar month.

1.1.9 "**Week**" means seven consecutive days.

1.1.10 "**Day**" means a calendar day beginning and ending at 00 Hrs and 24 Hrs respectively.

1.1.11 "SBI's Engineer" shall mean The Civil / Electrical Engineer in - charge of the Project, as nominated by the SBI.

1.1.12 The following shall constitute the Joint Project Committee (herein under referred to as JPC) for assessing and reviewing the progress of the work on the project and to issue instructions or directions from time to time for being observed and followed by the Architects Site Engineer / PMC and other consultants / contractors engaged in the execution of the project.

CLAUSE

1.0 **Language**

The language in which the contract documents shall be drawn shall be in English.

2.0 **Errors, omissions and discrepancies**

In case of errors, omissions and/ or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc., the following order shall apply.

- i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.

- ii) Between the written or shown description or dimensions in the drawings and the corresponding one in the specification the former shall be taken as correct.
- iii) Between written description of the item in the specifications and descriptions in bills of quantities of the same item, the former shall be adopted:
 - a) In case of difference between rates written in figures and words, the rate in words shall prevail.
 - b) Between the duplicate / subsequent copies of the tender, the original tenders shall be taken as correct.

3.0 i) Letter of Acceptance:

Within the validity period of the tender the SBI shall issue a letter of acceptance directly or through the architect by registered post or otherwise depositing at the of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a bind contract between the SBI and the contractor.

ii) Contract Agreement:

On receipt of intimation of the acceptance of tender from the SBI/ Architect the successful tenderer shall be bound to implement the contract and within fifteen days there of shall sign an agreement in a non-judicial stamp paper of appropriate value.

4.0 Ownership of drawings:

All drawings, specifications and copies thereof furnished by the SBI through its Architect / consultants are the properties of the SBI. They are not to be used on other work.

5.0 Detailed drawings and instructions:

The SBI through its architects / consultants or directly shall furnish with reasonable proper additional instructions by means of drawings or otherwise necessary for the execution of the work. All such drawings and instructions shall be consistent with contract documents, true developments thereof and reasonably inferable there.

The work shall be executed in conformity therewith and the contractor prepare a detailed programme schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBI.

6.0 Copies of agreement

Out of Six copies, two copies of agreement/tender document duly signed by both the parties with the drawings shall be handed over to the contractors, two copies to SBI and one copy each shall be for the use of SBI and Architect.

7.0 Liquidated damages:

If the contractor fails to maintain the required progress in terms of clause 8.0 of "Instruction to the tenderer" or to complete the work and clear the site including vacating their office on or before the contracted or extended date of completion, without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damages at the rate of 0.50% of the contract value per week which subject to a maximum of 5% of the contract value.

8.0 Materials, Appliances and Employees

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be best quality. The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. Workman whose work or behavior is found to be unsatisfactory by the SBI /Architect/ consultant he shall be removed from the site immediately.

9.0 Permits, Laws and Regulations:

Permits and licenses required for the execution of the work shall be obtained by the contractor at his own expenses. The contractor shall give notices and comply with the regulations, laws, and ordinances rules, applicable to the contract. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the SBI in writing under intimation of the Architect/ Consultant. If the contractor performs any act, which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBI any legal actions arising there from.

10.0 Setting out Work:

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the architect

/consultant before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by, the architect / consultant the contractor shall be responsible for the same and shall bear his own expenses to rectify such error, if so, required to the satisfaction of the SBI.

11.0 Protection of works and property:

The contractor shall continuously maintain adequate protection of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss, except due to causes beyond his control and due to his fault or negligence except which are due to causes beyond his control.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Govt. and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property on or about or adjacent to his place of work. The contractor shall take insurance covers as per clause 26.0 at his own cost. The policy may be taken in joint names of the contractor and the SBI and the original policy may be lodged with the SBI.

12.0 Inspection of work:

The SBI / Architect / Consultant or their representatives shall at all reasonable times have free access to the work site and / or to the workshop, factories, or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the SBI/Architect/consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the SBI / Architect / Consultant except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its construction stage or its completion can also be inspected by the Chief Technical Examiner's Organization a wing of Central Vigilance Commission.

13.0 Assignment and subletting

The whole of work included in the contract shall be executed by the contractor and he shall not directly entrust and engage or indirectly transfer, assign or underlet the contract or any part or share thereof or interest therein without the written consent of the SBI through the Architect and no undertaking shall relieve the contractor from the responsibility of the contractor from active & superintendence of the work during its progress.

14.0 Quality of materials, workmanship & Test

All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with SBI/Architect's instructions and shall be subject from time to time to such tests as the SBI /Architect may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory.

The contractor shall provide such assistance, instruments, machinery, labour and materials.

Contractor to made arrangement of laboratory on site, where weight of various materials like aluminium extrusions etc. can be done, Contractor should also make available a 3.00 meters, 15.00 meters & a 50.00 meters tape, a Vernier Caliper & Micrometer so any measurements/ tests can be taken on sites itself.

ii) **Samples**

All samples of adequate numbers, size, shades & pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site detailed literature/test certificate of the same shall be provided to the satisfaction of the SBI/Architect. Before submitting the sample/literature the contractor shall satisfy himself that the material/equipment for which he is submitting the samples/literature meet with the requirement of tender specification. Only when the samples are approved in writing by the SBI /Architect the contractor shall proceed with the procurement and installation of the particular material/equipment.

The approved samples shall be signed by the SBI. /Architect for identification and shall be kept on record at site office until the completion of the work for inspection/comparison at any time. The SBI/Architect shall take reasonable time to approve the sample. Any delay that might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials/equipment etc. shall be to the account of the contractor..

iii) **Cost of tests**

The cost of making any test shall be borne by the contractor if such test is intended by or provided for in the specification or BOQ.

iv) **Costs of tests not provided for**

If any test is ordered by the SBI/Architect which is either:

- (a) If so intended by or provided for or (in the cases above mentioned) is not so particularized or through so intended or provided for but ordered by the SBI/Architect which is either to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government/approved laboratory, then the cost of such test shall be borne by the contractor.

15.0 Obtaining information related to execution of work

No claim by the contractor for additional payment shall be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the work nor any misunderstanding or the obtaining incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfilment of contract.

16.0 Contractor's superintendence

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the SBI/Architect may consider necessary until the expiry of the defects liability period, stated hereto.

17.0 Quantities

- i) The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under Clause 20 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 21(e) hereof.

18.0 Works to be measured

The SBI /SBI/Architect may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the SBI/Architect in taking such measurements and calculation and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the BI/SBI/



Architect shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book.

The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the measurement book. Should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the SBI/ Architect shall be final. All authorized extra work, omissions and all variations made shall be included in such measurements

19.0 **Variations**

No alteration, omission or variation ordered in writing by the SBI/Architect shall vitiate the contract. In case the SBI/Architect thinks proper at any time during the progress of works to make any alteration in, or additions to or omission from the works or any alteration in the kind or quality of the materials to be used therein, the Architect/Consultant shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice but the contractor shall not do any work extra to or make any alteration or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the Architect/Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect/Consultant and the same shall be added to or deducted from the contract value, as the case may be

20.0 **Valuation of Variations**

No claim for an extra shall be allowed unless it shall have been executed under the authority of the Architect / Consultant with the concurrence of the SBI as herein mentioned. Any such extra is herein referred to as authorized extra and shall be made in accordance with the following provisions.

- a) (i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
- (ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.

- b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of Works are carried out, otherwise the prices for the same shall be valued under sub-Clause 'c' hereunder.
- c) Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the SBI /Architect/ consultant of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the SBI /Architect/ consultant shall fix such rate or prices as in the circumstances in his opinion are reasonable and proper, based on the market rate.
- d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender, of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the SBI/ Architect/Consultant) the workman's name and materials employed be delivered for verifications to the SBI/ Architect /consultant at or before the end of the week following that in which the work has been executed.
- e) It is further clarified that for all such authorized extra items where rates cannot be derived from the tender, the Contractor shall submit rates duly supported by rate analysis worked on the 'market rate basis for material, labour hire / running charges of equipment and wastages etc. plus 15% towards establishment charges, contractor's overheads and profit. Such items shall, not be eligible for escalation.

21.0 Final measurement

The measurement and valuation in respect of the contract shall be completed within **two months** of the virtual completion of the work.

22.0 Virtual Completion Certificate (VCC)

On successful completion of entire works covered by the contract to the full satisfaction of the SBI, the contractor shall ensure that the following works have been completed the satisfaction of the SBI:

- a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour equipment and machinery.
- b) Demolish, dismantle and remove the contractor's site office, temporary works, structure including labour sheds/camps and constructions and other items and

things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI not incorporated in the permanent works.

- c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor by SBI and shall clear, level and dress, compact the site as required by the SBI
- d) Shall put the SBI in undisputed custody and possession of the site and all land allot by the SBI
- e) Shall hand over the work in a peaceful manner to the SBI.
- f) All defects / imperfections have been attended and rectified as pointed out by the Architects to the full satisfaction of SBI.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor is entitled to apply to the Architect / consultant is satisfied of the completion of work. Relative to which the completion certificate has been sought, the Architect/ consultant shall within fourteen (14) days of the receipt of the application for completion certificate, issue a VCC in respect of the work for which the VCC has applied.

This issuance of a VCC shall not be without prejudice to the SBI's rights and contractor liabilities under the contract including the contractor's liability for defects liability nor shall the issuance of VCC in respect of the works or work at any site be construction as a waiver of any right or claim of the SBI against the contractor in respect of or work at the site and in respect of which the VCC has been issued.

23.0 Work by other agencies

The SBI /SBI/Architect reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBI /SBI. Such work shall be carried out in such manners not to impede the progress of the works included in the contract.

24.0 Insurance of works

- 24.1 a) Before taking up the work, the Contractor shall, obtain and submit to the Employer (Bank/SBI), contractor's all risk policy and a third-party insurance policy in original, issued by any Public-Sector Insurance Company.
- b) The Policy should be issued in the joint names of Employer and contractor with Employer's name appearing first. For Minimum value Rs 5 lacs until completion of project or handing over whichever is later for any type of accident / incidence.
- c) The contractor shall, from time to time, provide documentary evidence as regards payments of premia for all insurance Policies for keeping them valid till the completion of the work.
- d) Without prejudice to any of its obligations and responsibilities specified above, the Contractor shall, within 10 days from the date of work order, submit documentary evidence as required by the Employer in support of having obtain requisite insurance cover.
- e) No work shall be taken up by the Contractor at site unless the Insurance Policies as mentioned above are obtained.
- f) Also, no payment shall be made to the Contractor on expiry of insurance policies unless renewed by them and renewed policy is submitted with the SBI. Nothing extra shall be payable on this account.

24.2 **Damage to persons and property**

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBI/SBI against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to:

- a) The permanent use or occupation of land by or any part thereof.
- b) The right of SBI to execute the works or any part thereof on, over, under, in or through any lands.
- c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract
- d) Injuries or damage to persons or property resulting from any act or neglect of the SBI. their agents, employees or other contractors not being employed by the contractor or for or in respect of any claims, proceedings, damages, costs,

charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBI, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

24.3 Contractor to indemnify SBI

The contractor shall indemnify the SBI against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision sub clause 25.2 of this clause.

24.4 Contractor's superintendence

The contractor shall fully indemnify and keep indemnified the SBI against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent, design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against SBI in respect of such matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the SBI if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Architect / consultant in this behalf.

24.5 Third Party Insurance

24.5.1 Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under clause 26.0 of GCC shall insure against his liability for any material or physical damage, loss, or injury which may occur to any property including that of SBI/SBI, or to any person, including any employee of the SBI/SBI by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision to clause 24.0 thereof.

24.5.2 Minimum amount of Third Party Insurance

Such insurance shall be affected with an insurer and in terms approved by the SBI which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required, produce to the Architect / consultant the policy or policies of insurance cover and receipts for payment of the current premiums.

The minimum insurance cover for physical property, injury, and death is Rs.5 Lakh per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

24.6 Accident or Injury to workman:

24.6.1 The SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBI/SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBI/SBI against all such damages and compensation, save and except as aforesaid, and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

24.6.2 Insurance against accidents etc. to workmen

The contractor shall insure against such liability with an insurer approved by the SBI during the whole of the time that any persons are employed by him on the works and shall, when required, produce to the architect / consultant such policy of insurance and receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor the contractor's obligation to insured as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that SBI is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect /consultant when such policy of insurance and the receipt for the payment of the current premium.

24.6.3 Remedy on contractor's failure to insure

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case the SBI may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SBI as aforesaid from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

24.6.4 Without prejudice to the others rights of the SBI against contractors. In respect of such default, the employer shall be entitled to deduct from any sums payable to the contractor the amount of any damages costs, charges, and other expenses paid by the SBI and which are payable by the contractors under this clause. The contractor shall upon settlement by the Insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with due diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the Insurer in respect of such damage shall be paid to the contractor and the Contractor shall not be entitled to any further payment in

respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

25.0 Commencement of Works:

The date of commencement of the work will be reckoned as the recorded date of handing over site by the SBI/SBI or **7 days** from the date of receipt of Letter of Acceptance/work order from SBI, whichever is later.

26.0 Time for completion

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **90 days from the date of commencement**. If required in the contract or as directed by the SBI/Architect, the contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract.

27.0 Rate of progress

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the SBI/SBI/Architect. Should the rate of progress of the work or any part thereof be at any time be in the opinion of the SBI /SBI/Architect too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the SBI /SBI/Architect shall thereupon take such steps as considered necessary to expedite progress so as to complete the works by the prescribed time or extended time. Such communications from the SBI/Architect neither shall relieve the contractor from fulfilling obligations under the contract nor he shall be entitled to raise any claims arising out of such directions.

28.0 Work during nights and holidays

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the SBI/Architect, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the SBI/SBI/Architect. However the provision of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required and continued with the prior approval of the SBI/Architect at no extra cost to the SBI.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance so as to avoid disputes with the neighbours.

29.0 No compensation or restrictions of work

If at any time after acceptance of the tender SBI shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not require the whole or any part of the work to be carried out, the SBI /Architect shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work fully but which he did not derive in consequence of the foreclosure of the whole or part of the work. Provided that the contractor shall be paid the charges on the cartage only of materials actually and bona fide brought to the site of the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the SBI/Architect shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less. In case of such stores having been issued from SBI stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of SBI/Architect shall be final.

30.0 Suspension of work

i) The contractor shall, on receipt of the order in writing of the Architect / consultant (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as Architect

/consultant may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

- a) On account of any default on the part of the contractor, or
- b) For proper execution of the works or part thereof for reasons other than the default of the contractor, or
- c) For safety of the works or part thereof.

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

ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

The contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

31.0 Action when the whole security deposit is forfeited

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the Architect / consultant shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBI:

- a) To rescind the contract (of which rescission notice in writing to the contractor by - Architect / consultant shall be conclusive evidence) and in which case the security, deposit of the contractor shall be forfeited and be absolutely at the disposal of SBI.
- b) To employ labour paid by the SBI and to supply materials to carry out the work, or part of the work, debiting the contractor with the cost of the labour and materials cost of such labour and materials as worked out by the Architect/consultant shall final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract certificate of architect /consultant as to the value of work done shall be final conclusive against the contractor.
- c) To measure up the work of the contractor, and to take such part thereof as shall unexecuted, out of his hands, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (The amount of which excess the certificates in writing of the Architects / consultant shall final and conclusive) shall be borne by original contractor and may be deducted from any money due to him by SBI under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof.

In the event of any of above courses being adopted by the SBI the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the performance of the contract and in case the contract shall be rescind under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the Architect / consultant will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

32.0 **Owner's right to terminate the contract**

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Government and of the Official Assignee of the liquidator in such acts of insolvency or winding up shall be unable within seven days after notice to him to do so, to show to the reasonable satisfaction of the SBI /Architect that he is able to carry out and fulfil the contract, and to give security therefore if so required by the SBI.

Or if the contractor (whether an individual firm or incorporated Company) shall suffer execution to be issued or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the SBI through the Architect/Consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor there under.

- a) Has abandoned the contract; or
- b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days after receiving from the SBI through the Architect/Consultant written notice to proceed, or
- c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect/ Consultant that the said materials were condemned and rejected by the Architect/ Consultant under these conditions; or has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or in defiance of the SBI /SBI's or Architect's/Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect/Consultant, may not withstanding any previous waiver, after giving seven days' notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect/Consultant or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And, further the SBI through the Architect/Consultant, their

agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads, use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works. When the works shall be completed or as soon thereafter as convenient to the SBI or the Architect/Consultant shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the SBI sell the same by public auction after due publication and shall adjust the amount realized by such auction. The contractor shall have no right to question any of the act of the SBI incidental to the sale of the materials etc.

33.0 Certificate of payment

The contractor shall be entitled under the certificates to be issued by the Architect / consultant (if appointed) to the contractor within 10 working days from the date of certificate to payment from SBI from time to time. The SBI shall recover the statutory recovering other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the Architect / consultant during progress of works or completion shall not have effect as certificate of satisfaction relieve the contractor from his liability under clause.

The Architect / consultant shall have power to withhold the certificate if the work or in part thereof is not carried out to their satisfaction.

The Architect / consultant may by any certificate make any corrections required previous certificate.

The SBI shall modify the certificate of payment as issued by the architect / consultant from time to time while making the payment

The contractor shall submit interim bills only after taking actual measurements and properly recorded in the M books

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and Architect / consultant shall issue the certificate of payment within a period of two months. The SBI shall pay the amount within a period of three months from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

34.0 A. Settlement of Disputes and Arbitration

Except where otherwise provided in the contract all questions and disputes to the meaning of the specifications, design, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question , claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings specifications, estimates, instructions orders or these conditions or otherwise concerning the work or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

- i) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the contractor shall forthwith give notice in writing of his claim, or dispute to The Regional Manager (in the address as stated above) and endorse a copy of the same to the Architect, if any, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the bank be in any way liable in respect of any claim by the contractor unless notice of such claim have been given by the Contractor to the respective Manager (address as stated above) in the manner and within the time as aforesaid.

The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the respective Regional Manager in writing in the manner and within the time aforesaid.

- ii) Regional Manager shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the Asstt. General Manager (P&E) submit his claims to the conciliating authority namely the Dy. General Manager (CDO), State Bank of India, LHO Mumbai for conciliation along with all details and copies of correspondence exchanged between him and the Branch/ RBO
- iii) Contractor If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Chief General Manager of the Bank for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.
- iv) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes of differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager. It will also be no objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates in the course of his duties as Bank Officer. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the said Chief General Manager. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.
It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator.
It is also a term of this contract that no person other than a person appointed by such Chief General Manager as aforesaid should act arbitrator. The conciliation and arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made thereunder. It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties. However, no fees will be payable to the arbitrator if he is a Bank Officer.

It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their settlement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof, shall be paid and fix or settle the amount of costs to be so paid.

35.0 Water & Power Supply

The contractors for other trades directly appointed by the SBI shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor. However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for Construction purposes shall be borne by the contractor and charges payable for permanent connections, if any, shall be initially paid by the contractor and the SBI will reimburse the amount on production of receipts.

36.0 Treasure trove etc.

Any treasure trove, coin or object antique which may be found on the site shall be the property of SBI and shall be handed over to the bank immediately.

37.0 Method of measurement

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date rules laid down by the Bureau of Indian Standards. In the event any dispute / disagreement the decision of the Architect / consultant shall be final and binding on the contractor.

38.0 Maintenance of registers

The contractor shall maintain the following registers as per the enclosed perform at site of work and should produce the same for inspection of SBI / Architect / consultant whenever desired by them. The contractor shall also maintain the records / registers as required by the local authorities / Govt. from time to time.

- i) Register for secured advance
- ii) Register for hindrance to work
- iii) Register for running account bill
- iv) Register for labour

39.0 Force Majeure

- 39.1 Neither contractor nor SBI shall be considered in default in performance of the obligations if such performance is prevented or delayed by events such as but not war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of or for any other cause beyond the reasonable control of the party affected or prevents or delayed. However, a notice is required to be given within 30 days from the happening of the event with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.
- 39.2 As soon as the cause of force majeure has been removed the party whose ability perform its obligations has been affected, shall notify the other of such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.
- 39.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the caused itself and inability resulting there from having been removed, the agreed time completion of the respective obligations under this agreement shall stand extended a period equal to the period of delay occasioned by such events.
- 39.4 Should one or both parties be prevented from fulfilling the contractual obligations by state of force majeure lasting to a period of 6 months or more the two parties, shall each other to decide regarding the future execution of this agreement.

50.0 **Local laws, Acts Regulations:**

The contractor shall strictly adhere to all prevailing labour laws inclusive at contract labour (regulation and abolition act of 1970) and other safety regulations. The contractors should comply with the provision of all labour legislation including the latest requirements of the Acts, laws, any other regulations that are applicable to the execution of the project.

- i) Minimum wages Act 1948 (Amended)
- ii) Payment of wages Act 1936 (Amended)
- iii) Workmen's compensation Act 1923 (Amended)
- iv) Contract labour regulation and abolition act 1970 and central rules 1971 (Amended)
- v) Apprentice act 1961 (amended)
- vi) Industrial employment (standing order) Act 1946 (Amended)

- vii) Personal injuries (Compensation insurance) act 1 963 and any other modifications
- viii) Employees' provident fund and miscellaneous provisions Act 1952 and amendment thereof
- ix) Shop and establishment act
- x) Any other act or enactment relating thereto and rules framed there under fromtime to time.
- xi) Prevailing Indian Electricity rules & act.

41.0 **Accidents**

The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the architect / consultant. The contractor shall also such report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

Note: - The contractor should obtain prior approval from SBI/ Consultants before placing order for any specific materials SBI may / delete any of the makes or brands out of the above list.

42.0 **SAFETY CODE**

SAFETY MEASURES AT SITE:

1. All personnel at site should be provided with Helmets and Safety Boots with some Identification Mark. Visitors also should be provided with Helmets. It should be ensured that these are used properly.
2. First Aid Box should be kept at site with all requisite materials.
3. No one should be allowed to inspect / work at a height without Safety Belt.
4. Suitable scaffolds should be provided for workmen for all Works that cannot safely be done from the ground, or from solid construction except such short period Work as can be done safely from ladders. When a ladder is used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (¼ horizontal and 1 vertical).
5. Scaffolding or staging more than 3.5 meters above the ground or floors, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 Meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as

may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

6. Working platforms, Gangways, and Stairways should be so constructed that they do not sag unduly or unequally, and if the height of the platform or the Gangway or the Stairway is more than 3-5 Meters above ground level or floor level they should be closely boarded, should have adequate width and should be suitably fenced, as described.
7. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 Meter.
8. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 Meters in length while the width between side rails in rung ladder shall in no case be less than 30cms for ladder upto and including 9 Meters in length. For longer ladders this width should be increased at least 6mm for each additional 30 cms. Uniform step spacing shall not exceed 30 cms.
9. Adequate precautions shall be taken to prevent danger from electrical equipment. For electrical on line works gloves, rubber mats, and rubber shoes shall be used.
10. All trenches 1.2 Meters or more in depth shall at all times be supplied with at least one ladder for each 30 Meters length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 Meter above the surface of the ground. The sides of the trenches, which are 1.5 Meters or more in depth shall be stepped back to give suitable slope, or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 Meters of the edge of the trench or half of the depth of the trench whichever is more. Cuttings shall be done from top to bottom. Under no circumstances undermining or under cutting shall be done.
11. Before any demolition work is commenced and also during the process of the work:-
 - a) All roads and open areas adjacent to the Work Site shall either be closed or suitably protected;
 - b) No electrical cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.
 - c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so over-loaded with debris or materials as to render it unsafe.
 - d) All necessary personal safety equipment as considered adequate by the Site Engineer should be kept available for the use of the persons employed on the

Site and maintained in a condition suitable for immediate use; and the Contractor should take adequate steps to ensure proper use of equipment by those concerned.

- e) Workers employed on mixing Asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - f) Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes shall be provided with protective goggles.
 - g) Those engaged in welding works shall be provided with Welder's protective eye- shields.
 - h) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - i) When workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals and boards to prevent accident to the Public.
12. Use of hoisting machines and tackle including their attachments, anchorage and support shall conform to the following standard or conditions:-
- a) These shall be of good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repairs and in good working order.
 - b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
 - c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffold, winch or give signals to the operator.
 - d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension the safe working load shall be ascertained by adequate means.
 - e) Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load, each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
 - f) Motor, Gearing, Transmission, Electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards, hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load, adequate precautions should be



taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced.

g) When workers are employed on electrical installation, which are already energized, insulating mats, wearing apparel such as gloves, rubber footwear etc.

Address:

Seal Signature of Tenderer:

Date:

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

Tenderer are advised to inspect the site in consultation with the Bank's Electrical Engineers before submission of the tender in order to acquaint with the proposed work and Site conditions.

A- SCOPE OF WORK:

The responsibility of successful bidder & scope of work consists of following activities:

- 1.** The Scope of Work includes all Check Survey, detailed design & Engineering, Procurement & Supply of Equipment and Material, Testing at manufacturer's works, Inspection, Packing and Transporting, Supply, Receipt, Unloading and Storage at site, associated Civil Works, Services, Permits from ADANI/TATA/MSEDCL, and other relevant permits for net meter application, Licenses, Statutory Approvals, Installation and incidentals, Insurance at all stages, Erection, Testing and commissioning of 145Kwp grid Interactive Roof Mounted Solar PV Power Plants under Net-Metering including warranty and performance demonstration with associated Power evacuation system up to the designated Substations/Locations along with its route survey and 5(Five) years comprehensive operation and maintenance with material & man power in accordance with Technical Specifications.
- 2.** Study the existing power system at Various branches under LHO Mumbai Metro, MUMBAI and space available on roof top for installation of solar PV system. Total erection works and material item supplies should be carried out as per applicable latest CE, IS, IEC & IEEE standards / codes with solar grade with appropriate Ingress protections and get it approved by the Bank before installation.
- 3.** Contract for 5 years including breakdown maintenance.
- 4.** Net Metering and Grid synchronization related approvals, Liaisoning and Bi-directional meters and CT's to be provided as per ADANI/TATA/MSEDCL norms are in the scope of L-1 Bidder. Also clearance/NOC from other statutory authority like Electrical inspector and other related applicable Government authority. No extra payment shall be made by the SBI for liaisoning works to the vendor. However, statutory fees paid by the vendor to the Government Departments/Electricity Boards for approval of extension of load/NOC etc. shall be reimbursed to the vendor on submission of original payment receipt to the Bank.

Also clearance from with MNRE or Central/State Government for obtaining capital subsidy, if applicable.

5. Electrical Inspector certificate of existing wiring are necessary.
6. Valid certificate of the licensed Agency regarding the compliance of the fire prevention and life safety measures shall be submitted.
7. The bidder must acknowledge that all the work of the project must be in the observance of licensed electrical contractor. The responsibility of electrical works, safety precautions and safety parameters of the project will be of licensed electrical contractor and awarded bidder, which must as per standards specified.

8. **Detailed Scope of works:**

Electrical:-

- a) Power cables, communication cables & control cables of armoured and Solar grade
- b) Synchronizing / Paralleling equipment's to achieve flaw less synchronizing with electricity board grid and captive diesel generator grid as desired / required by Bank i.e.100% utilization solar power.
- c) Lighting arresters, earthing, cable trays, cable trenches, terminations and etc.
- d) Armored copper cables for power should be laid up to AC junction box.
- e) From AC junction box to main junction box armoured aluminum power cable should be considered.
- f) Checking the feasibility of existing Control Panel/Switch Gear. Modification of existing outgoing feeder protection, which may include extension of bus bars in the Bus and outgoing section, metering and control circuits and energy meter to suite for receiving solar power for both grid connections (i.e. DG & EB).
- g) The Bidder shall provide the display board of size 3ft x 3ft that gives detailed information of system along with the contact details of manufacturer. This will help the beneficiary during 5 years CMC period.
- h) Suitable earthing with GI strips for following items provided at each plants
 - Civil supporting structure
 - Modules
 - Inverters
 - DC junction, Distribution & combiner boxes
 - AC junction & combiner boxes
 - CT/PT Unit

- Additional earthing for existing main panel of Branch/Office or transformer if required.
- i) Solar PV Power Plants with associated system (Typical) shall include but not be limited to the Supply, Erection, and Testing & COMMISSIONING OF 145Kwp Solar PV modules, PV array, fixed PV array support structure, String/Array combiner boxes, DC cabling, DC distribution box, Inverter, AC cabling, AC distribution box, plant AC energy meter, Surge Arrestors, Lighting arrestor, CT/PT net meter load energy meter and data acquisition system etc

Civil:-

Civil Works shall be performed with respect to the following but not limited to:

- Trimming of tress, and removing the unwanted materials in rooftop •
- In case of ground mounted system site leveling activities like removal of trees and bushes, undertaking blasting related works, disposal of cutting materiality shall be the responsibility of contractor. The area shall be suitably cut and filled to suit the layout requirement. The site levelling and grading scheme incorporating the above aspects shall be submitted to SBI for approval. •
- Design and construction of foundation for module mounting Structures having modules, all electrical equipments, Transformer platforms and allied equipment foundations. •
- Internal road and pathways and drains for Ground mount system and cable trenches
- Civil foundation work of for AC Distribution Board, DC distribution Board switchgears, Solar Road lights etc. Erection Work shall be performed with respect.
- Construction of Shed for housing CT/PT Unit, inverter, AC distribution boxes etc.
- GI structural supports to mount PV panel as per Bank approved design and drawings given along with tender document.
- If Drilling holes deep in Roof Concrete Slab grouting the same with injectable grout before and after inserting the M20 & 6inch long anchor bolts and to be casted with RCC block of 300x300x300mm as per the approved Drawings.
- Providing concrete pedestal as per drawing and laying M20, 6inch length anchor bolts at the time of casting.
- Providing and laying cement plaster and doing water proof treatment around the pedestals to prevent leakage of water.
- All GI structural steel section should be 'CE' quality certified.

- Damaged existing water proofing sheet should be re-laid with new one and also around the civil pedestals, to ensure no rain water will leak inside the building after completion of the total erection works.
- The structural design should be for 150KM / hours wind speed.
- Providing concrete pedestal as per drawing and laying M20 6inch length anchor bolts at the time of casting for the sites where the Solar Panels are intended to be mounted on RCC flat roof.
- Providing, fabricating and laying galvanized structural steel section, plates, nuts washer and bolts, and cable tray as per drawing with thickness of galvanizing of minimum 90 microns

Drawings and documents:

A) `The design documents to be submitted by the successful bidder will include butnot limited to:

- i. String Sizing & Array design
- ii. String Layout
- iii. Array Layout
- iv. AC Protection
- v. Inverter sizing
- vi. DC Protection
- vii. DC Cable size calculation
- viii. DC cable specification
- ix. DC cable schedule, voltage drop and power loss calculation
- x. String monitoring unit specification
- xi. DC & AC earthing and pit calculation
- xii. Lightning protection details/specification
- xiii. All technical specification of AC components
- xiv. Cable schedules
- xv. PV System Simulation Report with proposed modules and inverters
- xvi. Bill of quantity of entire project

B) Prepare & furnish the following all the as-built drawings in soft copy (autocad) and hardcopy to obtain approvals and All operating manuals, user manuals, system manuals, etc., as required.

- i. Shadow analysis of the roof.
- ii. General arrangement and dimensioned layout
- iii. Schematic drawing showing the SPV panels, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- iv. Layout of solar PV Array and Single line diagram with specification of all components

- v. Design document for mounting structure including certificate showing wind speed withstanding capacity of the structure (STAAD Pro / Equivalent).
- vi. Mounting structure drawing
- vii. Structural drawing along with foundation details for the structure.
- viii. Civil drawings of control room building if any.
- ix. Cable layout (indicating details of cable route for power & communication cables)
- x. Itemized bill of material for complete SPV plant covering all the components and associated accessories.
- xi. Sizes and specification of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be furnished.

9. Fabrication works are to be done at factory only and submit structural stability certificate from the structural engineer/reputed engineering college in the area that designed MS structure can sustain the wind pressure of 150 Kmph with the load of solar panels. Only grouting and assembly with nuts and bolts are to be done at the site.

10. Contractor shall provide the supervisory license of electrical supervisor as well as the certificates /PWD license of Electrician /Wireman.

11. The supporting MS section/ girders should be located at a height such as to completely avoid the parapet wall shadows from falling onto the PV modules.

12. Replacement of existing conventional energy meter with bidirectional energy meter for net metering and grid connection etc. This will also include the replacement of CT/PT, metering box etc. in the scope of the vendor.

13. Bidder shall provide permanent arrangement for the module cleaning in the plant (both rooftop and ground mounted system). This shall include pumps, motor, and requisite laying network of GI pipes throughout the periphery. Opening from the GI pipe with manual isolating valves should be provided at regular intervals. Water used for module cleaning shall be provided through the nearest available water line within the plant. Water supply shall be provided free of cost to the O&M contractor.

14. Minimum Generation Guarantee:

The tenderer has to guarantee a minimum energy generation of 4 KWH per KWp per day valid with respect to total plant capacity (considering the weather conditions) during the first five years of operation at Bank's power grid synchronization point. Failing which, a penalty @ Rs.12/- per kWh shortfall per annum will be deducted from the Security Deposit (SD) up to the defects liability period.

15. Data Acquisition, Performance monitoring & Reporting

Remote Monitoring system shall be provided to monitor the Solar Power Generation such that all (i.e. AC & DC) electrical parameters (cumulative & instant) in graphical presentation from string level, next inverter and so on as desired by Bank/ owner.

- GSM Modem/Wi Fi modem in case GSM connectivity is used or Wireless Router+modem in case Ethernet connection is being used for remote access must be provided.
- All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values. The following parameters should be accessible via the operating interface display and also on the dedicated laptop in the concerned office

AC Voltage

AC Output current

Output Power

DC Input Voltage

DC Input Current

Time Active

Time disabled

Time Idle

Temperatures (C)

Inverter Status

Irradiation

Module temperature

Protective function limits – (Viz- AC overload voltage, AC under voltage, over frequency.

Under frequency, ground fault. PV starting voltage, PV stopping voltage,

Over voltage delay, under voltage delay, over frequency, Ground fault delay, PV

Starting delay, PV stopping delay).

16. Scope of Operation & Maintenance Work of Solar Photovoltaic Power Plant for the 5 years:
Total Operation & Maintenance of Solar Photovoltaic Power Plant for the 5 years' period including deployment of Engineering Personnel, Technicians, and helpers for cleaning modules and their upkeep, as and when required. The contractor shall be responsible for all the required activities for the successful running, optimum energy generation & maintenance of the Solar Photovoltaic Power Plant covering:

O&M activities – Daily basis

- i. Contractor shall clean the modules twice in a month or weekly once based on the soiling loss and maintain this schedule in its records for the cleaning cycle.
- ii. In order to meet the maintenance requirements stock of consumables are to be maintained as well as various spare as recommended by the manufacturer at least for 5 years to be kept for usage.
- iii. Logging of DC, AC, and grid parameters (current, voltage, power, energy etc) at string inverters/ ACDB/ metering panels, equipment tripping/ breakdown, grid outage etc.

O&M activities – monthly basis

- i. Inspection of fire extinguishers (weight, pressure indication, physical status etc.) followed by refilling actions, if necessary, based on indications. Report to be submitted to concerned officer.
- ii. Earthing resistance measurements for solar array structures, various equipment and lightning arrestors: measured values shall be recorded in registers and reported to concerned officer.
- iii. Energy generation / meter reading report to be prepared and submitted to the concerned department.

O&M activities – quarterly basis

- i. Cleaning of string inverters, ACDB, LT panels etc. to remove accumulated dust.
- ii. Monitoring and status review, followed by rectification/ calibration/ replenishment/ replacement actions as necessary and applicable for following:
 - (a) Spare items of all electrical equipment
 - (b) First aid box items - medicines and accessories
 - (c) Safety gadgets
 - (d) Tool kits and measuring instruments
 - (e) Pumps, starters

O&M activities – yearly basis

- i. Painting of earthing chambers if required based on conditions of rusting.
- ii. Checking tightness of hardware in MMS structures and tightening wherever required.
- iii. Checking tightness of power cable terminations in SPV modules (MC4), string inverters, ACDB

O&M activities – as and when required basis

- i. Monitoring and operation of plant electrical equipment as and when required:
 - a) ACB and MCCB on/off operations on LT side.
 - b) String inverter operations: review/selection of settings, monitoring the DC/AC/ event/ faultstatus parameters
 - c) Water pumping operations

- ii. Removal of garbage from solar array field, sand buckets; logging in registers with signatures of operating persons and in-charge.
- iii. Coordinating and liasoning, on behalf of SBI, and obtaining renewal of statutory licenses, clearances and approvals from state departments such as electricity boards, CEA/CEIG etc.
- iv. Repair and replacement of supplied items, with urgent action plans and implementation, when the items are found non-working / damaged. The same shall be reported to SBI within 12 hours from time of observation.
- v. Reporting, on an immediate basis (within max 2 hours) of functional problems / damages in items to facilitate repair / replacement. Further, vendor shall correspond / coordinate with respective equipment vendors / service centers, on behalf of SBI, for getting the service engineers to the site. Later, coordinating with the service engineers during their visit to site, and assisting them in the trouble shooting process until the problem is resolved.
- vi. Coordinating with sub-station upon grid failures, line problems etc and implementing the needful steps to restore the plant to normal operation.

B-TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below

A Grid Tied Solar Rooftop 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, Junction boxes, Distribution boxes and switches. PV Array is mounted on a suitable structure. Gridtied SPV system is without battery and should be designed with necessary features. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

SPECIFICATIONS OF MAJOR COMPONENTS OF THE SYSTEM

1. PV MODULES:

- a) The PV modules Poly / Mono crystalline modules (Manufactured in India or abroad) to be employed shall be of minimum 72 cell configuration with rated power Min 325Wp at STC as certified for solar PV module power performance test as prescribed by latest edition of IEC 61215 / IS14286 and as tested by IEC / MNRE recognized test laboratory. The Solar Modules should be **IEC** Certified and **BIS** Approved
In addition, the modules must conform to IEC 61730 Part 1-requirements for construction & Part 2 - requirements for testing, for safety qualification.

The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his project proposal submitted to SBI.

Technical Requirements:

Make	:WARIEE/GOLDI/VIKARAM/LUXRA/NOVASYS/ RENEWSYS
Type	: Multi-Crystalline Silicon Solar Module
Rated power at STC	: Minimum 325 Wp, Max. Tolerance +3% No negative tolerance is allowed.
Cell size	: +/-~157mm x 157mm
Cell Qty.	: 72 pcs per Module
Module size	: +/- 1956mm x 990mm x 50 mm
Junction Box	: Four Terminals with IP67 Protection
Diode	: 15A bypass
Nominal Rating: 330W or above under STC	
Vmax	: > 37.67V
Imax	: > 8.79A
Voc	: > 46.24V
Isc	: > 9.31A
FF	: > 71.00%
Efficiency (Module)	: > 17.00%
Power Tolerance	: 0-5W
RFID Tag	: Inside the Lamination
PV Module standard: IEC 61215 and IEC 61730-1 & IEC 61730-2	
Weight	: 22.0 kg. (approximate)

b) IDENTIFICATION AND TRACEABILITY

Each PV module used in the solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module Laminate, but must be able to withstand harsh environmental conditions.

- i) Name of the manufacturer of PV Module
- ii) Name of the Manufacturer of Solar cells of PV Module
- iii) Month and year of the manufacture (separately for solar cells and module).
- iv) Country of origin (separately for solar cells and module)
- v) I-V curve for the module
- vi) Peak Wattage, Im, Vm and field factor (FF) for the module
- vii) Unique Serial No. and Model No. of the module
- viii) Date and year of obtaining IEC PV module qualification certificate
- ix) Name of the test lab issuing IEC certificate
- x) Other relevant information on traceability of solar cells and module as per ISO 9000 series.

It may be noted that from 1st April 2013 onwards; RFID shall be mandatory placed inside the module laminate.

- c) Each module shall have low iron tempered glass front for strength & superior light transmission. It shall also have tough multi-layered polymer back sheet for environmental protection against moisture & provide high voltage electrical insulation.
- d) Solar module shall be laminated using lamination technology using established polymer (EVA) and Tedlar /Polyester laminate.
- e) The module frame shall be made of aluminium or corrosion resistant material, which shall be electrically compatible with the structural material used for mounting the modules.
- f) 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) per cent from the respective arithmetic mean for all modules and/or for all module strings, as the case may be.
- g) The module frame shall be made of anodized Aluminium, which shall be electrically & chemically compatible with the structural material used for mounting the modules. It is required to have provision for earthing to connect it to the earthing grid. The anodisation thickness shall not be less than 15 micron.
- h) Minimum three number of bypass diodes (Schottky type) and two number of MC4 connectors with appropriate length of TUV 2 Pfg 1169/08.2007 certified 4 sq.mm, Cu. armoured cable should be used only.
- i) Photon conversion efficiency of SPV Module should be greater than 17%. Module shall be made of high transmittance glass front surface giving high encapsulation gain.
- j) **Technical Requirements:**
 - i. The modules should be 100% PID (Potential Induced Degradation) tolerant and should comply with IEC 62804.
 - ii. Modules shall perform satisfactorily in relative humidity up to 85% and temperature between 10° C and 85°C (module temperature).
 - iii. Modules should have rugged design to withstand tough environmental conditions and high wind speeds (minimum up to 270 km/h). Fill Factor should be 0.72 minimum.
 - iv. SPV module shall have module safety class-II and should be highly reliable, light weight and must have a service life of more than 25 years.
 - v. Modules only with the same rating and of same manufacturer and model shall be supplied.
- k) **Component Specifications:**
 - i. The glass used to make the PV modules shall be toughened low iron glass with minimum thickness of 4.0 mm for 72 cell module. The glass used shall have transmittance of above 90%. Glass must have bending of less than 0.3%.
 - ii. The back sheet used in the PV modules shall be of three layered or mono layered structure. The back sheet used in the crystalline silicon based modules shall be 3 layered structures. Outer layer of fluoro polymer, middle layer of Polyester (PET) based and Inner layer of fluoropolymer or UV resistant polymer. Back sheet with additional layer of Aluminium also will be considered.
 - iii. The back sheet should be durable for humid – hot conditions with properties of moisture barrier, elongation retention and UV resistance.

l) **Authorised Testing Laboratories / Centers:**

- i. The PV modules must be tested and approved by one of the IEC authorized test centers. Test certificates can be issued by any of the NABL / BIS Accredited Testing / Calibration Laboratories.
- ii. Test certificates for the system/ components/ items from any of the NABL / BIS Accredited Testing Calibration Laboratories / MNRE approved test centers to be submitted to the Bank.
- iii. The Contractor shall provide the Bill of Materials (BOM) of the module that is submitted for approval along with the datasheets of each component. The component datasheet shall contain all the information to substantiate the compliance for component specifications mentioned above. The Contractor shall also provide complete test reports and certifications for the module proposed as per above. The BOM proposed shall be the subset of Constructional Data Form (CDF)'s of all the test reports.

m) **Warranties:**

a). **Material Warranty:**

- i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than twenty five (25) years from the date of sale to the original customer.
- ii. Defects and/or failures due to manufacturing
- iii. Defects and/or failures due to quality of materials.
- iv. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will replace the solar module(s), at the Owners sole option.

b).Performance Warranty:

- i. The manufacturer should warrant the output of Solar Module(s) for at least 90% of its rated power after initial 10 years & 80% of its rated power after 25 years from the completion of trial run at site/date of final commissioning.
- ii. Modules with lower degradation rate less than 0.7% per year will be considered.
- iii. The contractor shall collect the Warranty Certificate for performance of the modules from the manufacturer and submit the same to SBI prior to delivery of the products to the respective sites.
- iv. If, Module(s) fail(s) to exhibit such power output in prescribed time span, the Contractor will bound to either deliver additional PV Module(s) to replace the missing power output with no change in area of site used or replace the PV Module(s) with no extra cost claimed at Owner's sole option.

2. **Solar PV Mounting Structure**

- a. The mounting structure shall have to be designed by the Contractor after spot verification.
- b. The module mounting structures should be made suitable for Sheet Roof & Flat RCC roof.

- c. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.
- d. The structures shall be designed to allow easy replacement of any module.
- e. Each structure will have a provision to adjust its angle of inclination to the horizontal as per the site condition and will be capable of withstanding a wind load of 150 Km/hr after grouting and installation. The vendor has to submit the installation drawings approved by the registered structural engineer that designed structure and grouting method is capable of withstanding a wind pressure of 150 Km/hr.
- f. Few locations/site are of Flat RCC roof, where the suitable Elevated GI Structure to be fabricated to utilize the space beneath the Structure.
- g. The Modules on the elevated structures with GI Sheet roofs & existing GI Sheet roof will be mounted with Anodized Aluminium Channels/structures. The Anodized Aluminium Rails/channels should be fixed with suitable Adhesives to the GI Sheet roof withstanding wind speed of 150Km/hr
- h. Mounting Structure must be designed to withstand all weights of modules and to withstand wind speed of 150km/hr. Anti-theft Nut & Bolts must be used for modules.
- i. For Elevated Structure Hot dip galvanized MS angles & poles to be used adhering to IS standards. The thickness of galvanization should be minimum of 90 microns. All the nuts, bolts are made of good quality Stainless Steel (SS 304). Space must be provided in between rows for proper maintenance and cleaning.
The minimum clearance of the lowest part of the module structure and the developed ground level shall not be less than 600 mm. The structure shall be fixed tilt type to give maximum output from the plant
- j. Material Specification for MS Items for Elevated Structure:

Column	MB200
Rafter	Rectangular Tube 100 x 50 x 4mm
Purlin	Rectangular Tube 80x50x4mm
Base Plate	HR Plate 300x300x10mm

- k. Bidders have to submit detailed designs and Drawings to SBI for acceptance and approval before execution of work.
- l. Vendor shall carry out all the tasks such as cleaning/ scratching/ roughening/ smoothing etc required to prepare the floor for effective bonding with the concrete pedestal of the module mounting structures (MMS). Foundation that is Concrete pedestal for the MMS structures shall be of 300X300X300mm @ ratio 1:2:4 concrete mix as per IS: 456. Two-part epoxy compound (NITO Bond Epoxy Resin Bonding agent) shall be applied between the floor and pedestal surfaces to facilitate effecting bonding.
- m. Contractor to confirm that no damage to existing water proofing of the roof shall be made during the course of installation of the structure on roof top. Any damage to the waterproofing found during the above should be rectified to the existing roof condition at

Contractor's cost. All pedestals shall be finished to the existing roof condition to prevent any water seepage later. Contractor shall commence the work only after clearance of drawings by SBI authority

- n. Racks will be laid out in parallel matrices allowing individuals to access the area between the racks for cleaning and other maintenance needs. In between the row of solar panels sufficient gap need to be provided to avoid falling of shadow of one row on the next row. Seismic factors for the site will be considered while making the design of the foundation. Array support structure shall be fabricated using corrosion resistant GI sections electrically compatible with the structural material. Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance
- o. Provision for installing the Array Junction Box shall be available on the same frame material and specification as defined for Module mounting structure.
- p. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m². The array structure shall be grounded properly using maintenance free earthing kit suitable for mounting over building terrace.
- q. **Bidder has to design MMS as per the actual site conditions and loads of roof top. Elevated systems to be installed on any roof, if the obstacles found within the terrace area. Structural integrity and safety is afforded the topmost priority during the design process. The expected life of a solar power plant is 25 years and ensure that structures are designed in a manner to ensure achieving of said milestone**

r) **Cable Trays:**

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

The perforated cable trays with Tray cover shall be manufactured from good commercial, high grade strength sheet steel having minimum thickness of 1.6mm for Tray and 1mm for Tray Cover. The perforated cable trays shall be hot dip galvanized according to IS-2629, BS729-1971

OR

Equivalent standard suitable for indoor/outdoor use having moderate humidity and air pollution. The zinc coating thickness shall work out by applying a 610 gm of zinc per square meter surface with an approximate thickness of 80 microns

Sr No	Size of Tray Size	Size of Tray Cover	Approx. Quantity
1	250mm X 100mm X 1.6mm	250mm X 15mm X 1mm	As required
2	100mm X 50mm X 1.6mm	100mm X 15mm X 1mm	As required
3	50mm X 25mm X 1.6mm	50mm X 15mm X 1mm	As required

3. **Junction Box:**

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

- i. The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.
- ii. Suitable markings shall be provided on the busbar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- iii. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP 65 standard and IEC62208 Hinged door with EPDM rubber gasket to prevent water entry, Single/ double compression cable glands, Provision of earthings. It should be placed at a height suitable for ease of accessibility.
- iv. Each combiner box/ junction box will have suitable Reverse Blocking Diodes of maximum DC blocking voltage of 1000 V with suitable arrangement for its connecting.
- v. Junction boxes should be equipped with fuses on both positive & negative input to protect the PV module from short circuits.
- vi. The combiner box/ Array junction Box will also have suitable surge protection device to protect the PV modules as well as the other electrical / electronic systems from transients over voltages created due to lightning and to reduce insulation break downs due to lightning. The SPD's should be tested and approved according to IEC 61643-11 and EN 50539-1:2013-03.

4. **Solar Array Fuse**

- i. The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating and current rating as required. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

Selection of fuses: It is important to coordinate the power dissipation of fuse-links with the acceptable power dissipation of fuse holders. Rated voltage of fuse-link and fuse holder should be at least 20% higher than open circuit voltage of photovoltaic installation. Typical rated voltage of fuse-links and fuse holders is 1000 V DC. Rated current of fuse-links ≥ 1.4 ISC. (ISC = short circuit current of photovoltaic modules), Utilization category g PV (protection against overload and short-circuit), Minimum interrupt rating $1.35I_n$, Non fusing current $1.13 I_n$.

5. **DC Distribution Board:**

A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations:

Incoming positive and negative DC cables from the DC Combiner Box- DC circuitbreaker, 2 pole & DC surge protection device (SPD), class 2 as per IEC 60364-5-53; Outgoing positive and negative DC cables to the solar grid inverter.

6. **Power Conditioning Units:**

a) General:

- i.** DCDB output will be fed to Inverter/ Power Conditioning Unit (PCU), grid interactive in nature, which mainly consists of Maximum Power Point Tracker (MPPT), Charge Controller, Inverter, Voltage Stabilizer, Frequency and voltage and distribution panel along with necessary Displays, Indicators and Alarms. It shall provide necessary protections for Grid Synchronization and Data Logging/Monitoring. The Invertors should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of **Suitable Capacity**. The bidder have to choose the inverter as string as per the design. PCU should conform IEC 61683, IEC 60068 as per specifications.
- ii.** The string inverter shall be installed near to the solar array and hence it shall be suitable for weather proof and shall have IP65 class of protection. Also, a separate hood type arrangement using GI metal sheet to cover top of the string inverter enclosure shall also be provided with necessary mounting arrangements.
- iii.** The inverters shall have protection against any sustained fault, lightning discharge in feeder line and earth leakage faults.
- iv.** PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- v.** The combined wattage of all inverters should not be less than rated capacity of power plant.
- vi.** The PCU shall be mounted on a suitable reinforced concrete pad inside control room not susceptible to inundation by water. All cable entry to and from the PCU shall be fully sheathed to prevent access of rodents, termites or other insects into the PCU from bottom/top of the PCU in form of a detachable gland plate.
- vii.** In case of GRID failure, the PCU shall be re-synchronized with grid after revival of power supply. Vendor to furnish the time taken by PCU to be re- synchronized after restorations of GRID supply same to be indicated in data sheet to be submitted during detail engineering stage.

viii. Typical technical features of String inverter of following ratings is required as mentioned below: Bidder should ensure compatibility of inverter system with SPV modules with 325Wp and above.

Sr.	Technical parameter	Specification
1	Type	Grid Connected String Inverter
2	Make	Waree/SMA / ABB / SCHNEIDER / Delta/Poly Cab / Refusol/
3.0	Standards:	
3.1	Efficiency Measurement	IEC 61683/ Equivalent BIS Std.
3.2	Environmental testing	IEC 60068-2 (1,2,14,30) / Equivalent BIS Std.
3.3	Interfacing with utility grid EMC	IEC 61727, IEC 61000-6-2
3.4	Islanding Prevention Measurement	IEC 62116
3.5	MPPT	IEC 62093
3.6	Type Test certificate issuing authority (for Sl. No. 3.1 , 3.2,3.3,3.4 and 3.5)	NABL/ IEC Accredited Testing Laboratories or MNRE approved test centers.
4.0	Input DC	
4.1	Voltage range	Min 250-1000
4.2	MPP voltage range	Min 420-850
4.3	Power Control	MPPT
5.0	Output AC	
5.1	Output voltage and phase	Sine wave 3 Phase 415 V \pm 10% 50Hz AC, minimum 4 wire output RYBN or RYBN+PE
5.2	Reactive power	0.8 lagging to 0.8 leading
5.3	Total Harmonic Distortion (THD)	< 1.8 % at rated power
5.4	Power factor at rated current	0.98-1.00
5.5	Phase Load Imbalance at least 30 %	at least 30 %
5.6	Grid frequency synchronization range	+/- 3 Hz
5.7	Grid frequency tolerance range	+/-2 or more
5.8	Grid voltage tolerance range	+/- 20%
5.9	Standby power consumption	Standby power consumption of Inverter shall not exceed 20 Watts
6.0	Efficiency	Min 94% at 100% load as per IEC 61683
7.0	Protection	
7.1	DC Side	<ul style="list-style-type: none"> • Disconnection device • Reverse polarity protection Reverse current to PV array protection overvoltage, under

		<p>voltage and over current protection</p> <ul style="list-style-type: none"> • Short circuit protection: PV fuse • Surge protection: SPD type II
7.2	AC Side	<ul style="list-style-type: none"> • Short circuit protection • Over voltage, under voltage over current protection over and under Grid frequency protection. <ul style="list-style-type: none"> • Anti-Islanding protection <ul style="list-style-type: none"> • AC surge protection
7.3	Ground fault / Grid Monitoring	Yes
7.4	Over Temperature protection	Yes
8.0	Display:	
8.1	Display type	LCD/LED
8.2	Display parameter	Voltage, current, power, line status, grid voltage grid frequency, export power and export energy.
9.0	Communication	
9.1	Communication port	Ethernet , RS485, port for web based remote monitoring system and should match with data
0.0	General:	
0.1	Operating Temperature	- 20 Deg. C to + 60 De. C
	Humidity	95% non-condensing
0.2	Dimensions	Shall be provided by the Bidder.
0.3	Weight	Shall be provided by the Bidder.
0.4	Cooling	Cooling arrangement (if any) details shall be furnished by the Bidder.
0.5	Ingress protection (IP)	IP 65 or better (Out Door Installation)
0.6	Maximum altitude	Bidder to mention up to what altitude above sea level inverters will work without de-rating.
0.7	Noise level	<45Dba
11	Switching devices	IGBT/MOSFET
12	Control	Microprocessor /DSP

- ix.** DC side of each inverter shall be earthed to distinct earth pit through adequate size conductor as per IS 3043 -1987. The size of conductor/ procedure for earthing for inverters shall be as per the maximum fault current of DC system.

x. To allow maintenance of the PV Inverter, means of isolating the PV Inverter from the DC side must be provided by a DC isolator mandated in each photovoltaic power system according to IEC 60364-7-712.

xi. **Operating Modes:** Operating modes of PCU shall include, but not limited to, the following modes.

I). Low Power Mode: The control system shall continuously monitor the output of the solar arrays connected to the inverter until preset value is exceeded & begins to export power provided there is sufficient solar energy and grid voltage and frequency are in specified range.

II). Active Maximum Power point tracking (MPPT) mode: When solar radiations increases further, the PCU shall enter Maximum Power Point Tracking (MPPT) mode and adjust the voltage of SPV arrays to maximize solar energy fed into the grid. When the solar power from arrays falls below threshold level, the PCU shall enter into low power mode.

III) Sleep mode: Automatic 'sleep' mode shall be provided so that unnecessary losses are minimized at night.

xii. The PCU/ inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.

xiii. **Integration of PV Power with Grid:** The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case OF 90 KWP CAPACITY GRID failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service, PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/DG Powerconnection need to be provided.

xiv. Grid Islanding:

Anti-islanding (Protection against Islanding of Suitable capacity Grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.

i).The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

ii).A manual disconnect 4pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

iii) Inverter shall be tested for islanding protection performance. When the mains power is off, the PCU should also get automatically off so that back-feeding to the grid is not possible.

xv. Maximum Power Point Tracker (MPPT):

Maximum power point tracker shall be integrated into the PCU to maximize energy drawn from the Solar PV array. The MPPT should be microprocessor / micro-controller based to minimize power losses. The details of working mechanism of MPPT shall be mentioned. The efficiency of the Charge controller (MPPT based with data logger) shall not be less than 94% and shall be suitably designed to meet array capacity.

MPPT must conform IEC 62093, IEC 60068 as per specifications.

xvi. Data Acquisition System / Plant Monitoring:

- i Data logger system (Hard ware) and the software for study of effect of various environmental & grid parameters on energy generated by the solar system and various analyses would be required to be provided. The communication interface shall be suitable to be connected to local computer and also remotely via the Web using either a standard modem or a GSM / WIFI modem.
- ii Remote Monitoring system shall be provided to monitor the Solar Power Generation such that all (i.e. AC & DC) electrical parameters (cumulative & instant)in graphical presentation from string level, next inverter and so on as desired by Bank/ owner
- iii Monitoring complete systems including hardware and Modem/Router shall facilitate monitoring of the performance of the Inverter /inverters, energy yield, temperature, irradiance level etc through LAN based or GSM based network. PC based inverter

monitoring is also required for local monitoring of each system. Some of the salient features of the monitoring system shall be:

- a) The data acquisition system shall have a real-time clock and data storage capacity for recording data round the clock for min. one year.
- b) The monitoring of the Solar system and logging / viewing of system data shall be through a PC with latest software/hardware configuration and service connectivity to be supplied, operation & maintenance/control to be ensured by the bidder.
- c) The software package shall be preferably windows based MS Excel compatible. The data shall be represented in both tabular and graphical form.
- d) System shall have provision for remotely viewing the System status on local LAN /INTRANET of bank.
- e) The following parameters are accessible via the operating interface display in real time separately for solar power plant:
 - AC Voltage.
 - AC Output current.
 - Output Power
 - Power factor.
 - DC Input Voltage.
 - DC Input Current.
 - Time Active.
 - Time disabled.
 - Time Idle.
 - Power produced
 - Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage)
- f) All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- g) Metering and Instrumentation for display of systems parameters and status indication to be provided.

PV array energy production:

- a) Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class shall be provided.
- b) All major parameters available on the digital bus and logging facility for energy auditing shall be available on the display.
- c) The following parameters should be accessible via the operating interface display.
 - AC Voltage.
 - AC Output current.
 - Output Power
 - DC Input Voltage.
 - DC Input Current.
 - Time Active
 - Time disabled.
 - Time Idle
 - Temperatures
 - Inverter Status

POWER CONSUMPTION:

Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid

7) AC Distribution Board (ACDB):

- i. AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode. ACDB shall be installed on roof-top.
- ii. All switches and the circuit breakers, connectors should conform to IEC 60947, part I,II and III/ IS60947 part I, II and III.
- iii. The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- iv. All the Panels shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated,

cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz and designed for minimum expected ambient temperature of 45degree Celsius, 80percent humidity and dusty weather.

- v. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- vi. Should conform to Indian Electricity Act and rules (till last amendment).
- vii. ACDB shall be 3-phase, 50Hz, 415VAC, 1.1kV system voltage, outdoor, with canopy, IP55, neoprene gasket for doors/ frame joints, CRCA sheets 2mm (frame)/ 1.6mm(door)/ 3mm (removable gland plate bottom side), painting seven tank process, colour RAL 7032, base frame with section 75mm min/ black painted, panel lifting hooks, Al bus bars as per SLD, RYB colour coded heat-shrinkable sleeves for bus bars, SMC/DMC insulator supports, Al earth bus, accessible live parts shrouded with FRP/polycarbonate sheets, MCBs for i/c feeders, 25mm min phase to phase clearance, LED indicators for RYB at o/g, colour coded Cu-cable AC/DC wiring (1.5/2.5 mm² as applicable) etc. Forthe incoming and outgoing power cables, nickel plated brass double compression glands, Al cable lugs, SS304 plain/ spring washers shall be provided.
- viii. Modifications/ addition if any, in existing L T panel and D G set panel of SBI shall be done at site and covered in scope of Bidder. Also required size cable and other equipment between existing panel to solar AC distribution panel is covered in scope of Bidder.
- ix. An AC distribution box shall be mounted close to the solar grid inverter.
- x. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the following components and cable terminations:
 - Incoming 3-core / 5-core (single-phase/three-phase) cable from the solar grid inverter
 - AC circuit breaker, 2-pole / 4-pole
 - AC surge protection device (SPD), class 2 as per IEC 60364-5-53
 - Outgoing cable to the grid interconnection point
- xi. Extra feeders (including two spare feeders) shall be provided to meet the various auxiliary supply requirements at the roof-top such as module washing pumps, data loggers etc.
- xii. MCCB, MCB shall be L&T/C&S/Siemens/ABB/ Schneider or reputed equivalent subject SBI approval.

- xiii. Vendor shall submit the detailed GA, SLD, BOM, MQP etc of ACDBs for SBI approval during detailed engineering.

8) **Cables & Wirings:**

The Specification of wiring material of PV Power plant shall include but not limited to the following:

Sl.	Item	Description
1.0	DC Cable	From PV module to inverter
1.1	Type	1.1kV grade heavy duty PVC insulated, Double sheathed, UV Protected XLPO stranded copper cables as per IS: 7098 (Part I & II) – 1976 or IS 1554 or IS9537/IEC60227/IS694. The voltage drop shall not exceed more than 2% of peakpower voltage
1.2	Size	The minimum DC cable size shall be 6.0 mm² copper.
1.3	Laying	The cable must be laid through PVC conduit /GI pipe/ cable tray on roof and indoor. In case of using metallic pipe as conduit proper grounding of the conduit must be done.
2.0	AC Cable	From inverter to ACDB and ACDB to distribution panel/LT panel
2.1	Type	1.1 kV grade heavy duty PVC insulated Aluminum armored XLPE stranded cables as per IS: 7098 (Part I& II) – 1976 or IS 1554 or IS9537/IEC60227/IS694. The voltage drop shall not exceed more than 2% of peak power voltage <ul style="list-style-type: none"> Outdoor AC cables shall have a UV-stabilised outer sheath.
2.2	Laying	The cable must be laid through PVC conduit /GI pipe/ cable tray on roof and indoor. In case of using metallic pipe as conduit proper grounding of the conduit must be done.

a) **Procedure of cable laying:**

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

- ii. Only terminal cable joints shall be accepted. Cable joint to join two cable ends shall not be accepted.
- iii. All cable/wires/control cable shall be marked with good quality letter and number/ferrules of proper sizes so that the cables can be identified easily.
- iv. All fasteners will be made of Stainless steel or Aluminum or UV Protected PVC.
- v. All power, control, communication cables running from buildings shall be routed from one building to another building through underground cable trench (direct burying) as per IS: 1255.
- vi. The DC cables from the SPV module array shall run through a UV stabilised PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm. The conduits shall not run across the path way of the terrace. Flexible corrugated PVC conduits shall not be used.
- vii. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
- viii. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm. The minimum DC cable size shall be 6.0 mm² copper. The minimum AC cable size shall be 4.0 mm² copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:
 - DC positive: red (the outer PVC sheath can be black with a red line marking)
 - DC negative: black
 - AC single phase: Phase: red; neutral: black
 - AC three phase: Phases: red, yellow, blue; neutral: black
 - Earth wires: green
- ix. Cables and conduits that have to pass through walls or ceilings shall be taken through a PVC pipe sleeve.
- x. Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.
- xi. The total voltage drop on the DC cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%. Conductor size of less than 6 sq. mm shall not be accepted.
- xii. Cable/wire connections shall be soldered, crimp-on type or split bolt type. Wire nut connections shall not be used.
- xiii. The wiring must be carried out in pvc precession make conduit only.
- xiv. Cable Routing/ Marking: All cable/wires are to be routed in a GI/PVC cable tray and suitably tagged and marked with proper manner by good quality ferrule or by other means so that the cable easily identified use
- xv. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25years.

- xvi. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

9) **LTPDB combiner boxes:**

AC outputs from ACDB installed at the Roof top of building are terminated at a LT power distribution board (LTPDB) which is located in the ground floor of the same building where LT evacuation point is provided. Supply and installation LTPDB is in vendor scope.

- i. LTPDB comprises of 320A, 4 Pole MCCB suitable for termination of cable coming from AC Distribution Board. PVC insulated AL armoured cable coming from solar ACDB at incoming end shall be provided in main control room with Out going of 320A, 4 Pole MCCB The panel shall be 3-phase, 50Hz, 415VAC, 1.1kV system voltage, outdoor, with canopy, cubicle design, compartmentalized (Breaker/ control box/ CTPT chamber etc), floor mounted, free standing IP55, neoprene gasket for doors/ frame joints, CRCA sheets 2mm (main frame)/ 1.6mm (door)/ 3mm (removable gland plate bottom side), painting seven tank process,, panel illumination lamp, space heater, thermostat etc. CU bus bars as per SLD, RYB colour coded heat-shrinkable sleeves for bus bars, SMC/DMC insulator supports for the incoming and outgoing power cables, nickel plated brass double compression glands, Al cable lugs, SS304 plain/ spring washers shall be provided.
- ii. Vendor shall provide bus bar extension at LT panel if Spare breakers are not available for LT evacuation.
- iii. Digital MFM shall be EM6300 of Schneider along with Indicator lamps shall be L&T/ C&S or reputed equivalent subject to SBI approval
- iv. MCCB: L&T/ C&S/ ABB/ Siemens/ Schneider or reputed equivalent subject to SBI approval
- v. Vendor shall install the LTPDB panels near to Customer LT evacuation point
- vi. Laying and termination of cables from ACDB box to LTPDB box:
 - Cables are 1.1kV, Al, XLPE, armoured as per IS: 7098 part-1 shall be in vendor scope of supply and installation for laying between ACDB to LTPDB.
 - These cables shall be routed using the same type of GI cable trays/ accessories/ hardware used for 1Cx4 cables up to the ground level outside the buildings.
 - All power, control, communication cables running from buildings shall be routed from one building to another building through underground cable trench (direct burying) as per IS:1255.

10) **NET METERING:**

Net Metering: Bi Directional Meter (As per TATA/ADANI/ MSEDCL Standard) shall have the provision for measurement for Current, Voltage, frequency, Energy, Power/Load, power factor, maximum demand with RS232 with class 0.5 accuracy.



Net metering shall be provided by the contractor for the captioned sites of SBI. The scope of work for net metering is detailed as below:

- Preparation of necessary documentation and submission of application (online/offline) to MSEDCL for net metering.
- Obtaining site feasibility report from MSEDCL.
- Obtaining net metering approval from MSEDCL.
- Contractor shall work with MSEDCL to enable SBI's signing of Power Purchase Agreement (PPA).
- Supply & Testing of net meter (Main & Check meter) and related accessories (Cubicle, CTs, PTs, earthing etc.) as per requirements of MSEDCL.
- Replacement of existing meter and related accessories (Cubicle, CTs, PTs, earthing etc.) with new metering systems as per requirements of MSEDCL.
- CEIG/CEA/MSEDCL inspectorate approval for supply, testing and replacement of new net metering system including preparation and submission of necessary documentation.
- CEIG/CEA/MSEDCL inspectorate approval of Solar Power Plant including preparation and submission of necessary documentation.
- Synchronization / Commissioning approval from CEIG/CEA/MSEDCL.
- Synchronization/Commissioning certificate for the Plant from CEIG/CEA/MSEDCL.

Note:

The contractor shall take up net metering for SBI turnkey basis including any statutory fees, fee towards testing of net meter, CTs, PTs, Cubicle etc. to be paid. Any other item / supply / activity / approvals/NOCs/fees not specifically defined in the above clause but required for successful completion of net metering with MSEDCL as per the latest Net Metering Policy for SBI shall be to the scope of the Contractor. In other case of non- applicability of Net metering, Contractor has to take care of approval of alternative mechanism as per state electricity regulatory norms & latest revisions of state grid code, all the required fees/NOC/other activity adhering to alternative mechanism shall be responsibility of contractor only

11) PROTECTIONS

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

i. LIGHTNING PROTECTION:

The SPV power plants shall be provided with lightning & overvoltage protection. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 /IS 2309 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth. ESE Lightning and surge protection for the SPV plant shall be provided using adequate number of earthing kits but not less than two independent earthing

stations. It shall be ensured that all the earth are bonded together to bring them to the same potential. *Earth resistance shall not be more than 5 ohms with earthing Strip of 25x6mm GI.*

- a) Lightning Arrester is composed of one main striking point, emission device, fixing element, and a connection to the down conductor.
- b) The area protected by LA is determined using the early streamer emission test method as per NFC 17 102 Standard and it is preferred to have LA installed on the highest part of the structure.
- c) Lightning arrester is advanced ESE type and provides protection radius of 107m in Level IV.
- d) Our ESE lightning arrester is testable from external tester for internal configuration aswell as magnetic field test. Carries 30 years warranty.

Tested as per NFC 17-102 standard for:

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

ii. SURGE PROTECTION:

Surge protection shall be provided on both the DC and the AC side of the solar system. The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.

The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter. The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system. The SPDs shall be of type 2 as per IEC 60364-5-53.

iii. EARTHING PROTECTION:

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

Earth pit chamber with RCC cover as per standards shall be constructed for each maintenance free earth rod. Earthing conductor of size not less than 25x3mm GI strip on roof/wall mounting for body Earthing system shall be provided with proper clamping arrangement using GI spacer and saddles over a suitable concrete blocks on roof and with necessary fixing materials with a spacing of not less

than 600mm. Earth resistance shall not be more than 5 ohms. All metal casing/shielding of the plant shall be thoroughly grounded to ensure safety of the solar power plant

EARTHING SPECIFICATIONS:

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

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

1) **TOOLS, TACKLES AND SPARES**

The Installer shall keep ready stock of tools, tackles and essential spares that will be needed for the day-to-day maintenance of the solar PV system. This shall include but not be limited to, the following:

- I. Screw driver suitable for the junction boxes and combiner boxes.
- II. Screw driver and / or Allen key suitable for the connectors, power distribution blocks, Circuit breaker terminals and surge arrestor terminals.
- III. Spanners / box spanners suitable for the removal of solar PV modules from the solar PV module support structure.
- IV. Solar panel mounting clamps.
- V. Cleaning tools for the cleaning of the solar PV modules.
- VI. Spare fuses

2) **CAUTION SIGNS**

In addition to the standard caution and danger boards or labels as per Indian Electricity Rules, the cable junction box near the solar grid-tie inverter, the building PCC board to which the AC output of the solar PV system is connected shall be provided with a non-corrosive caution label

The size of the caution label shall be minimum 105mm (width) x 20mm (height) with white letters on a red background.

3) **FIRE EXTINGUISHERS:**

The firefighting system for the proposed power plant(s) for fire protection shall be consisting of: Portable fire extinguishers in the control room for fire caused by electrical short circuits. The installation of Fire Extinguishers should conform to TAC regulations and BIS standards. The suitable fire extinguishers shall be provided in the control room housing as well as near the Roof or site where the PV arrays have been installed. Separate payment will not be made for the provision of fire prevention measures.

4) DOCUMENTATION TO ACCOMPANY FOR HANDING OVER THE PROJECT (Part-A,B,C)

Part A: DOCUMENTATION

- The complete documentation should be as per IEC 62446 and submitted to Bank.
- One set of operation manuals complete with drawing, parts list (with part codes) circuit diagrams with list ratings of components and list of do's and don'ts for the main equipment as well as the sub-systems should be submitted to Bank.
- One set of maintenance manuals with full information on drawings, circuit diagrams, list and suppliers addresses for bought out parts, troubleshooting charts, programs of built in controllers etc. for the main equipments as well as for the sub-system.
- These manuals should be in the form of hard (printed) copy in English Language as well as in electronic storage form (disc pen drive etc.)
- A certificate for the adequacy of the manuals should be obtained and provided with the manuals. Such certificate must be signed by the QA engineer of the manufacturer.
- The Installer shall supply the following documentation also:
 - a) System description with working principles.
 - b) System single line diagram.
 - c) Solar PV array lay-out.
 - d) Routing diagram of cables and wires.
 - e) Data sheets and user manuals of the solar PV panels and the solar grid-tie inverter.
 - f) A system operation and maintenance manual.
 - g) Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.
 - h) Guarantee & Warranty cards of the components supplied with seal and signature of the manufacturer.
 - i) Maintenance Register

Part B: TEST CERTIFICATES AND REPORTS TO BE FURNISHED

- a. Test Certificates / Reports from IECQ / NABL accredited laboratory or MNRE approved test centers for relevant IEC / equivalent BIS standard for quoted components shall be furnished.
- b. Type Test Certificates shall be provided for the solar modules and the solar grid inverters to provide evidence of compliance with standards as specified in relevant articles of this Technical Specification.
- c. Bank reserves the right to ask for additional test certificates or (random) tests to establish compliance with the specified standards.

Part C: INSTRUCTION AND O& M MANUALS

Four copies of Instruction and Operation and Maintenance Manual should be furnished. The manual shall be furnished at the time of dispatch of the equipment and shall include the following aspects about:

- a. Precautions during unpacking
- b. Instructions for handling at site.
- c. Erection drawings with written assembly instructions.
- d. Detailed instructions and procedures for the installation, operation and maintenance.
- e. Pre-commissioning tests.
- f. Solar PV system—its components and expected performance.
- g. Clear instructions about mounting of PV module (s)
- h. DO's and DONT's.
- i. Specimen log book.
- j. Principle of Operation of various equipment
- k. Safety and reliability aspects
- l. Metering scheme
- m. string inverter software and controls
- n. Clear instructions on regular maintenance and troubleshooting of solar power plant.
- o. Name and address of the person or service centre to be contacted in case of failure or complaint.
- p. Outline dimension drawings showing relevant cross sectional views, earthing details and constructional features.
- q. Rated voltages, current and all other technical information which may be necessary for correct operation of the SV plant.
- r. Catalogue numbers of all the components which are liable to be replaced during life of the SV plant and all the component parts.
- s. Trouble shooting and diagnostic procedure



Approved Make of Materials

S.No.	Components /Make	Specifications/Standards	Warranty
1	<u>Solar Module</u> (GoldieGreen/ Panasonic/TATA Solar/ Waree / Vikram/ Navisol/ Solar max/ Nano)	Poly/Mono/crystalline/CIGS, 325Wp - 375 Wp IEC 61215 /IS 14286, IEC 61730 (part 1 & 2) IEC 62716, IEC 61853-1 IEC 61701,IEC 62782 IEC 62804,IEC 62892	25 years
2	<u>Solar Grid Tied Inverter</u> (Schnider/ABB/ Sungrow / Delta / Solis/ Pwerone) SMA/ /Solar age /Polycab/ solare Grow watt /Fronius/SMA Solar/Delta/Waree	IP 65; Transformer less with MPPT, minimum efficiency of 98%. IEC 61683, IEC 62109-2 and IEC 62093 or equivalent BISstandards	5 years
3	<u>Mounting Structure andGI tray</u>	Hot-dip galvanized, 80 microns thk, Design wind speed 150 kmph	25 years
4	Cables DC (Polycab/ V- Guard/Gloster /Havells/finolex/RR) Cable AC (Polycab/ V- Guard/ Gloster /Havells/RR)	Single core DC cable, UV stabilised, multi-strand XLPE PVC insulated) 4 core solid CU conductor, XLPE insulated, FLEXIBLE ,PVC inner sheathed, 650/1100V, cable as per IS IEC 60227 / IS 694 IEC 60502/IS 1552 (Pt. I &II) TUV 2PFG 1169	-



5	Array Junction Box (if required)	Polycarbonate IP 65 (Protection DC fuses, DC Isolator and DC SPD)	
6	AC/DC Distribution Board	MDS/Hager/L&T	
7	String Combiner Box	Robotina/Trinity Touch/Hensel/Cape Electric,AKG	
8	LV Switchgear	ABB/L&T/Schneider/ MDS or Equivalent IEC 60947 part I, II, III IEC 60947 part I, II, III EN 50521 IEC 62852	
9	Energy Meter	Secure/L&T or Equivalent	
11	Connectors	MC4/or Equivalent	
12	Surge protection (spd)	MDS, L&T, Hager	
13	ACDB (if required)	Polycarbonate IP 65 (Protection AC isolator alongwith phase(indicators)	
14	Earthing (Chemical Earthing Kit)	chemical type 3 mtr ISI Mark along with Earthing Chambers as per IS 3043 Ashlok, /Equivalent	
15	Earthing Strip	25mmx3mm GI Type	
16	Lighting Arrestor	Standard (Copper Type) IEC 62305	
17	Cable Trays	Sharada Cable Trays , Bravo Cables Trays, CSR Industries, BG Shirke	



COMPONENTS	MAKE
Solar Photovoltaic Modules	(Waree / GoldieGreen / Panasonic / TATA Solar/ Vikram/ Navisol/ Solar max/ Nano)
Solar Inverter	(Schnider/ABB/Sungrow / Delta/ Solis/ Pwerone) SMA/Solar age /Polycab/ solare Grow watt /Fronius /SMA Solar /Delta / Waree
Cable	RR/Polycab / Siechem / KEI
Cable Tray	Sharada Cable Trays , Bravo Cables Trays, CSR Industries, BG Shirke
Chemical Earthing Kit	Ashlok, /Equivalent
Energy Meters	Secure/ L&T/ LNG
Surge Protection	Conzerve / Secure
Panel Meters	Conzerve / Secure
Lightening Arrestor	OBO / Indelec
SS Fasteners	Unbrako / APL / Viraj / Raj
Components of LT panel	Schneider / ABB/ Siemens

Note: -

- 1) The contractor should obtain prior approval from SBI/ Consultants before placing order for any specific materials SBI may / delete any of the makes or brands out of the above list.
- 2) All materials should conform to relevant standards and codes of BIS. Materials with I.S.I. mark shall be used duly approved by the SBI Engineer/Architect.
- 3) Any material is found to be not up to the mark, the contractor will have to produce original bills/certificate from the manufacturer or his authorized Distributor for authenticity and genuineness of the material for consideration and as per make approved by the SBI. The same will not be considered for payment.
- 4) Any additional item as per BOQ specifications or as per the instructions of the bank / Consultants. Any of the above items / other items if any will be as approved by the Consultants & Engineer-in-charge.



A.SCHEDULE OF TECHNICAL DATA TO BE FUNISHED BY THE CONTRACTOR

a	SPV MODULE	
i.	Manufacture's Name & Address	
ii.	Type of Modules with cat. Reference	
iii.	Design of module at standard test condition	
	a) Peak power watt	
	b) Peak power voltage	
	c) Peak power current	
	d) Open circuit voltage	
iv.	No. of SPV Modules proposed branch wise to achieve minimum KWp DC power (i),ii,iii,iv,v,vi	
v.	Short circuit current of PV module (Amp.)	
vi.	Open circuit voltage of PV Module (V)	
vii.	Max. power rating of one PV Module (KWp) (not less than 320Wp)	
viii.	Photo electrical conversion efficiency of SPV module (not less than 14%)	
ix.	Fill factor of the SPV module (> 0.70)	
x	Designated life of the SPV modules	
xi.	Overall dimensions (in mm)	
xii.	Weight	
xiii	Frame materials	
xiv.	Reference of Standards / approval, if any	
xv.	Life of SPV Module (Years of Operation)	
b	PV ARRAY CAPACITY	
	Number of Module in series in each array	
	Peak power rating of one array	
	Number of array considered to achieve the specified output	

c	MODULE MOUNTING STRUCTURE	
i)	Type of structure and its materials used in frame and accessories	
ii)	Type of mounting structures (Fixed or any other type)	
iii)	Overall dimensions	
iv)	Type of mounting	
v)	Surface azimuth angle of PV Modules	
vi	Tilt angle (Slope) of PV module	
vii.	Confirm structure & module frame shall be designed at windspeed 150 km/hr.	
d	POWER CONDITIONING UNITS (PCUs)	
i.	Manufacturer's name & address	
ii.	Type of PCU (Centralized or string type)	
iii.	Number of units proposed	
iv.	Rated capacity of each PCU	
v.	Input DC Voltage range	
vi.	Output voltage	
vii.	Frequency	
viii.	Minimum efficiency at full load	
ix.	Location (outdoor/indoor)	
x.	Output wave shape	
xi.	Dimensions in mm	
xii.	IP protection level	
xiii.	Type of cooling required	
xiv	Type of mounting	
xv.	Suitability for specified Ambient Temp. range & Humidity at	
xvi.	Type of Protection provided	
xvii	Over Load Condition	Yes/No
xviii	Short Circuit Protection	Yes/No



xix	Low/High Voltage Protection	Yes/No
xx	Power Electronic Component Protection Yes/No	Yes/No
e.	METERING	
i.	Nos. of meters proposed to be provided	
ii.	Location of meters	
iii.	Manufacturer's name & address	
iv	Confirm compliance with laid down specification	

f	Item	Quantities	To be filled by the contractor
1	SPV Modules	Total Quantities (nos)	
		No. of Arrays	
		Nos. of SPV modules in each array	
2	Power Conditioning Units (PCUs) (Centralized / string type)	Type	
		quantity	
3	DC Junction Boxes		
4	AC Junction Boxes		
5	Other related items viz. control & power cables, cable trays, surge diverters, earthing etc. for the complete work as required & specified	LOT	

Signature of the contractor with company seal



B-WARRANTY CERTIFICATE

Name & Address of the Manufacturer/Supplier		
Name & Address of the Purchasing Agency		
Date of Erection of system		
PV Module a) Make b) Model c) Serial No (List Enclosed) d) Wattage under STC e) Warrantee valid up to		
Electronics & Inverter a) Make b) Model c) Serial No Warrantee valid up to		
Other BOS a) Make b) Model c) Serial No d) Warrantee valid up to		
Designation & Address of the person to be contacted for claiming Warrantee obligations		
Date: Place:	(Signature) Name Designation Name & Address of the Manufacturer /Supplier (SEAL)	



FORMAT FOR BANK GUARANTEE TOWARDS SECURITY DEPOSIT AND PERFORMANCE GUARANTEE

(To be submitted on Rs. 200/- non judicial stamp

paper)Bank Guarantee No._____dated _____

M/s State Bank of India,

.....,

Dear Sirs,

In consideration of M/s 'SBI' which expression unless repugnant to the context and meaning thereof shall include its successors and assigns], having agreed to exempt, M/s.____having its registered/principaloffice at

_____ [hereinafter referred to as 'Supplier / Contractor' which expression unless repugnant to the context and meaning thereof shall include its successors and assigns], from depositing with SBI a sum of Rs._____towards security / performance guarantee in lieu of the said Supplier / Contractor having agreed to furnish an irrevocable bank guarantee for the said sum of Rs._____as required under the terms and conditions of Contract / Work Order / Purchase Order no_____dated _____ [hereinafter referred as the 'Order'] placed by SBI on the said supplier / contractor, we, _____ [hereinafter referred to as 'the Bank' which expression shallinclude its successors and assigns] do hereby undertake to pay SBI an amount not exceeding Rs.

_____ [Rupees_____] on demand made by SBI on us due to a breach committed bythe said Supplier / Contractor of the terms and conditions of the Order.

We_____the Bank hereby undertake to pay the amount under the guarantee without any demur merely on a demand received in writing from SBI stating that the Supplier / Contractor has committed breach of the term(s) and/or condition(s) contained in the Order and/or failed to comply with the terms and conditions as stipulated in the Order or amendment(s) thereto. The demand made on the Bank by SBI shall be conclusive as to the breach of the term(s) and/or condition(s) of the Order and the amount due and payable by the Bank under this guarantee, notwithstanding any dispute or disputes raised by the said Supplier / Contractor regarding the validity of such breach and we agree to pay the amount so demanded by SBI forthwith and without any demur. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.

_____ [Rupees_____].

We,_____the Bank further agree that this irrevocable guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said



Order and that it shall continue to be enforceable till all the dues of SBI under or by virtue of the said Order have been fully paid and its claim satisfied or discharged or till SBI certifies that the terms and conditions of the Order have been fully and properly carried out by the Supplier / Contractor and accordingly discharge the guarantee.

We _____ the Bank, undertake to pay to SBI any money so demanded notwithstanding any dispute or disputes raised by the said Supplier / Contractor in any suit or proceedings pending before any court or tribunal relating thereto as our liability under this present being absolute and unequivocal. The payment so made by us under this Guarantee shall be valid discharge of our liability for payment there under and the said Supplier / Contractor shall have no claim against us for making such payment.

We _____ the Bank further agree that SBI shall have full liberty, without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the Order or to extend time of performance by the said Supplier / Contractor from time to time or to postpone, for any time or from time to time, any of the powers exercisable by the SBI against the said Supplier / Contractor and to forbear or enforce any of the terms and conditions relating to the Order and shall not be relieved from our liability by reason of any such variation or extension being granted to the said Supplier / Contractor or for any forbearance, act or omission on the part of SBI or any indulgence by SBI to the Supplier / Contractor or by any such matter or thing whatsoever which under the law relating to sureties would but for this provisions have effect of so relieving us.

In order to give full effect to this guarantee, SBI will be entitled to act as if the BANK were the principal debtor and the BANK hereby waives all rights of surety ship.

- 5) Our liability under this bank guarantee is restricted to Rs. _____ [Rupees] and shall remain in force up to _____ and thereafter till the expiry of the extended period, if any, (hereinafter Validity period). Unless a demand is made under this guarantee on us in writing at any time from the date of issue of the guarantee till the expiry of the Validity period, we shall be discharged from all liabilities under this guarantee thereafter.
- 6) The claim, if any, under this guarantee, shall be lodged at (address of BANK & Branch) _____.

This guarantee will not be discharged due to change in the constitution in the Bank or the said Supplier / Contractor or the provision of the contract between Supplier / Contractor and SBI

The BANK hereby agrees that the Courts in Mumbai shall have exclusive jurisdiction in any matter of dispute between SBI and the Bank and the Bank hereby agrees to address all the future correspondence in regard to this bank guarantee to The Assistant General Manager (P&E), LHO Mumbai Metro, State Bank of India, 3rdFloor, Synergy Building, Bandra Kurla Complex, Mumbai - 51.



We have the power to issue this Guarantee in your favour under the Charter of our Bank and the undersigned has full power to execute this Guarantee under the Power of Attorney granted to him by the Bank.

We, _____ the Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the SBI in writing.

SIGNED AND DELIVERED ON THIS _____ DAY OF _____

Yours faithfully,

For and on behalf of _____ . (Bank) Signature of Authorised Official of bank



**FORMAT FOR SOLVENCY CERTIFICATE)
(On Bank's Letter Head)**

REF

NO:..... DATE:

To Whomsoever Concerned

This is to certify that to the best of our knowledge and information, M/s _____(Bidders name with complete address), a customer of our Bank, is respectable, and is capable of executing orders to the extent of Rs _____ (Rupees _____). M/s _____ have been our customer since _____

to date and has been granted the following limits, at present, against various facilities granted by the Bank:

.....
.....

This certificate is issued without any guarantee, risk or responsibility on behalf of the Bank or any of its officials.

This certificate is issued at the specific request of the customer.

Yours faithfully,

(Bank Official's signature & stamp)



ENERGY GENERATION FOR 5 YEARS BRANCH WISE AFTER DEFECT LIABILITY PERIOD OF ONE YEAR.

(On Company letter head)

Note: Efficiency of solar PV System shall be guaranteed to minimum 90% at the end of 5 years after expiry of defect liability period of one year.

Year	Total (KWh/KW/year) of guaranteed generation
Year 2	
Year 3	
Year 4	
Year 5	
Year 6	

Signature of the authorized person with company seal
DATE



**Part-II (B)
PRICE BID**

(BILL OF QUANTITIES TO BE SUBMITTED ONLINE)

Description of Work:

Design, Tender For Design, Supply, Installation, Testing and Commissioning Of 145Kwp Grid Connected Roof top Solar Power System Under Net Metering Policy Including 5 Years Comprehensive Maintenance (from 2nd Year) at various branches under LHO Mumbai Metro, Mumbai.

The rate shall include for all the material required including required quantities of SPV modules formed into arrays, their mounting arrangement with 30% Elevated structure where the site doesn't permit to achieve targeted solar power, power conditioning units, required DC & AC distribution panels with surge protection units, copper plate earthing stations with copper strip/cablings, data loggers for system performance monitoring through licensed software, metering safety arrangements, civil works, training etc. as defined in Part I of the tender to provide a composite operational system. The rate shall also include for 5 (five) years Warranty/Guarantee and Operation & Maintenance Including standard set of tools and spares (to be supplied free of cost).

NOTE:

- 1. Total project works should strictly carried out complete as described in detailed technical specification. Prices quoted must be for Turnkey project and should be firm for the period of contract. No escalation shall be admissible in respect of any item of the contract.**
- 2. The system shall have guaranteed annualized ac energy output of 1,440 kwh Per KWp per year during the first five years of operation.**
- 3. Prices Quoted should be Inclusive all Taxes, Transportation, Insurance, Loading & unloading, Installation & commissioning, CMC for 5 Years (from 2nd year), Net Metering PPA and Grid synchronization related approvals and Bi-directional meters and CT's to be provided as MSEDCL norms & modifications in existing LT Panels including supply of LT modules. Also the Liaisoning with ADANI/TATA/MSEDCL will be in the scope of bidder only**



Sr	Site	Capacity Kwp	Mini KWH	Qty	Unit	Rate	Amount
1	VARIOUS BRANCHES UNDER LHO MUMBAI METRO, MUMBAI	145Kwp	1,440 kwh/ KWp Per Year	1	Job		
TOTAL Kwp		145 Kwp	TOTAL AMOUNT				
GST will be paid extra							

Remarks :

The Work will be distributed among L-1, L-2 & L-3 provided L-2& L-3 accepts the L1 Price.

The details are as under;-

- (i) L-1: Industrial Estate Branch Wagle, Vashi Turbhe Branch/ SBLC, Chembur
L-2: MIDC Andheri and IE Badlapur Branch
L-3: IE Kandivali Branch
- (ii) If L-2 bidder does not accept for L-1 rate, L-2 Branches will be shared to L-1 & L-3 bidders.
If L-3 bidder does not accept for L-1 price L-3 Branches will be given to L-1 bidder

(Signature of the authorized person with stamp of the firm/company)Name of the authorized person:

Date: