



## निविदा प्रपत्र

सेंट्रल बैंक ऑफ इंडिया अपने  
317एम जी मार्ग, पुणे स्थित  
आंचलिक कार्यालय भवन पे  
सोलर प्लांट प्रस्थापित करने हेतु प्रतिष्ठित सेवा प्रदाताओं से निविदा आमंत्रित करती है

निविदाकार का नाम : - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

निविदा प्रस्तुत करने की अंतिम तिथि: 07/04/2022 दोपहर 03:00 बजे तक

निविदा खोलने की तिथि ) केवल प्रि-क्वालीफिकेशन/टेकनिकल निविदा ( : 07/04/2022 दोपहर 03:30 बजे

निविदा शुल्क: डिमांड ड्राफ्ट के रूप में ₹5,000.00 (₹ पाँच हजार मात्र (अप्रतिदेय )

बयाना जमा राशि: डिमांड ड्राफ्ट के रूप में ₹66,000.00 (₹ छेसठ हजार मात्र)

आय ई एम का विवरण:-

1) श्री. त्रिविक्रम नाथ तिवारी  
ईमेल :- trivikramnt@yahoo.co.in

2) श्री. जगदीप नारायण सिंह  
ईमेल :- jagadipsingh@yahoo.com

सेंट्रल बैंक ऑफ इंडिया,  
व्यवसाय सहायता विभाग  
पहिली मंजिल आंचलिक कार्यालय  
317एम जी मार्ग, कैंप  
पुणे 411001  
दूरभाष:- 020-26131611-14



## **Tender Document**

**Central Bank of India invites tender from established and reputed contractors  
for installation and testing and commissioning of Solar plant at its office  
building at 317,  
M G Road, Camp, Pune 411001**

Name of the Tenderer: - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Last Date of Submission:** 07/04/2022 at 3.00 PM

**Date of Opening of Pre-Qualification/Technical bid:** 07/04/2022 at 3.30 PM

**Tender fee:** ₹ 5,000.00 non-refundable in the form of DD

**Earnest Money Deposit:** ₹ 66,000.00 DD in favor of Central Bank of India, Payable at Pune

आय ई एम का विवरण:-

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ईमेल :- trivikramnt@yahoo.co.in

2) श्री. जगदीप नारायण सिंह  
ईमेल :- jagadipsingh@yahoo.com

**CENTRAL BANK OF INDIA,**  
General Administration Department,  
1<sup>st</sup> floor, Zonal Office,  
317, M G Road, Camp,  
Pune 411001  
Ph:- 020-26131611-14

Dear Sir/ Madam,

**Reg: Installation and testing and commissioning of Solar plant at Bank's Buildings at 317, M G Road, Camp, Pune 411001**

Central Bank of India, Zonal Office Pune invites tender for **Installation and testing and commissioning of Solar plant at Bank's Buildings at 317, M G Road, Camp, Pune 411001** from reputed and established Contractors/ firms who have a considerable experience in the field of renewable energy especially Solar plant installation and testing and commissioning and who qualifies in Pre-qualification criteria set by the Bank. It is mandatory for the bidders to visit the location of said work before submission of bids.

The tenders will be issued by Bank to contractors from 11/03/2022 during working hours (10 AM to 5 PM) from our office at Zonal office, 1<sup>st</sup> floor, 317, M G Road, Camp, Pune 411001 on payment of tender fees (non-refundable) of ₹5000.00 (₹Five thousand only) in the form of draft favoring "Central Bank of India" payable at Pune. Tender details are also available on Bank's website [www.centralbankofindia.co.in](http://www.centralbankofindia.co.in)

The Tenders should be submitted in two Separate envelop No. 1 (Technical Bid) containing Earnest Money Deposit, technical specification and Terms & Conditions of Tender duly signed on each page & Envelop No. 2 (Price Bid) containing schedule of work/specification & rates for the above mentioned work. The specifications, conditions of contract and schedule of work be carried out are enclosed herewith.

Please Note that the Bank does not bind itself to accept the lowest or any Tenders and reserve itself the right to accept/ reject any or all tenders either in whole or in part, without assigning any reason for doing so.

The tender (both envelopes) duly filled in and signed on each page shall be submitted in sealed cover marked as technical bid and Financial bid, clearly subscribing the name of the said work, to Asst General Manager- BSD, Central Bank of India, Zonal Office, 317, MG Road, Camp, Pune 411001 so as to reach us not later than 3.00 p.m. on 07/04/2022. Late tenders are liable to be rejected.

The tender should be submitted along with the earnest money deposit demand draft of amount ₹ 66,000/- (₹ Sixty Six Thousand only) favoring "Central Bank of India" payable at Pune. The earnest money deposit submitted in the form of Cheque will not be accepted. The earnest money deposit of unsuccessful tenders shall be returned after finalization of the bidder mostly within 30 days from the date of opening of tenders. No interest shall be paid on the earnest money deposit amount.

For any further information on the tender, Business Support department at Zonal Office, Pune may be contacted (Ph. No.020- 26131614; extension 124).

(Swadesh Chandra)  
Asst. General Manager

## **PRE-QUALIFICATION ELIGIBILITY/ TECHNICAL BID**

1. Prior to submission of tenders, it is mandatory for contractors to visit the location of said work preferably within weeks' time from issuance of tender document and to become well acquainted with the nature, scope, extent, location, working condition etc. of the work. They will inspect the site, study the drawing details specifications and obtain all required clarifications from the department. Submission of bids without site visit shall not be acceptable.

SN	Minimum eligibility criteria	Documents required
1.	The applicant should be a well-established and reputed contractor firm/ proprietorship firm specialized in dealing with solar plant installation works and shall have minimum experience of 10 years in the same field and must have office in Pune.	Firm registration certificate/ Firm/ partnership deed/ experience certificate
2.	The firm shall be ISO9000 certified and shall be registered/ associated with Organization/ Statutory bodies associated with renewable energy	Relevant Certificate/ document shall be submitted
3.	The firm should have Experienced and qualified (at least graduate in relevant field/stream) team of Designers, structural, civil, electrical and mechanical Engineering staff who are expertize in similar work	Staff structure along with supporting documents are to be submitted
4.	The firm Should have executed at least 2 projects of similar magnitude and nature for office buildings/ Govt office/ PSU/ commercial establishment	Satisfactory Completion certificate certified by Engineers/ officer in- charges shall be submitted
5.	Contractor shall have mandatory experience of carrying out minimum 2 assignments above 100 Kwp during the course of time	Satisfactory Completion certificate certified by Engineers/ officer in- charges shall be submitted
6.	The applicant should have satisfactorily completed 'similar' works of magnitude as specified below during the last 3 years ending 31/03/2021 (i) One similar completed work, costing not less than ₹ 27.0 Lakh, or (ii) Two similar completed works, each costing not less than ₹ 17.0 Lakh, or (iii) Three similar completed works, each costing not less than ₹ 14.0 Lakh	Certificate by an authorized officer/ Chief Project Manager or equivalent of the organization for whom the works has been done. In case of private project, project architect/ engineer will have to certify the execution of work. Annex the copy of the work order. Additionally, committee may, at its own discretion visit the site/s.
7.	The applicant should have average annual financial turnover of ₹1.0 Cr. in similar works during the last three FY ending 31/03/2021	Audited balance sheet of relevant period shall be submitted

To,

Asst. General Manager,  
General Administration Department,  
Central Bank Of India,  
Zonal office ,M .G .Road  
Pune-411001

**Ref: Application for Installation and testing and commissioning of Solar plant at Bank's Buildings at 317, M G Road, Camp, Pune 411001**

Dear Sir,

I / we have read and understood the instructions and the Terms & Conditions mentioned in the application form. I / we do hereby declare that the information furnished in the application and the supplementary sheets are correct to the best of my knowledge and belief.

I / we authorize Bank to approach our employers, clients, corporation organization etc. to verify the facts submitted by us.

Signature of applicant with seal

Name:

Designation:

Address:

Place

Date:

## INFORMATION TO BE FURNISHED BY THE APPLICANTS

Name of the Organization

Address with telephone no. and  
e-mail address if any.

Address
Telephone nos.
Fax no.
E-mail ID

Year of testing and commissioning

Status of the firm  
(Enclose copy)

Proprietorship / partnership / limited /  
trust / any other (please specify)

Name of Directors/ Partners/ Proprietor

- i)
- ii)
- iii)

Name and address of Bankers

- i)
- ii)
- iii)
- iv)

Important major projects executed during  
last three years by the firm together with  
approximate cost of individual projects and  
full address of the clients for whom  
the works have been executed

Important major projects on which the firm  
is engaged at present and their estimated cost  
the full address of clients shall be indicated  
against each project. ....

Whether an assesses of income tax, if so,  
mention permanent account number. Furnish  
copies of Income Tax Clearance Certificate .....

Whether registered with GST Department.  
Please inform the registration number  
and date of registration. Furnish copy  
of registration. ....

Furnish copies of audited Balance Sheet and  
Profit & loss account (audited) for the  
last three financial years. ....

If you are registered in Panel of other  
Organisation/ Statutory bodies associated with renewable energy  
furnish their name, Category and date of registration.

i) .....

.....

.....

.....

v) .....

## DETAILS OF DIRECTORS / PARTENERS

Sr. no.	Name of partners / directors	Academic qualification	Official designation	Address / phone / fax / e-mail
1.				
2.				
3.				
4.				
5.				
6.				



## DETAILS OF REGISTRATION

Sr. no	Name of organisation / department	Registration no.	Date / year of registration	Enclosed proof	
				Yes	No
1.	Registrar of firms and societies				
2.	Income tax department (mention PAN no. with copy of latest income tax clearance certificate)				
3.	GST registration certificate/ proof of depositing the tax)				
4.	Details of EPF account and registration				

## FINANCIAL STATUS

Sr. no	Financial year	Turnover of the firm (in Rs. lacs	Profit / loss	Enclosed certified copies of audited balance sheets / chartered accountant's certificate.	
				Yes	No
1	2018 – 2019				
2	2019– 2020				
3	2020– 2021				

PROFORMA –1  
PARTICULARS IN RESPECT OF WORK EXECUTED DURING LAST 3 YEARS

Sr. No	Name of the work/ project executed with address	Short description of work executed	Name and address of owner / consultant	Value of work executed Rs.	Stipulated time of completion	Actual time of completion	Date of commencement and completion of the work	Any other relevant information
1								
2								
3								
4								

Signature of the Applicant contractor

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Note The contractor shall mention only those works executed during last 3 years which fulfills the eligibility criteria on this page. The list is to be substantiated with the documentary evidence such as work order and completion certificates in absence of which the application is liable to be rejected.  
Other works should be mentioned on separate sheet.

PROFORMA- 2  
LIST OF KEY PERSONAL PERMANANTLY EMPLOYED

Sr. no.	Name	Designation	Qualification	Experience	Years with the Firm	Any other information
1						
2						
3						
4						
5						
6						
7						
8						

Signature of the Applicant contractor

PROFORMA –3

PARTICULARS IN RESPECT OF WORK IN HAND

Sr.No	Name of the work/ project executed with address	Short description of work executed	Name and address of Owner	Value of work executed Rs.	Stipulated time of completion	Current Status Of Work	Any other relevant information
1							
2							
3							
4							
5							
6							
7							

Signature of the Applicant contractor

PROFORMA – 4  
OTHER RELEVANT INFORMATION  
WORK FORCE PERMANENTLY EMPLOYED  
TRADE NOS.

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Design Engineer.....

Electrical engineer.....

Structural engineer.....

Others.....

LIST OF MACHINES AND EQUIPMENTS AND SOFTWARE  
IN POSSESSION OF THE FIRM

.....

ii) .....

iii) .....

iv) .....

v) .....

vi) .....

**List of Documents to be enclosed with application form.**

1. Status of the Firm / Registration certificate
2. GST registration certificate
3. Service tax registration certificate
4. Income tax registration certificate
5. Income Tax clearance certificate.
6. EPF registration certificate
7. Proforma-I
8. Proforma-II
9. Proforma-III
10. Proforma-IV
11. Photograph of major work executed. Completion certificates from clients / architects for similar jobs.
12. Solvency certificate from bank
13. Turn over certificate from Chartered Accountant.
14. Three years balance sheet.
15. Financial Standing Certificate from Chartered Accountant
16. Memorandum of association in case of partnership / limited company.
17. Demand draft ₹ 5000/- in favour of Central Bank of India payable at Pune.

## **GENERAL CONDITIONS**

1. **Prior to submission of tenders, it is mandatory for contractors to visit the location of said work preferably within weeks' time from issuance of tender document and to become well acquainted with the nature, scope, extent, location, working condition etc. of the work. They will inspect the site, study the drawing details specifications and obtain all required clarifications from the department. Submission of bids without site visit shall not be acceptable.**
2. Item to be carried out are listed in the attached schedule of quantities. Bank reserves the right to add/omit any items /partly or fully without giving any reasons. The rate for any new item introduced shall be settled by the Bank after getting necessary rate analysis from the successful bidder.
3. The extra and deviated item rates shall be settled by a rate analysis wherein a gross profit (inclusive of overheads) of 15% of total cost of material + Labor shall be paid, Cost of material being supported by vouchers and labor estimated as per approved norms or as per actual, if norms are not available.
4. The quantities contained in the scheduled are only approximate/ notional and may vary, for which no extra compensation will be paid to the contractors. They are meant only for tendering purpose, so that a common base is available for comparison. The work actually done will be measured as per actual and paid for, as mentioned above.
5. The contractor shall at his own expenses rectify the unsatisfactory works within 7 days from the date of intimation. In case of failure to do so, Bank reserves the right to carry out the work through any other agency/agencies and such expenditure will be recovered from the Contractor in due course of time.
6. All soil filth; rubbish and other objectionable materials shall be at once carted away out of the premises as per local authority's rules in force, if any, at his own cost and expenditure. In absence of above, the Bank may do at the Contractor's risk and cost.
7. The Bank does not bind itself to accept the lowest or any tender and reserves itself the right to accept/reject any or all the tenders without assigning any reasons for doing so.
8. The rates quoted in the tender should include all charges for material, labor, transportation and taxes, if any etc. and bank shall not be responsible for any other incidental expenses in this connection.
9. The Rates shall be firm and fixed and shall not be subject to any change, variation in price of materials and labor, labor strikes whatsoever and shall hold good till completion of work. No escalation shall be payable for price variation and / or changes in tax structure.
10. An acceptance of the contract shall mean essentially acceptance of rates for each individual items of work. The actual payment however shall be made on actual authorized quantities of the work done, based on joint measurements at accepted tender rates, and / or approved extra and deviated item-rates, for extra and deviated items.
11. The tenderers are requested to sign the tender form and the schedule of quantities on all pages otherwise the same shall be rejected.
12. No extra shall be paid for any minor alterations modification/addition made in design/specification while work is in progress and as per site requirements.

13. Rates quoted in the tender/quotation should be valid for at least 120 days from the date of receipt of the order.
14. Contractor shall have to complete the work within **60 days** from the date of commencement of the work as stated in Appendix I.
- 15. In case, contractor fails to complete the work within the said period, liquidated damages @ 1.0% per week and part thereof maximum up to 10% of contract value will be levied till the work is completed in all respects, as per bank's specifications.**
16. Earnest money deposit of Rs.66,000.00 (Rupees Sixty Six Thousand only) shall be submitted in the form of demand draft/banker's cheque favoring "Central Bank of India" payable at Pune.
17. Retention money of 10% (including EMD) shall be deducted from the interim and final bill and shall be paid as mentioned in APPENDIX –I
18. 5% of the total billed amount shall be retained with the bank till the completion of the defects liability period of 12 months is over.
19. The successful tenderer shall extend full cooperation and coordination with other agencies that are executing other related jobs at site and ensure to complete the overall work expeditiously.
20. Best specified materials are used by the firm and to complete the job with utmost workmanship and as per bank's requirements.
21. No compromise on material and workmanship shall be allowed at any stage.
22. Time bound program to be fixed and adhered to. In exceptional case, request may be considered for granting extension in time limit.
23. Certificate to be kept on record about the specification/material used from the contractors and the copy of the same to be forwarded to us for our records. All care to be taken for satisfactory completion of the work in neat and tidy conditions.
24. Safety and security of the material and Labor will be responsibility of the contractor and Bank will not be responsible for the same.
25. It shall be responsibility of the Contractor to liaison with concerned/competent authorities i.e. PCB, PMC, PWD, Police, Local Development authority or other directly/indirectly involved in the work and ensure to obtain necessary permission / approval for smooth completion of the overall job in neat and tidy conditions and without any hindrances. However all communication shall be carried out by bank and contractor will carry out required follow-up.
26. The tenderer must not assign the contract or sublet any portion of the contract except with the written consent of the Bank
27. The Contractor shall strictly comply with provision of contract labor (Regulation & Abolition) Act of Maharashtra Govt.
28. No change in design / specification by bidder is permitted unless otherwise approved Bank Official / Architect.
29. Any and all the permissions/NOC required to be obtained from relevant authorities e.g. Municipal Corporation/ PWD/ MSEDCL/ Fire dept. etc., or any other for the repair including out of pocket expenses etc. shall be contractor's responsibility. However any letters by Bank as required for the same and any official charges/fees shall be Bank's responsibility.



30. The contractor shall be responsible of making good of public property in case of any damage happened during execution of said work.
31. The Bidder shall have necessary registration with State / Central Revenue Dept. i.e. GST, PAN CST etc.

**32. TERMS OF PAYMENTS:-**

- a) **Advance Payment:** - 10% of the initial contract price shall be paid to the contractor as Mobilization advance after mobilization of equipment, plant, material on site. The advance shall be paid against submission of an unconditional Bank Guarantee for the amount equal to the advance payment. The advance so paid shall be adjusted from interim bills maximum up to 50% from each interim bill.
- b) **RA 1:** - RA1 shall be paid as per actual for supply of Solar PV Modules and for Grid tied Inverter against Proforma Invoice.
- c) **RA2:-** 50% of balance amount shall be paid after completion of installation of MMS and installation of Modules and Inverters
- d) **Final bill:** - Final payment shall be made after testing, commissioning, MSEDCL grid connectivity and overall completion of work. The final bill shall be accompanied by a certificate of completion from the Bank's technical Officer. Payments of final bill shall be made after deduction of Retention Money as specified in APPENDIX –I of these conditions, which sum shall be refunded in the manner stated in APPENDIX –I. The acceptance of payment of the final bill by the Contractor would indicate that he will have no further claim in respect of the work executed.
- e) 5% retention amount shall be paid after 12 months on completion of Defect liability period.

I/ We hereby declare that, I/ We have read and understood the above conditions and I/We agree to comply with the same.

We accept the above conditions in Toto.

SIGNATURE OF CONTRACTOR  
WITH DATE & SEAL

## APPENDIX -I

1.	Name of Work	Installation and testing and commissioning of Solar plant at Bank's Buildings at 317, M G Road, Camp, Pune 411001
2.	Defect liability period	12 (Twelve) months from the date of completion of work
3.	Date of commencement	Within 7 days from issue of order or handing over site, Whichever is later
4.	Date / Time of completion	<b>60</b> Days from the date of commencement of work as stated above (Sr.3)
5.	Liquidated damages	1% of the accepted contract sum per week and part thereof subject to maximum of 10% of the accepted contract value.
6.	Earnest Money deposit	Rs. 66,000.00 along with tender to be submitted in the form of demand draft favoring "Central Bank of India" payable at Pune.
7.	Retention Percentage	Total retention = 10% of the value of work (including EMD)
8.	Release of retention amount after completion	50% of the total retention amount (total security deposit) shall be released after successful completion of work and remaining 50% shall be retained till completion of defect liability period
9.	Terms of payment	As mentioned at Sr. no. 32 of tender document
10.	Period of Honoring Interim Certificate	2 weeks from date of receipt of Certificate
11.	Period of Honoring Final Certificate	1 Months on the receipt of bill from the Contractor.

## **INTEGRITY PACT**

Between

**Central Bank of India** hereinafter referred to as “**The Principal**”,

And

..... hereinafter referred to as “**The Bidder/ Contractor**”

### **Preamble**

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

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

### **Section 1 – Commitments of the Principal**

(1.) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

- a. No employee of the Principal, personally or through family members, will in connection with the tender for , or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
- b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
- c. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

### **Section 2 – Commitments of the Bidder(s)/ contractor(s)**

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

- a. The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal’s employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.
- c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document

provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

- d. The Bidder(s)/Contractors(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly the Bidder(s)/Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the “Guidelines on Indian Agents of Foreign Suppliers” shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the “Guidelines on Indian Agents of Foreign Suppliers” is placed at (page nos. 6-7)
  - e. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- (2) The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

### **Section 3- Disqualification from tender process and exclusion from future contracts**

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the “Guidelines on Banning of business dealings”. Copy of the “Guidelines on Banning of business dealings” is placed at (page nos. 8-17).

### **Section 4 – Compensation for Damages**

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- (2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

### **Section 5 – Previous transgression**

- (1) The Bidder declares that no previous transgressions occurred in the last three years with any other Bank in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in “Guidelines on Banning of business dealings”.

### **Section 6 – Equal treatment of all Bidders / Contractors / Subcontractors**

- (1) The Bidder(s)/ Contractor(s) undertake(s) to demand from his subcontractors a commitment in conformity with this Integrity Pact.
- (2) The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

## **Section 7 – Criminal charges against violating Bidder(s) / Contractor(s) / Subcontractor(s)**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

## **Section 8 – Independent External Monitor / Monitors**

- (1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- (2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. It will be obligatory for him to treat the information and documents of the Bidders/Contractors as confidential. He reports to the Chairman & Managing Director, CENTRAL BANK OF INDIA.
- (3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/ Subcontractor(s) with confidentiality.
- (4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- (5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- (6) The Monitor will submit a written report to the Chairman & Managing Director, CENTRAL BANK OF INDIA within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- (7) If the Monitor has reported to the Chairman & Managing Director CENTRAL BANK OF INDIA, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Chairman & Managing Director CENTRAL BANK OF INDIA has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
- (8) The word “**Monitor**” would include both singular and plural.

### Section 9 – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman & Managing Director of CENTRAL BANK OF INDIA.

### Section 10 – Other provisions

- (1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. Mumbai.
- (2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- (3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- (5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.”

\_\_\_\_\_  
(For & On behalf of the Principal)

(Office Seal)

Place -----

Date -----

Witness 1:

(Name & Address)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness 2:

(Name & Address)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(For & On behalf of Bidder/ Contractor)

(Office Seal)

Integrity Pact Page 5 of 17

## **GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS**

- 1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with CENTRAL BANK OF INDIA shall apply for registration in the prescribed Application –Form.
- 1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/remuneration/salary/ retainer ship being paid by the principal to the agent before the placement of order by CENTRAL BANK OF INDIA.
- 1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order

### **2.0 DISCLOSURE OF PARTICULARS OF AGENTS/ REPRESENTATIVES IN INDIA. IF ANY.**

- 2.1 Tenderers of Foreign nationality shall furnish the following details in their offer:
  - 2.1.1 The name and address of the agents/representatives in India, if any and the extent of authorization and authority given to commit the Principals. In case the agent/representative be a foreign Bank, it shall be confirmed whether it is real substantial Bank and details of the same shall be furnished.
  - 2.1.2 The amount of commission/remuneration included in the quoted price(s) for such agents/representatives in India.
  - 2.1.3 Confirmation of the Tenderer that the commission/ remuneration if any, payable to his agents/representatives in India, may be paid by CENTRAL BANK OF INDIA in Indian Rupees only.
- 2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:
  - 2.2.1 The name and address of the foreign principals indicating their nationality as well as their status, i.e, whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/representatives.
  - 2.2.2 The amount of commission/remuneration included in the price (s) quoted by the Tenderer for himself.
  - 2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/remuneration, if any, reserved for the Tenderer in the quoted price (s), may be paid by CENTRAL BANK OF INDIA in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items .

- 2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission /remuneration, if any payable to the agents/representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.
- 2.4 Failure to furnish correct and detailed information as called for in paragraph-2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by CENTRAL BANK OF INDIA. Besides this there would be a penalty of banning business dealings with CENTRAL BANK OF INDIA or damage or payment of a named sum.



## **Guidelines on Banning of Business Dealing**

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## **1. Introduction**

- 1.1 Central Bank of India, being a Public Sector Enterprise and ‘State’, within the meaning of Article 12 of Constitution of India, has to ensure preservation of rights enshrined in Chapter III of the Constitution. CENTRAL BANK OF INDIA has also to safeguard its commercial interests. CENTRAL BANK OF INDIA deals with Agencies, who have a very high degree of integrity, commitments and sincerity towards the work undertaken. It is not in the interest of CENTRAL BANK OF INDIA to deal with Agencies who commit deception, fraud or other misconduct in the execution of contracts awarded / orders issued to them. In order to ensure compliance with the constitutional mandate, it is incumbent on CENTRAL BANK OF INDIA to observe principles of natural justice before banning the business dealings with any Agency.
- 1.2 Since banning of business dealings involves civil consequences for an Agency concerned, it is incumbent that adequate opportunity of hearing is provided and the explanation, if tendered, is considered before passing any order in this regard keeping in view the facts and circumstances of the case.

## **2. Scope**

- 2.1 The General Conditions of Contract (GCC) of CENTRAL BANK OF INDIA generally provide that CENTRAL BANK OF INDIA reserves its rights to remove from list of approved suppliers / contractors or to ban business dealings if any Agency has been found to have committed misconduct and also to suspend business dealings pending investigation. If such provision does not exist in any GCC, the same may be incorporated.
- 2.2 Similarly, in case of sale of material there is a clause to deal with the Agencies / customers / buyers, who indulge in lifting of material in unauthorized manner. If such a stipulation does not exist in any Sale Order, the same may be incorporated.
- 2.3 However, absence of such a clause does not in any way restrict the right of Bank (CENTRAL BANK OF INDIA) to take action / decision under these guidelines in appropriate cases.
- 2.4 The procedure of (i) Removal of Agency from the List of approved suppliers / contractors; (ii) Suspension and (iii) Banning of Business Dealing with Agencies, has been laid down in these guidelines.
- 2.5 These guidelines apply to all the Units and subsidiaries of CENTRAL BANK OF INDIA.
- 2.6 It is clarified that these guidelines do not deal with the decision of the Management not to entertain any particular Agency due to its poor / inadequate performance or for any other reason.
- 2.7 The banning shall be with prospective effect, i.e., future business dealings.

## **3. Definitions**

In these Guidelines, unless the context otherwise requires:

- i) ‘Party / Contractor / Supplier / Purchaser / Customer/Bidder/Tenderer’ shall mean and include a public limited Bank or a private limited Bank, a firm whether registered or not, an individual, a cooperative society or an association or a group of persons engaged in any commerce, trade, industry, etc. ‘Party / Contractor / Supplier / Purchaser / Customer / Bidder / Tenderer’ in the context of these guidelines is indicated as ‘Agency’.
- ii) ‘Inter-connected Agency’ shall mean two or more companies having any of the following features:
- a) If one is a subsidiary of the other.
- b) If the Director(s), Partner(s), Manager(s) or Representative(s) are common;
- c) If management is common;

- d) If one owns or controls the other in any manner;
- iii) 'Competent Authority' and 'Appellate Authority' shall mean the following:
  - a) For Bank (entire CENTRAL BANK OF INDIA) wide Banning Executive Director (GAD) shall be the 'Competent Authority' for the purpose of these guidelines. Chairman & Managing Director, CENTRAL BANK OF INDIA shall be the 'Appellate Authority' in respect of such cases except banning of business dealings with Foreign Suppliers of imported coal/coke.
  - b) For banning of business dealings with Foreign Suppliers of imported goods, CENTRAL BANK OF INDIA Executive Directors' Committee (EDC) shall be the 'Competent Authority'. The Appeal against the Order passed by EDC, shall lie with Chairman & Managing Director, as First Appellate Authority.
  - c) In case the foreign supplier is not satisfied by the decision of the First Appellate Authority, it may approach CENTRAL BANK OF INDIA Board as Second Appellate Authority.
  - d) For Zonal Offices only  
Any officer not below the rank of Deputy General Manager appointed or nominated by the Head of Zonal Office shall be the 'Competent Authority' for the purpose of these guidelines. The Head of the concerned Zonal Office shall be the 'Appellate Authority' in all such cases.
  - e) For Corporate Office only  
For procurement of items / award of contracts, to meet the requirement of Corporate Office only, Head of GAD shall be the 'Competent Authority' and concerned Executive Director (GAD) shall be the 'Appellate Authority'.
  - e) Chairman & Managing Director, CENTRAL BANK OF INDIA shall have overall power to take suo-moto action on any information available or received by him and pass such order(s) as he may think appropriate, including modifying the order(s) passed by any authority under these guidelines.
- iv) 'Investigating Department' shall mean any Department or Unit investigating into the conduct of the Agency and shall include the Vigilance Department, Central Bureau of Investigation, the State Police or any other department set up by the Central or State Government having powers to investigate.
- v) 'List of approved Agencies - Parties / Contractors / Suppliers / Purchasers / Customers / Bidders / Tenderers shall mean and include list of approved / registered Agencies - Parties/ Contractors / Suppliers / Purchasers / Customers / Bidders / Tenderers, etc.

#### **4. Initiation of Banning / Suspension**

Action for banning / suspension business dealings with any Agency should be initiated by the department having business dealings with them after noticing the irregularities or misconduct on their part. Besides the concerned department, Vigilance Department of each Unit /Corporate Vigilance may also be competent to advise such action.

#### **5. Suspension of Business Dealings**

- 5.1 If the conduct of any Agency dealing with CENTRAL BANK OF INDIA is under investigation by any department (except Foreign Suppliers of imported goods), the Competent Authority may consider whether the allegations under investigation are of a serious nature and whether pending investigation, it would be advisable to continue business dealing with the Agency. If the Competent Authority, after consideration of the matter including the recommendation of the Investigating Department, if any, decides that it would not be in the interest to continue business dealings pending investigation, it may suspend business dealings with the Agency. The order to this

effect may indicate a brief of the charges under investigation. If it is decided that inter-connected Agencies would also come within the ambit of the order of suspension, the same should be specifically stated in the order. The order of suspension would operate for a period not more than six months and may be communicated to the Agency as also to the Investigating Department. The Investigating Department may ensure that their investigation is completed and whole process of final order is over within such period.

5.2 The order of suspension shall be communicated to all Departmental Heads within the Plants / Units. During the period of suspension, no business dealing may be held with the Agency.

5.3 As far as possible, the existing contract(s) with the Agency may continue unless the Competent Authority, having regard to the circumstances of the case, decides otherwise.

5.4 If the gravity of the misconduct under investigation is very serious and it would not be in the interest of CENTRAL BANK OF INDIA, as a whole, to deal with such an Agency pending investigation, the Competent Authority may send his recommendation to ED (GAD), CENTRAL BANK OF INDIA Corporate Office along with the material available. If Corporate Office considers that depending upon the gravity of the misconduct, it would not be desirable for all the Units and Subsidiaries of CENTRAL BANK OF INDIA to have any dealings with the Agency concerned, an order suspending business dealings may be issued to all the Units by the Competent Authority of the Corporate Office, copy of which may be endorsed to the Agency concerned. Such an order would operate for a period of six months from the date of issue.

5.5 For suspension of business dealings with Foreign Suppliers of imported goods, following shall be the procedure :-

i) Suspension of the foreign suppliers shall apply throughout the Bank including Subsidiaries.

ii) Based on the complaint forwarded by ED (GAD) or received directly by Corporate Vigilance, if gravity of the misconduct under investigation is found serious and it is felt that it would not be in the interest of CENTRAL BANK OF INDIA to continue to deal with such agency, pending investigation, Corporate Vigilance may send such recommendation on the matter to Executive Director, GAD to place it before Executive Directors Committee (EDC) with ED (GAD) as Convener of the Committee.

The committee shall expeditiously examine the report, give its comments/recommendations within twenty one days of receipt of the reference by ED, GAD.

iii) If EDC opines that it is a fit case for suspension, EDC may pass necessary orders which shall be communicated to the foreign supplier by ED, GAD.

5.6 If the Agency concerned asks for detailed reasons of suspension, the Agency may be informed that its conduct is under investigation. It is not necessary to enter into correspondence or argument with the Agency at this stage.

5.7 It is not necessary to give any show-cause notice or personal hearing to the Agency before issuing the order of suspension. However, if investigations are not complete in six months time, the Competent Authority may extend the period of suspension by another three months, during which period the investigations must be completed.

## **6. Ground on which Banning of Business Dealings can be initiated**

6.1 If the security consideration, including questions of loyalty of the Agency to the State, so warrants;

- 6.2 If the Director / Owner of the Agency, proprietor or partner of the firm, is convicted by a Court of Law for offences involving moral turpitude in relation to its business dealings with the Government or any other public sector enterprises or CENTRAL BANK OF INDIA, during the last five years;
- 6.3 If there is strong justification for believing that the Directors, Proprietors, Partners, owner of the Agency have been guilty of malpractices such as bribery, corruption, fraud, substitution of tenders, interpolations, etc;
- 6.4 If the Agency continuously refuses to return / refund the dues of CENTRAL BANK OF INDIA without showing adequate reason and this is not due to any reasonable dispute which would attract proceedings in arbitration or Court of Law;
- 6.5 If the Agency employs a public servant dismissed / removed or employs a person convicted for an offence involving corruption or abetment of such offence;
- 6.6 If business dealings with the Agency have been banned by the Govt. or any other public sector enterprise;
- 6.7 If the Agency has resorted to Corrupt, fraudulent practices including misrepresentation of facts and / or fudging /forging /tampering of documents;
- 6.8 If the Agency uses intimidation / threatening or brings undue outside pressure on the Bank (CENTRAL BANK OF INDIA) or its official in acceptance / performances of the job under the contract;
- 6.9 If the Agency indulges in repeated and / or deliberate use of delay tactics in complying with contractual stipulations;
- 6.10 Willful indulgence by the Agency in supplying sub-standard material irrespective of whether pre-dispatch inspection was carried out by Bank (CENTRAL BANK OF INDIA) or not;
- 6.11 Based on the findings of the investigation report of CBI / Police against the Agency for malafide / unlawful acts or improper conduct on his part in matters relating to the Bank (CENTRAL BANK OF INDIA) or even otherwise;
- 6.12 Established litigant nature of the Agency to derive undue benefit;
- 6.13 Continued poor performance of the Agency in several contracts;
- 6.14 If the Agency misuses the premises or facilities of the Bank (CENTRAL BANK OF INDIA), forcefully occupies, tampers or damages the Bank's properties including land, water resources, forests / trees, etc.  
(Note: The examples given above are only illustrative and not exhaustive. The Competent Authority may decide to ban business dealing for any good and sufficient reason).

## **7 Banning of Business Dealings**

- 7.1 A decision to ban business dealings with any Agency should apply throughout the Bank including Subsidiaries.
- 7.2 There will be a Standing Committee in each Zone to be appointed by Head of Zonal Office for processing the cases of "Banning of Business Dealings" except for banning of business dealings with foreign suppliers of goods. However, for procurement of items / award of contracts, to meet the requirement of Corporate Office only, the committee shall be consisting of General Manager / Dy. General Manager each from Operations, Law & GAD. Member from GAD shall be the convener of the committee. The functions of the committee shall, inter-alia include:
  - i) To study the report of the Investigating Agency and decide if a prima-facie case for Bank-wide / Local unit wise banning exists, if not, send back the case to the Competent Authority.
  - ii) To recommend for issue of show-cause notice to the Agency by the concerned department.

iii) To examine the reply to show-cause notice and call the Agency for personal hearing, if required.

iv) To submit final recommendation to the Competent Authority for banning or otherwise.

7.3 If Bank wide banning is contemplated by the banning Committee of any Zone, the proposal should be sent by the committee to ED (GAD) through the Head of the Zonal Office setting out the facts of the case and the justification of the action proposed along with all the relevant papers and documents. GAD shall get feedback about that agency from all other Zones and based on this feedback, a prima-facie decision for banning / or otherwise shall be taken by the Competent Authority. At this stage if it is felt by the Competent Authority that there is no sufficient ground for Bank wide banning, then the case shall be sent back to the Head of Zonal Office for further action at the Zone level.

If the prima-facie decision for Bank-wide banning has been taken, ED (GAD) shall issue a show-cause notice to the agency conveying why it should not be banned throughout CENTRAL BANK OF INDIA.

After considering the reply of the Agency and other circumstances and facts of the case, ED (GAD) will submit the case to the Competent Authority to take a final decision for Bank-wide banning or otherwise.

7.4 If the Competent Authority is prima-facie of view that action for banning business dealings with the Agency is called for, a show-cause notice may be issued to the Agency as per paragraph 9.1 and an enquiry held accordingly.

7.5 Procedure for Banning of Business Dealings with Foreign Suppliers of imported goods.

- Banning of the agencies shall apply throughout the Bank including Subsidiaries.
- Based on the complaint forwarded by ED (GAD) or received directly by Corporate Vigilance, if gravity of the misconduct under investigation is found serious and it is felt that it would not be in the interest of CENTRAL BANK OF INDIA to continue to deal with such agency, pending investigation, Corporate Vigilance may send such recommendation on the matter to Executive Director, GAD to place it before Executive Directors' Committee (EDC) with ED (GAD) as Convenor of the Committee.
- The committee shall expeditiously examine the report , give its comments/recommendations within twenty one days of receipt of the reference by ED, GAD.
- If EDC opines that it is a fit case for initiating banning action, it will direct ED (GAD) to issue show-cause notice to the agency for replying within a reasonable period.
- On receipt of the reply or on expiry of the stipulated period, the case shall be submitted by ED (GAD) to EDC for consideration & decision.
- The decision of the EDC shall be communicated to the agency by ED (GAD).

## **8 Removal from List of Approved Agencies - Suppliers / Contractors, etc.**

8.1 If the Competent Authority decides that the charge against the Agency is of a minor nature, it may issue a show-cause notice as to why the name of the Agency should not be removed from the list of approved Agencies - Suppliers / Contractors, etc.

8.2 The effect of such an order would be that the Agency would not be disqualified from competing in Open Tender Enquiries but Limited Tender Enquiry (LTE) may not be given to the Agency concerned.

8.3 Past performance of the Agency may be taken into account while processing for approval of the Competent Authority for awarding the contract.

## **9 Show-cause Notice**

9.1 In case where the Competent Authority decides that action against an Agency is called for, a show-cause notice has to be issued to the Agency. Statement containing the imputation of misconduct or misbehavior may be appended to the show-cause

notice and the Agency should be asked to submit within 15 days a written statement in its defense.

9.2 If the Agency requests for inspection of any relevant document in possession of CENTRAL BANK OF INDIA, necessary facility for inspection of documents may be provided.

9.3 The Competent Authority may consider and pass an appropriate speaking order:

- a) For exonerating the Agency if the charges are not established;
- b) For removing the Agency from the list of approved Suppliers / Contactors, etc.
- c) For banning the business dealing with the Agency.

9.4 If it decides to ban business dealings, the period for which the ban would be operative may be mentioned. The order may also mention that the ban would extend to the interconnected Agencies of the Agency.

#### **10 Appeal against the Decision of the Competent Authority**

10.1 The Agency may file an appeal against the order of the Competent Authority banning business dealing, etc. The appeal shall lie to Appellate Authority. Such an appeal shall be preferred within one month from the date of receipt of the order banning business dealing, etc.

10.2 Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the Agency as well as the Competent Authority.

#### **11 Review of the Decision by the Competent Authority**

Any petition / application filed by the Agency concerning the review of the banning order passed originally by Competent Authority under the existing guidelines either before or after filing of appeal before the Appellate Authority or after disposal of appeal by the Appellate Authority, the review petition can be decided by the Competent Authority upon disclosure of new facts / circumstances or subsequent development necessitating such review. The Competent Authority may refer the same petition to the Standing Committee/EDC as the case may be for examination and recommendation.

#### **12 Circulation of the names of Agencies with whom Business Dealings have been banned**

12.1 Depending upon the gravity of misconduct established, the Competent Authority of the Corporate Office may circulate the names of Agency with whom business dealings have been banned, to the Government Departments, other Public Sector Enterprises, etc. for such action as they deem appropriate.

12.2 If Government Departments or a Public Sector Enterprise request for more information about the Agency with whom business dealings have been banned, a copy of the report of Inquiring Authority together with a copy of the order of the Competent Authority / Appellate Authority may be supplied.

12.3 If business dealings with any Agency has been banned by the Central or State Government or any other Public Sector Enterprise, CENTRAL BANK OF INDIA may, without any further enquiry or investigation, issue an order banning business dealing with the Agency and its inter-connected Agencies.

12.4 Based on the above, Zonal Offices may formulate their own procedure for implementation of the Guidelines and same be made a part of the tender documents.

## **Technical Specification for the work**

### **A. Outline of the Scheme of the Project:**

1. The Work will be executed strictly in accordance with the relevant IEC/equivalent BIS Standards/MNRE guidelines / specifications corrected up to date at the time of tenders unless specified to contrary. If the items not covered in Building Manual or IS-specifications/BIS specification or District specification, sound engineering practice as determined by the Engineer-in-charge should be followed.
2. Steel reinforcement shall be ISI marked TMT bars of various grades from the steel manufacturers such as SAIL, TATA steel ltd. SRMB Steel, RINI, Jindal Steel etc.
3. No claim shall be entertained on account of increase in price of material and wages of labour due to any cause what so ever.
4. For safe custody of materials and watch and ward thereof and proper double lock arrangement, the contractor shall be bound to follow the instruction of the Engineer-In-Charge.
5. Materials and testing of materials for quality:  
The materials shall be subject to inspection and approval of the Engineer-In-Charge. The contractor shall be required to get necessary tests carried out of materials / work from an approved laboratory.
6. The Bidder must obtain for himself on his own responsibility and at his own expenses all the information which may be necessary for the purpose of making a bid and for entering into a contract, must examine the BOQ, must inspect the sites of the work, acquaint himself with all local conditions, means of access to the work, nature of the work and all matters pertaining thereto.
7. The PV array shall be installed at the suitable space of available roof area at CENTRAL BANK OF INDIA ZONAL OFFICE, PUNE. Capacity of solar power plant shall be of 48.60 KWp or more as calculated based on the available roof area at project site.
8. The power generated from PV array shall be fed to the MPPT Tracker of Three Phase Grid-Tied Solar String Inverters. The capacity of Inverter shall be installed as per design.. Each MPPT Trackers of the inverters shall be protected with Type-II Surge Protection Device (SPD) installed at Array Junction Box. String fuse of 1.5 times of ISC rating or as per design, 1000 V shall be provided with each PV String.
9. Output from the Grid-tied Solar String Inverter shall be fed to the supply mains of the consumer (connected with grid) through Inverter Interfacing Panel installed near the inverter and through 4 Pole MCB of suitable current rating installed near the Grid Coupling Point.
10. The outgoing side of the Inverter Interfacing Panel shall be protected with Type-II Surge Protection Device (SPD).
11. Unidirectional 3-Phase energy meter (Export Import Energy meter - Net Meter) of 5-30 A/20-100 A current rating or as applicable shall be provided at the output feeder of Inverter Interfacing Panel to monitor the Solar PV Generation. The Meters shall have to be provided as per Standard Specifications of CENTRAL BANK OF INDIA/Concerned Discom/Grid interfacing authority. The meter to be tested at MSEDCL Lab before



installation.

12. DC and AC Earthing would be separate. Design of suitable site specific Earthing System (equipment and body earthing) with Lightning Arrestors shall have to be installed as per approved design.
13. Safety Sign as per relevant Indian Standard and Project Information Signage and Schematic Diagram as per approved design from CENTRAL BANK OF INDIA shall be installed at site.
14. The installed Solar PV power plant should be site specific, Robust, Economic and Efficient.

## **B. Submission of the Design Report & Drawings:**

The contractor shall submit site specific Design Report and Drawings for according approval of from CENTRAL BANK OF INDIA. The Design Report shall contain but not limited the following details:

- a) Roof plan indicating the suitable area for installation of solar plant, dimension, north-south direction, Latitude & Longitude and any other relevant information for project site.
- b) The structural condition of the roof / type of roof / type of roof treatment (if any).
- c) All technical particulars along with Single Line Diagram (SLD).
- d) Module Mounting Structure & Foundation Details with Drawings and Design.
- e) The contractor/ vendor should furnish the structural stability certificate of the module mounting structure indicating the strength of structure to carry load and wind pressure. The certificate shall be from Certified and practicing Structural engineer only and the MMS design has passed the STAAD analysis (report shall also be submitted).
- f) Bill of Materials (BOM) and Detailed Time Schedule.
- g) Type Test Report and all other relevant certificates for Modules and Inverters proposed to be used in the plants.

## **C. System/Equipment Details:**

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

#### **Standards:**

The PV modules must conform to the latest edition of the following IEC/equivalent BIS Standards for PV module design qualification and type approval:

<b>Sl. No.</b>	<b>Standard</b>	<b>Description</b>
1.	IEC: 61215/IS: 14286	Crystalline silicon terrestrial photovoltaic modules - Design qualification and type approval.
2.	IEC: 61730 – Part 1	Photovoltaic (PV) module safety qualification - Requirements for construction.
3.	IEC: 61730 – Part 2	Photovoltaic (PV) module safety qualification - Requirements for testing.

4.	IEC: 61701/IS: 61701	Salt Mist Corrosion Testing of the PV Modules.
5.	IEC: 62804	Test method for detection of Potential Induced Degradation of photovoltaic (PV) modules.
6.	EC 62579 Part – I, 2015	PV Module Transportation Testing, Transportation & Shipping of Module Package Units.

The proposed PV Module must have the Type Test Certificate issued from NABL/ Internationally accredited test laboratories of Ministry of New and Renewable Energy, Government of India.

Type test certificates issued from IEC accredited laboratories shall be acceptable.

### **Identification and Traceability:**

Each PV module must use a RF identification tag (RFID), which must contain the following information:

- i. Name of the manufacturer of PV Module.
- ii. Name of the Manufacturer of Solar cells.
- iii. Month and year of the manufacture (separately for solar cells and module).
- iv. Country of origin (separately for solar cells and module).
- v. I-V curve for the module at standard test condition.
- vi. Peak Wattage, Imp, Vmp and Fill Factor 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.

RFID shall be placed inside or outside of each solar module laminate and must be capable to withstand environmental conditions as per latest Guideline of MNRE, Govt. of India. A permanent sticker mentioning the Project/Scheme name, LOA number and date shall have to be fixed on each PV module.

### **Warranty:**

- **Material Warranty:** The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer.
- i. Defects and/or failures due to manufacturing
  - ii. Defects and/or failures due to quality of materials
  - iii. Non conformity to specifications due to faulty manufacturing and/or inspection processes.

If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owner's sole option. The contractor shall be responsible to contact with the contractor if any of the above mentioned cases occurred.

**Performance Warranty:** The manufacturer should warrant the peak watt output capacity 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 completion of date of final commissioning. The contractor shall collect the Warranty Certificate for performance of the modules from the manufacturer and submit the same to CENTRAL BANK OF INDIA prior to delivery of the products..

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.

Manufacturer of proposed PV modules must have the ISO 9001:2008 or ISO 14001 Certification for their manufacturing unit for their said manufacturing item.

#### **Specification:**

<b>Sl. No.</b>	<b>Item</b>	<b>Description</b>
1.	Type	Crystalline Silicon – Mono
2.	Efficiency of module	Minimum 15 % at STC
3.	Cell efficiency	Minimum 17 % at STC
4.	Fill Factor	Minimum 74 %
5.	No. of cells per module	72
6.	Module Frame	Non-corrosive and electrolytically compatible with the structural material, preferably anodized Al. Anodizing Thickness shall be 15 micron or more.
7.	Termination box	Thermo-plastic, IP 65, UV resistant
8.	Blocking diodes	Schottky type
9.	Bypass Diode	Yes, as required
10.	Peak Power Rating of PV module	Shall not be less than 300 Wp
11.	Power tolerance	upto +5 %
12.	Temperature co-efficient of power	Less than - 0.45% / °C
13.	Glass	High transmittance glass
14.	RF Identification tag for each solar module	Shall be provided inside or outside the module and must be able to withstand environmental conditions and last the lifetime of the solar module as per MNRE Norms.

#### **Other General Requirements:**

- i. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of bypass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP 65 rated.

#### **Testing & Approval:**

- The contractor shall submit the following details of the solar modules:
  - Detailed specifications and Necessary drawings;
  - Type test reports etc.
- Prior to the delivery of the product, the contractor shall submit but not limited to the following documents:
  - Guarantees
  - Instructions for installation and operation, manual
  - Copies of the Factory Acceptance Test reports .

## 2.PV ARRAY Specification:

Sl. No.	Item	Description
1.	Nominal Capacity	48.6kWp minimum
2.	Type of Solar Modules	For installation of Solar PV Array in a site, modules having same capacity, rating / specification shall be used. Mixing of modules having different capacity, rating/specification will not be allowed.
3.	PV Module interconnection	MC - 4 / Tyco connector
4.	PV Module interconnection cable and array cable	PV 1-F standard / NEC standard "USE - 2 or RHW - 2" type.
5.	PV array String Voltage	Compatible with the MPPT channel of inverter

### B)Designing of Module Mounting Structure (MMS):

During Structural design following points must be include but not limited to the following:

- a. The structure is to be designed to accommodate minimum of 90 nos modules and the same shall be elevated type. .
- b. The module alignment and tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation.
- c. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement.
- d. The mounting structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the base properly.
- e. The mounting steel structure shall be as per latest BIS 2062 (amended up to date).
- f. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.
- g. All fasteners shall be of stainless steel of grade SS 316.
- h. The support structure & foundation shall be so designed to withstand wind load of the location as given in relevant Indian code for wind (IS 875 Part III, latest edition).**
- i. IS 800-2007 shall be followed for structural design.
- j. Galvanization of the structural members shall conform to IS: 4759. The quality of zinc shall conform to IS: 209 and IS: 2629. All galvanized materials shall withstand tests as per IS: 2633. Arrangement of testing shall be made by the contractor.
- k. All structures including any metallic part thereof must be protected against any corrosion. The structures must also be electrolytically compatible with the materials used in the module frame, fasteners, fixtures, nuts, bolts or any similar nature of metallic components whichever are required to complete the job.
- l. Foundation concrete of the structure should be of grade M20 and the mixture should not be leaner than 1:1.5:3. Neat cement finish should be made over the foundation concrete.
- m. Foundation should be strong enough to withstand the uplift force due to wind load and the same should be shown in design calculations.
- n. Detailed engineering, drawings, specification and instructions for civil and other related structural works will be prepared by the Contractor/ architectural firm for erection and

installation of the PV Array structure. Before execution of the same, Prior approval is to be taken from CENTRAL BANK OF INDIA.

- o. Mounting structure shall be designed to satisfy all the safety requirement of the roof. For any special case or any different type of roof, the contractor may provide different type of mounting structure after getting approval from CENTRAL BANK OF INDIA.
- p. Safety of the roof structure should be properly maintained all through the work. If any damages of the structure which may occur during installation of the Solar PV Systems, necessary rectification shall have to be done by the contractor immediately at his own cost.

### **C) PV ARRAY JUNCTION BOX (AJB) OR DCDB**

Array Junction Box (AJB) shall have to be used for termination of string prior connecting array with each inverter. The string combiner box / array junction box shall be dust, vermin, and water proof and made of Polycarbonate Plastic. The number of PV Array Junction Box will be as per plant configuration.

If the Inverter has the protections like String fuses and SPDs internal to each MPPT tracker, this may not be required .

### **Standards:**

The Array Junction Boxes shall conform to the latest edition of following Standards except where specified otherwise in this specification. Equipment meeting with other authoritative standards which ensure an equal or better quality is also acceptable.

<b>Sl. No.</b>	<b>Standard</b>	<b>Description</b>
1.	IS 13703: Part 1	Low voltage fuses for voltage not exceeding 1000V AC or 500V DC: General Requirements
2.	IEC 60269: Part 4 /IS 13703: Part 4	Low-voltage fuses: Supplementary requirements for fuse-links for the protection of semiconductor devices
3.	IEC 60269-4: Part 6	Low-voltage fuses: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
4.	IEC 62262:2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
5.	IEC 60068-72	Environmental testing of electronic equipment
6.	IEC 60695-2-10:2013	Glow-wire apparatus and common test procedure
7.	IEC 60695-2-13	Glow-wire ignition temperature (GWIT) test method for materials
8.	IEC 61643	Surge protective devices connected to low-voltage power stems - Requirements and test methods
9.	IEC 60364	Protection against over voltages of atmospheric origin or due to switching

**Specification:**

Sl. No.	Item	Desired Data
<b>1.</b>	<b>Enclosure</b>	
	Degree of Protection	IP 65 with UV Protected
	Material	Polycarbonate
	Withstanding voltage	1000 V DC
	Withstanding Temperature	100°C
	Accessories mounting arrangement	DIN Rail
	Number of Strings entry	As may be required
	Approved Make	Hensell/Geesys/AEC/ Trinity Touch or equivalent make
<b>2.</b>	<b>Cable Entry and Exit</b>	
	Position	Bottom at cable entry and exit
	Cable Entry and Exit connector type	MC 4 / Tyco Connector (PV Array String cable). All wires / cables must be terminated through cable lugs.
	Cable gland	Input & output termination shall be made through suitable cable glands.
<b>3.</b>	<b>Surge Protecting Device (SPD)</b>	
	Type	DC
	Approve Make	OBO Bettermann / Dehn / Citel / ABB / Phoenix Contacts or equivalent make
	Protection class	Type B + C
	Rating	1000 V, 20 kA
	Number of set	As may be required as per string Design
<b>4.</b>	<b>Fuse with fuse holder</b>	
	Position	+ve and -ve terminal for each series string
	Type	Glass fuse, for PV Use only
	Rating	Current: Minimum 1.5 times of the Isc Rating of the string Voltage: Minimum 1000 V DC
	Approved make	Cooper Bussman/FerazzShamut or equivalent make
<b>5.</b>	<b>Earthing</b>	
	Earthing Provision	Terminal blocks will have to be provided
<b>6.</b>	<b>Terminals, lugs and bus bar</b>	
	Material	Tinned copper

**d) GRID CONNECTED INVERTER**

The power generated from PV array shall be fed to the MPPT Tracker of Three Phase Grid-Tied Solar String Inverters as per requirement through Array Junction Box (AJB)/ DCDB.

**Standards:**

Sl. No.	Standard	Description
1.	IEC/IS: 61683	Photovoltaic systems – Power Conditioners – Procedure for measuring efficiency
2.	IEC 62093	Balance-of-system components for photovoltaic systems – Design qualification natural environments
3.	IEC 60068	Environmental Testing
4.	IEC 62116	Islanding Prevention Measurement
5.	IEC 61727	Interfacing with utility grid

The inverters should have CE conformity according to LVD (Low Voltage Directive) and EMC (Electro Magnetic Compatibility) Directive for safety purpose. Type test certificate issuing authorities should be any NABL/IEC Accredited Testing Laboratories or MNRE approved test centers. Equipment meeting with other authoritative standards which ensure an equal or better quality is also acceptable.

**Specification:**

Desired specification of each inverter shall include but not limited to the following:

Sl. No.	Item	Desired Data
1.	Type	Grid connected String Inverter
2.	Input (DC)	
	PV array connectivity capacity	As per site requirement
	MPPT Voltage range	Compatible with the array voltage
	Number of MPPT Channel	2 Nos. (Minimum)
3.	Output (AC)	
	Nominal AC Power output	As per requirement
	Phase	
	Adjustable AC voltage range	The inverters shall continue generation for grid voltage variation from + 10 % to at least - 20 % of the rated system voltage.
	Frequency range	The inverters shall continue generation for grid frequency variation from + 5 % to – 5 % of the rated system frequency.
	Total Harmonic Disorder (THD)	The limits on voltage harmonics are 5 % for THD and 3 % for any single harmonic. Current harmonics for various power output conditions shall be limited as per the values provided in relevant Indian Standard.
	Switching	H.F. transformer / transformer less

<b>4.</b>	<b>General Electric Data</b>	
	Maximum Efficiency	95 % (minimum)
	Night mode consumption	Less than 10 W
<b>5.</b>	<b>Protection</b>	
	DC Side	Reverse-polarity, reverse current to PV array, over voltage, under voltage, over current
	AC side	Over voltage and under voltage, over current, over and under grid frequency, ground fault
	Isolation Switch	PV array Isolation switch (integrated)
	Earthing	Provision of Body Earthing
<b>6.</b>	<b>LCD Display Patameters</b>	
	General	Unit Temperature
	DC	Voltage, Current, Power
	On grid connected mode	Line status, Grid voltage, Grid frequency, Export Power, Cumulative Export Energy
<b>7.</b>	<b>Switching Device</b>	
<b>8.</b>	<b>Control</b>	
	Microprocessor/DSP	
<b>9.</b>	<b>Interface (Communication Protocol)</b>	
	Suitable port must be provided in the inverter for onsite dumping data from the memory, web based remote monitoring system.	
	Web monitoring	Matched with the monitoring and data logging system installed at site. DC voltage and current at each string, AC voltage, Current and Power should be at least monitored.
<b>10.</b>	<b>Storage of Data</b>	
	At least for 1 year. Separate data logger may be provided to meet the criteria.	
<b>11.</b>	<b>Mechanical Data</b>	
	Protection Class	IP 65 or higher
	Cooling	Natural / forced air cooling
<b>12.</b>	<b>Make</b>	
	DELTA/ABB/GROWATT/ GOODWE / SUNGROW/ POWERONE MICROSYSTEM or equivalent make	

#### **Testing & Approval:**

- The contractor shall submit the following details pertaining to the ON GRID Solar Inverter used:
  - Detailed specifications and Necessary drawings;
  - Type test reports etc.
- Prior to the delivery of the product, the contractor shall submit but not limited to the following documents:
  - Guarantees
  - Instructions for installation and operation, manual
  - Safety precautions

**Note: Solar inverters proposed to be utilized in Grid Connected Rooftop Solar PV Power Plants under this scheme shall have post sale service center in India. Factory test facility should have in India. Inverters offered by bidders shall have to submit the at least three years successful installation, operation and performance in Indian environment.**



## e) DATA LOGGER & REMOTE MONITORING

Data logging system shall be an integrated part of the inverter or a separate unit and it should be combined with remote monitoring provision in order to monitor the solar PV plant continuously using any of the communication techniques viz., computer to computer communication (Ethernet), embedded system to computer (GSM) and embedded system to embedded system (GSM, GPRS). The data logging system includes MPPT wise PV array monitoring system. The data logger should have required transducer to monitor and record the required system data.

The data logger shall have data storage capacity (minimum one year data) to record all sorts of data simultaneously round the clock. All data shall be recorded chronologically. The data file should be MS Excel / XML / any readable form and should have the facility of easy downloads.

Web based Remote Monitoring system must be compatible with data logger. The other required accessories, hardware etc. Shall have to be provided as integrated part of the system to monitor the real time data (max 20 minutes delay) through web server. The data logger shall continuously send data to the server. The system shall be monitored from anywhere through internet without installing any special software. The server shall not be provided by CENTRAL BANK OF INDIA or end user.

For proper monitoring of all the above mention, the authentication must be provided by contractor to CENTRAL BANK OF INDIA only through web based technology. **At least one user name with password has to be provided confidentially to CENTRAL BANK OF INDIA for proper monitoring of the plant/system at any time.** The monitoring includes various types of reports. Also after logging to web based monitoring the system should be such that it filters out those Plants, whose inverters voltage and current varies more than 25%, inverters where no power for more than 12 hours, inverters where AC output varies more than 20% for a month etc. The data logging system shall store the plant data which include but not limited to the following:

Sl. No.	Operating Parameter	Desired Specification
1.	Input data	PV Energy , DC Voltage, DC Current,
2.	Output data	AC Energy generation for the day , Cumulative energy
3.	Other required data	Time Active, Time Disabled, Time Idle

### Network Connection:

The internet facility for Remote Monitoring shall be provided by the Purchaser .The MODEM and other accessories shall be placed within the same kiosk for Solar Inverter, Array Junction Box, Inverter Interfacing Panel etc. The contractor will be liable for any kind of maintenance (including replacement of parts) of the system for 1 year of Defect liability period.

#### **f) INVERTER INTERFACING PANEL**

Output from the Grid-tied Solar String Inverter shall be fed to the Inverter Interfacing Panel installed adjacent to the inverter through 4 Pole MCB/MCCB of suitable current rating. The outgoing feeder from the Inverter Interfacing Panel shall be brought out through a 415 V TPN MCB. The outgoing side of the Inverter Interfacing Panel shall be protected with Type-II Surge Protection Device (SPD).

All switches and circuit breakers, connectors should conform to IS / IEC: 60947 (Part I, II and III).

The panel shall be metal clad, totally enclosed, rigid, air - insulated cubical type. Protection class shall be IP 65 or better. The Inverter Interfacing Panel should conform to Indian Electricity Act and rules (till last amendment). Unidirectional energy meter (5-30 A/20-100 A/as per actual requirement) shall be provided at the output feeder of Inverter Interfacing Panel to monitor the Solar PV Generation.

#### **g) KIOSK**

The Array Junction Box(DCDB), Solar String Inverter, Inverter Interfacing Panel shall be installed in suitable locations in Kiosk. The kiosk must be of a suitable design, painted for avoiding rust, covered with a door and locking arrangement with good air circulation. The Kiosks must have security arrangement against theft, manhandling etc. Minimum clearance of the lower edge of the equipments from floor should be 1.0 m. Clearance from the front door of the Kiosk with any of the equipments / panel within the Kiosk shall be minimum 100 mm.

Necessary civil work as required to construct / fixing the Kiosks(s) shall be done by the contractor. If any civil construction is required for installing the whole arrangement, as and where required, it will be within the cost of contract value.

#### **h) ENERGY METER**

Unidirectional energy meter 20 -100 A/ as per actual requirement (with CT or without CT) of L&T/Genus/Secure or equivalent make as per specification and subject to acceptability of CENTRAL BANK OF INDIA/Concerned DISCOM/Grid interfacing authority shall be provided at the output feeder of Inverter Interfacing Panel to monitor the Solar PV Generation. The meter shall display the voltage, current, frequency, power factor, kW, kWh, kVAR, kVARh etc. The meter should be tested and approved by Concerned DISCOM/Grid interfacing authority.

#### **i) INTEGRATION OF PV POWER WITH GRID**

After synchronization, AC power from the inverter shall be fed to the main electricity grid through Inverter Interfacing Panel installed near the inverter and 4 Pole MCB of suitable current rating installed near the Grid Coupling Point. The MCBs mentioned above shall be installed near the existing LT Panel / main meter of the consumer.

## j) CABLES & WIRING

### Specification:

Sl. No.	Item	Desired Data
<b>A.</b>	<b>DC Cable</b>	
	Conductor	Tinned annealed stranded flexible copper according to IEC 60228 class 5
	Standard	V-1 F/2 PfG 1169/08.2007/VDE Standard E PV 01:2008 - 02/ Equivalent (Sheathed and Insulated)
	Make	LAPP/Top Solar/Nexans/Schneider/Polycab or equivalent
<b>B.</b>	<b>AC Cable</b>	
	Rated Voltage	1.1 kV
	Type	3.5 / 4 core, as per current rating, Armoured
	Conductor	Stranded flexible Copper / Aluminium
	Insulation	PVC / XLPE
	Standard	IS: 1554-1
	Make	RR Cable/Polycab/LAPP/Havells/ Finolez or equivalent
<b>C.</b>	<b>PVC Conduit tees, bends, etc. (Hard &amp; Flexible)</b>	
	Standard	ASTM D 1785 UPVC
	Ambient Temperature	0°C to 500°C
	Type	UV Stabilized, Temperatures, Shock Proof, Chemical Resistant
	Make	Oriplast/Supreme or equivalent make
<b>D.</b>	<b>GI Pipe</b>	
	Make	TATA/Jindal/Bansal or equivalent make

### Guideline for Installation:

- i. For installation of DC Cables, sufficient gaps shall be provided in between the module connectors and the module mounting structure.
- ii. All AC cables must be armoured.
- iii. 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 panel bottoms should be properly sealed to prevent entry of snakes / lizard / insects 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.
- iv. Only terminal cable joints will be accepted.
- v. The cable must be laid through PVC conduit on roof and indoor. Wherever the cables (either AC & DC) are to be laid in the roof, the PVC Conduit shall be placed at least 30 mm height from the roof. Necessary permanent support / base should be provided on the PVC Conduit to maintain the gap from the roof. Maximum distance between two adjacent support / base shall be 2 m.
- vi. 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.
- vii. All cable shall be suitably marked or coded for easy identification. Cables and wires shall conform to the relevant standards suppliers to specify the specification.
- viii. Cable tray (metallic preferably aluminium) of suitable size must be used for laying of cable on the floor, wherever required.
- ix. All fasteners shall be made of Stainless steel/Aluminium.
- x. Minimum two (02) number loop must be provided at the start and end each span of cable laying. Loop length shall be as per relevant Indian Standard.

## **k) PROTECTION SYSTEM**

### **Lightning Protection:**

The SPV power plants shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC: 62305 & IS 2309: 1989. The protection against induced high-voltages shall be provided by the use of Surge protection devices (SPDs) and suitable earthing such that induced transients find an alternate route to earth.

### **Surge Protection:**

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

### **Earthing Protection:**

- a. The earthing system includes earth electrode, installation of earth electrode in suitable pit size, construction of earth pit with cover for the installation
- b. The site has certain limitations and hence deployment of Chemical Earthing is preferred.
- c. The earth electrode is in direct contact with the ground provides means for conducting earth current with ground. Earth Electrode material should have good electrical conductivity and mechanical strength and should not corrode in wide variety of soil conditions.
- d. Copper Bonded Rods: High tensile-low carbon steel rod having diameter not less than 14/17 mm of Length not less than 1500mm to be used The Rod shall comply with requirements of BS 4360 Grade 43A or EN10025:2-004 S275JR, molecularly bonded by 99.99% pure high conductivity copper on outer surface with copper coating thickness 250 micron or more in conformity to UL-467. Its surface shall be clean, free from mechanical defect and any visible oxide layer or foreign material
- e. Earthing Enhancement Compound: Earthing enhancement materials shall be used to improve the ground electrode resistance. Earth enhancement material shall be a superior conductive material which improves earthing effectiveness. It shall have the following characteristics:-
- f. High conductivity, improves earth's absorbing power and humidity retention capability, non-corrosive in nature having low water solubility but highly hygroscopic.

- g. Carbon based with min 9 of fixed carbon content premixed with corrosion resistant cement to have set properties. Cement shall not mix separately & shall not have Bentonite.
- h. Earth pits to be covered with appropriate enclosure /covers for periodic maintenance.
- i. Minimum four (04) numbers of interconnected earth pit needs to be provided. One nos for AC earthing , One for DC Earth , One for body earth and one for Lightning Arrestor
- j. Grid Islanding:  
In the event of a power failure on the electric grid, it is required that any independent power producing inverters attached to the grid turn off in a short period of time. 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.

#### **l) FIRE BUCKETS & EXTINGUISHERS**

Minimum one number or as per requirement of Fire Bucket (10 litres) with Stand shall be provided at roof. The stand shall be installed at suitable location.

Minimum one number or as per standard of 3 kg ABC type dry power portable fire extinguishers shall be provided at each location. The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards.

##### **Standards:**

Fire Extinguisher	IS 13849 (with latest amendments)
Fire Bucket	IS 2546 (with latest amendments)

#### **m) SIGN BOARDS**

##### **Project information Signage:**

For signage, water resistant, anti-corrosive paint shall be used over permanent suitable back sheet.

##### **Safety Sign:**

Safety Sign must be provided mentioning the level and type of voltage and symbols as per Indian Electricity Rule at different places of a site as may be required.

#### **n) SAFETY MEASURES:**

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

#### **o) ACCESS TO ROOF**

The bidder shall arrange his own for access of roof for both installation and maintenance purpose (within defect liability period) where access through stairs is unavailable and includes costs in his quoted price.

### Approved Manufacturers

S.N.	Material	APPROVED Supplier/ Manufacturer
1	Mono crystalline SPV panels/Modules of rating min. 540 Wp per panel	WAAREE/ VIKRAM/ ADANI/TATA RENEWSYS/ LONGI/ TRINA/ JA SOLAR or Equivalent
2	Structural Steel	SAIL, TATA steel ltd. SRMB Steel, RINI, Jindal Steel or Equivalent
3	PV Array Junction Box (AJB) /( DCDB )	Hensell/Geesys/ AEC/ Trinity Touch or equivalent make
4	3 phase Solar Inverter	DELTA/ABB/GROWATT/ GOODWE / SUNGROW/ POWERONE MICROSYSTEM or equivalent make
5	Data logger & Remote Monitoring Instrument/Unit	Compatible with the Inverter used
6	Grid Interfacing Panel for AC (ACDB Panel)	Hensell/Geesys/ AEC/ Trinity Touch or equivalent make
7	Dual way, Import & Export Energy Meter	GENUS/ L&T/ SECURE subject to Approval by MSEDCL
8	DC high conductivity, FRLS PVC insulated 1100V copper & wires with PVC Conduits / AC Cables with XLPE Aluminium cables	POLYCAB/ RR KABEL/ FINOLEX/ LAPP/ APAR/ or Equivalent
9	Lightning Arrestor	EXCEL EARTHING / Equivalent

### Bill of Quantities

SN	Description of Works	Unit	Qty.	Rate	Amount
1	Supply, Installation, Testing & Commissioning of mono crystalline SPV panels/Modules of rating min. 540 Wp per panel & PV Array connected in series and parallel to produce 48.6 kWp powers in total as per Technical Specification.	no	90		
2	Structural steel Supply, Testing & Installation of PV Array Structure for mounting of above solar modules as per Technical Specification & required to complete the work.	Kg	2000		
3	Supply, Installation, Testing & Commissioning of PV Array Junction Box (AJB) /( DCDB ) as per Technical Specification & required to complete the work.	Set	1		
4	Supply, Installation, Testing & Commissioning of 3 phase Solar Inverter suitable for Grid connection & 48.6 kWp Solar Plant as per Technical Specification & required to complete the work.	no	1		
5	Supply, Installation, Testing & Commissioning of Data logger & Remote Monitoring Instrument/Unit (suitable for 48.6 kWp Solar plant) as per Technical Specification & required to complete the work.	no	1		
6	Supply, Installation, Testing & Commissioning of Grid Interfacing Panel for AC (ACDB Panel) as per Technical Specification & required to complete the work.	no	1		
7	Supply, Installation, Testing & Commissioning of Kiosk for Inverter Interfacing Panel (DC) and Grid Interfacing Panel (AC) as per Technical Specification & required to complete the work.	no	1		
8	Supply, Installation, Testing & Commissioning of Dual way, Import & Export Energy Meter as per Technical Specification & required to complete the work.	no	1		

SN	Description of Works	Unit	Qty.	Rate	Amount
9	Supply and laying of suitable size DC high conductivity, FRLS PVC insulated 1100V copper & wires with PVC Conduits / AC Cables with XLPE Aluminium cables clamped at regular intervals	L.S.	1		
10	Supply, Installation, Testing & Commissioning of Protection System as per Technical Specification & required to complete the work.	L.S.	1		
11	Supply, Installation, Testing & Commissioning of Lightning Arrestor as per relevant IS/BIS/concerned guidelines/Technical Specification & required to complete the work.	L.S.	1		
12	Supply, Installation & Testing of Earthing confirming to IS standard with earth pit with cover. (As per Technical Specification)	no	4		
13	Fire Fighting Arrangement as per Technical Specification & required to complete the work.	Set	1		
14	Project Information Signage as per Technical Specification & required to complete the work.	L.S.	1		
15	Schematic Diagram as per Technical Specification & required to complete the work.	L.S.	1		
16	Safety Sign as per Technical Specification & required to complete the work.	L.S.	1		
17	All Other items, fittings, fixtures, devices, instruments, equipments etc. and cables including ACDB, Transport Charges & other cost for installation, testing & commissioning of the complete system (48.6 kWp Solar plant) and as required to complete the work.	L.S.	1		
18	Providing and fixing safety net around the building till completion of work	rmt	70		
	Total				
	GST (As applicable)				
	G. Total				

SIGNATURE OF CONTRACTOR  
WITH DATE & SEAL