अंतर–विश्वविद्यालय केंद्र : खगोलविज्ञान और खगोलभौतिकी IUCAA
Inter-University Centre for Astronomy and Astrophysics
An Autonomous Institution of the University Grants Commission

Tender for

"ADDITIONAL HT ELECTRICAL WORK OF NEW IUCAA-2 BUILDING AT IUCAA, PUNE"

Technical Bid

Inter–University Centre for Astronomy and Astrophysics (IUCAA), Pune

Post Bag - 4, Ganeshkhind, Savitribai Phule Pune University Campus, Pune - 411 007.
Tel. (020) 25604100 Fax: (020) 25604699

Contact Details of the Bidder for

"ADDITIONAL HT ELECTRICAL WORK OF NEW IUCAA-2 BUILDING AT IUCAA, PUNE"

A. Name of Vendor / Firm / Company _____

Postal Address _____

Telephone Off. _____

Telex / Fax Email _____

ID _____

Signature & Seal of the Bidder

Name of the signatory:

Designation:

Date: Place:

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Copy of Advertisement

ADDITIONAL HT ELECTRICAL WORK OF NEW IUCAA-2 BUILDING AT IUCAA, PUNE

The Director, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Savitribai Phule Pune University Campus, Ganeshkhind, Pune – 411007, invites technical & financial bids for **"Tender for Additional HT Electrical Work of New IUCAA-2 Building At IUCAA, Pune**" from reputed bidders.

Interested bidders may view and download the tender document from the Government Central Procurement Portal **https://eprocure.gov.in/eprocure/app** . The tender document is also available on IUCAA's website **https://www.iucaa.in/tenders** .

The tender document has to be submitted through CPPP only.

IUCAA reserves the right to reject any or all of the tenders without assigning any reasons.

Estate Manager

IMPORTANT MILESTONES AND CONTACT INFORMATION

1.	Date of commencement	8th (Eighth) day after the letter of intent is received by the contractor of start the work.
2.	Date of completion	Three calendar months from the 8th day of receipt work order (including monsoon season).
3.	Defect Liability Period	60 (Sixty Months) calendar months from the date of work completion.
4.	Period of final measurements	Thirty days from the date of submission of Final bill with all necessary papers.
5.	The Interim Certificate / Running Bill Value	Minimum assessed bill value should not be less than Rupees 20/- Lakhs.
6.	Period of Honoring Certificate	Thirty days
7	Tender Fee	Tender fee of Rs. 1,000/- (Rs. One Thousand + GST) plus applicable GST must be paid at the time of tender submission
8.	Earnest Money Deposit (EMD)	Rs. 1,20,000/- (Rs. One Lacs Twenty Thousand Only) in the form of online payment. Refund: EMD of unsuccessful bidders during first stage (technical evaluation) shall be returned within 30 days of declaration of result of the first stage, i.e. technical evaluation. Bids of the unsuccessful bidders shall be returned to them earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the Contract / Work Order.
9.	Security Deposit (SD)	Initially SD will be 5 % of the work order value and at the time of final billing, 5% SD of the final bill value will be deducted (i.e. 5% of the final bill value). The EMD already submitted will be converted into Security Deposit and the balance amount of SD will be recovered from first RA bill. Security Deposit will be refunded to the vendor on completion of all contractual obligations, including the Defect Liability Period + 60 days.
10.	Performance Security(PS) / Performance Guarantee (PG)	The PS/PG will be 5% of the accepted tender value. The same has to be submitted within 21 days from the award of contract/letter of Intent/work order. The PG will be released after satisfactory completion of all contractual obligations, including the Defect Liability Period + 60 days. The PS can also be submitted in the form of Performance Bank Guarantee (PBG) drawn on a Nationalised Bank.
11.	Contact information of IUCAA representative for visit to site, technical information/clarification, etc.	Mr. Nitin Ohol Estate Manager, IUCAA Tel. 020-25604334, Email: tenders.estate@iucaa.in,

SECTION – I

TenderNotice

Inter-University Centre for Astronomy and Astrophysics (IUCAA), Post Bag 4, Ganeshkhind, Savitribai Phule Pune University Campus, Pune 411 007, invites tenders in two-bid system, i.e., "Technical Bid" and "Financial Bid" from reputed vendors for **"Tender for Additional Electrical Work Of New IUCAA-2 Building At IUCAA, Pune."**

Tender available on CPPP	: 23/07/2025 at 1800 hrs.
Closing date & time for receipt of Tender	: 13/08/2025 at 1100 hrs.
Tender opening date & time	: 14/08/2025 at 1100 hrs.
Place of tender opening	: IUCAA's office
Earnest Money Deposit (EMD)	: Rs.1,20,000/- (Rs. One Lacs Twenty Thousand Only)

1) Bidders shall ensure that their tenders, complete in all respects, are uploaded at https://eprocure.gov.in/eprocure/app on or before the closing date and time indicated as above.
2) EMD should be paid through **NEFT/RTGS** only. A photocopy of transaction ID or UTR no. should be uploaded along with the technical bid.
3) **Tender fee of Rs. 1,000/- (Rs. One Thousand + GST) must be paid** through **NEFT/RTGS only at the time of tender.** A photocopy of transaction ID or UTR no. should be uploaded along with the technical bid.
4) The Minimum turnover of the bidder shall not be less than Rs. 1.20 Crores (Indian Rupees One Crores Twenty Lakhs only) per annum for a last three financial years, i.e., 2022-2023, 2023-2024 and 2024-2025.
5) In the event of any of the above-mentioned dates being declared as a holiday / closed day for IUCAA, the tenders will be received/opened on the next working day at the appointed time.
6) The Estate Manager, IUCAA, Pune - 411007 on behalf of IUCAA reserves the right to postpone the date of opening of tender without assigning any reason thereof.
7) Technical Bid consists of all documents mentioned in the Technical Bid form along with EMD. Financial Bid consists of the prices and for all Commercial Terms and Conditions. A tender in which any of the prescribed condition(s) is not fulfilled or any condition including that of conditional rebate are put forth by any bidder then their bid shall be summarily rejected. However, tenders with unconditional rebate will be considered.
8) IUCAA reserves the right to reject any or all of the tenders without assigning any reason thereof.

Estate Manager
Inter-University Centre for Astronomy and Astrophysics,
Post Bag 4, Ganeshkhind, Pune – 411007, Tel. - (020)25604100
Email- tenders.estate@iucaa.in,

Technical Bid Form

(Must be filled by Bidder)

1	**Bidder's Name (firm/company Name) and Address**	
2	**Company Registration / Shop Act License No. and Validity Period/Date**	
3	**Electrical Contractor's License No. and Validity Period/Date**	
4	**Contractor 'A' Class PWD Registration No. & Validity Period/Date**	
5	Nature of Business & Establishment Year	
6	**Telephone Nos.** *Mobile No.* *Fax Nos.* *E-mail*	
7	**Contact Person** *Name* *Designation* *Mobile* *E-mail*	
8	EMD Paid (Proof to be Attached)	
9	**PAN Details** PAN No. (Photocopy to be attached)	
10	**PF/ESI/GST/Professional Tax details (Essential Documents)** Reg. no. PF (copy to be attached) Reg. no. ESI (copy to be attached) Reg no. GST (copy to be attached) Reg no. Profession Tax (copy to be attached)	
11	**Organizational Capability (staff strength)** *No. of Engineers …* *No. of Supervisors …* *No of Technicians…* Safety Engineers … Quality Engineers …	
12	**Financial capacity over last 3 years (Income tax return/Certified balance sheet of the firm along with CA's certificate for the respective year's turnover)** FY 2022-2023 FY 2023-2024 FY 2024-2025	
13	Last Five years continuous experience of the firm in the field of providing such services in Central Govt. establishment/Autonomous bodies of GOI/Corporation of GOI/Reputed Public or Private Organizations (Provide details in enclosed tabular form)	
14	Provide following details of **Institutional/Similar type** of Additional Electrical projects completed within the last 5 years of similar nature: 1) Minimum three **Institutional/Similar type** Electrical HT projects costing more than **Rs 30 Lacs OR** 2) Minimum two **Institutional/Similar type** of Electrical HT projects costing more than **Rs**. 3**6 Lacs OR** 3) Minimum one **Institutional/Similar type** of Electrical HT project costing more than **Rs. 48 Lacs**. Client Certificate to be attached for all the works	

	a) Name & address of the project Type of Work Start date Completion date Final Bill Value Scope of work *Client contact details (Name, tele, fax, e-mail).*
	b) Name & address of the project Type of Work Start date Completion date Final Bill Value Scope of work *Client contact details (Name tele, fax, e-mail).*
	c) Name & address of the project Type of Work Start date Completion date Final Bill Value Scope of work *Client contact details (Name tele, fax, e-mail).*
15	List of Clients for whom the bidder has executed works of similar nature
16	List along with details of any arbitration cases / legal disputes on Current / previous projects – (Mention name of project, reason for dispute, party filing the suit and its current status)
17	**Is the company ISO Certified?**
18	List any awards, recognitions on previously executed projects
19	**Address of Office**
20	Prepared and submitted by (Name & Signature)

Notes –

1. The Inter-University Centre for Astronomy & Astrophysics, Pune reserves the right to accept or reject any or all applications without assigning any reason.
2. The vendors/bidder has to fill completely the **'Technical Bid Form and Compliance sheet (Annexure 1 to 3)'** mentioned in **Clause No. 20.9 (i to xiii)** in all respects. Every statement made in the technical bid format should be supported by documentary proof for consideration and all pages of the tender should be verified and signed by the authorized person in this behalf. Otherwise the tender is liable to be rejected.
3. Please support **Completed Work (Form No. I)** and **Work in hand (Form No. II)** information with copy of the Work order/Contract from the client, **Otherwise the tender is liable to be rejected.**

Date: **Yours faithfully,**

Place: **(Signature of the Authorized person)**
Name:
Designation:
Seal:

SECTION - II

COMMERCIAL TERMS

1. Introduction

1.1 IUCAA has issued these tender enquiry documents for **"Additional HT Electrical Work of New IUCAA-2 Building At IUCAA, Pune**".

1.2 This section provides the relevant information as well as instructions to assist the prospective bidders in preparation and submission of tenders. It also includes the mode and procedure to be adopted by IUCAA for receipt and opening as well as scrutiny and evaluation of tenders and subsequent placement of contract.

1.3 Before formulating the tender and submitting the same to IUCAA, the bidder should read and examine all the terms, conditions, instructions etc. contained in the tender documents. Failure to provide and/or comply with the required information, instructions etc. incorporated in these tender documents may result in rejection of their tender.

2. Language of Tender: The tender submitted by the bidder and all subsequent correspondence and documents relating to the tender exchanged between the bidder and IUCAA shall be written in the English language, unless otherwise specified in the tender enquiry. However, the language of any printed literature furnished by the bidder in connection with its tender may be written in any other language provided the same is accompanied by an English translation and, for purposes of interpretation of the tender, the English translation shall prevail.

3. Eligibility Criteria for Bidders: The vendors should meet the following criteria to qualify in the tendering process. (Sufficient proof with authorized work order & completion certificate to be submitted)

3.1 The vendor should have completed minimum ONE similar Institutional **Electrical HT Project** costing **more than Rs. 48 Lacs (Indian Rupees Forty Eight Lacs only) in the last 3 financial years.**

OR

3.2 The vendor should have completed minimum TWO similar Institutional **Electrical HT Project** costing **more than Rs. 36 Lacs (Indian Rupees Thirty Six Lacs only) in the last 3 financial years.**

OR

3.3 The vendor should have completed minimum THREE similar Institutional **Electrical HT Project** costing **more than Rs. 30 Lacs (Indian Rupees Thirty Lacs only) in the last 3 financial years.**

3.4 The bidder must have valid Electrical Contractor's License and Contractor's 'A' Class PWD Registration certificate.

3.5 The Minimum turnover of the bidder shall not be less than Rs. 1.20 Crores (Indian Rupees One Crores Twenty Lacs only) per annum for last three financial years. The bids of those bidders who do not fulfil any of the above-mentioned criterion shall be summarily rejected.

3.6 The bidder must have valid ESI, PF, GST & Professional tax registration certificates.

4. Eligible Goods and Services : All goods and related services to be supplied under the contract shall have their origin in India or other countries, subject to any restriction imposed in this regard. The term "origin" used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied.

5. Tendering Expenses: The bidder shall bear all the costs and expenditure incurred and/or to be incurred by it in connection with its tender including preparation, mailing and submission of its

tender and for subsequent processing of the same. IUCAA will, in no case be responsible or liable for any such costs, expenditure etc. regardless of the conduct or outcome of the tendering process.

6. **Content of Tender Enquiry Documents**: The relevant details required for execution of work & services, the terms, conditions and procedure for tendering, tender evaluation, placement of contract, the applicable contract terms and, also, the standard formats to be used for this purpose are incorporated in the above-mentioned documents. The interested bidders are expected to examine all such details etc. to proceed further.

7. **Amendments to Tender Enquiry Documents:**

7.1 At any time prior to the deadline for submission of tenders, IUCAA may, for any reason it deems fit, modify the tender enquiry documents by issuing suitable amendment(s) to it. All such amendments shall form part of this tender document and shall be binding on all the bidders.

7.2 In order to provide reasonable time to the prospective bidders to take necessary action in preparing their tenders as per the amendments, IUCAA may, at its discretion extend the deadline for the submission of tenders and other allied time frames, which are linked with that deadline.

8. **Clarification of Tender Enquiry Documents & Pre-Bid Meeting:** A bidder requiring any clarification or elucidation on any issue of the tender enquiry documents may take up the same with IUCAA in writing by e-mail to **tenders.estate@iucaa.in** latest by **11:00 hrs. on 01/08/2025.** One Set of hard copy of tender document & drawings shall be available at IUCAA office during office hours.

9. **Contacting IUCAA:**

9.1 From the time of submission of tender to the time of awarding of the contract, if a bidder needs to contact IUCAA for any reason relating to this tender enquiry and / or its tender, it should do so only in writing to **tenders.estate@iucaa.in .**

9.2 In case a bidder attempts to influence IUCAA in its decision(s) during scrutiny, comparison and/or evaluation of tenders and/or awarding the contract, the tender of such a bidder shall be liable for rejection in addition to appropriate legal action(s) being taken against such a bidder at the discretion of IUCAA.

10. **Corrupt or Fraudulent Practices:** IUCAA requires that the bidders who wish to bid for against IUCAA's tender have the highest standards of ethics. IUCAA shall reject bids of those bidders who are found to be engaged in corrupt and/or fraudulent practices. This also applies to a successful bidder who has been awarded the contract and is found to be engaged in corrupt or fraudulent practices during the execution of the contract.

11. **Interpretation of the clauses in the Tender Document/Contract Document:** In case of any ambiguity in or dispute arising out of or related to (including the interpretation of any of the clauses in this tender document/purchase order/contract), decision of the Director, IUCAA or his nominee shall be final and binding on all parties.

12. **Tender currencies:** The bidder shall quote only in Indian Rupees.

13. **Tender Prices:** Bidder has to check and fill all the fields mentioned in the price bid. The quoted rates shall be inclusive of all the relevant taxes excluding GST. The GST shall be calculated automatically on the Gross Total and shown separately at the end in the BOQ sheet. The Net Total shall be the summation of the Gross Total and the GST. All the bidders should ensure that they are GST compliant and their quoted tax structure/rates are as per GST Law.

14. **Taxes:** GST shall be levied as per prevailing rates.

15. **Documents establishing Good's Conformity to Tender Enquiry document.:**

15.1 The bidder shall provide in its tender the required as well as the relevant documents like technical data, literature, drawings etc. to establish that the goods and services offered in the tender, fully conform to the goods and services specified by the procuring entity in the tender documents. For this purpose, the bidder shall also provide a clause-by-clause commentary on the technical specifications and other technical details incorporated by the procuring entity in the tender documents to establish technical responsiveness of the goods and services offered in its tender. In case, there is any variation and/or deviation between the goods & services prescribed by the procuring entity and that offered by the bidder, the bidder shall list out the same in a chart form without ambiguity and provide the same along with its tender.

15.2 If a bidder furnishes wrong and/or misguiding data, statement(s) etc. about technical acceptability of the goods and services offered by it, its tender will be liable to be ignored and rejected in addition to other remedies available to the procuring entity in this regard.

16. **Earnest Money Deposit (EMD) & Tender Fee:** The Earnest Money is required to protect IUCAA against the risk of the bidder's unwarranted conduct as amplified under GCC.

16.1 The amount of EMD will be Rs. 1,20,000/- (Rs. One Lacs Twenty Thousand Only).

16.2 **Tender fee of Rs. 1,000/- plus applicable GST must be paid at the time of tender submission.**

16.3 The EMD shall be denominated in Indian Rupees.

16.4 Scanned copy of the EMD paid receipt (as the case may be) must be uploaded along with the Technical Bid.

16.5 The tender fee and EMD shall be furnished through **NEFT/RTGS** only. IUCAA's bank details for the purpose of payment of EMD are as follows: -
Name of the Beneficiary - Inter-University Centre for Astronomy & Astrophysics
Bank Account Number - 98060100000188
Nature of Bank Account - Savings Bank Account, MICR NO. – 411012053
Name of the Bank - Bank of Baroda
Address of the branch - Bank of Baroda, IUCAA Branch,
Savitribai Phule Pune University Campus, Pune - 411007.
Bank Branch Code – EXTPOO, IFSC Code- BARB0EXTPOO,
Swift Code - BAR B IN BB PCB

16.6 Unsuccessful bidder's earnest money shall be returned to them without any interest after issuing the work order / LOI to the successful bidder. In case of the bidder whose offer is accepted, the EMD shall be converted into **Security Deposit**. [Please refer to Section II, Clause 31, for further details on Security Deposit.]

16.7 EMD of a bidder will be forfeited if the bidder withdraws or amends their bid or impairs or derogates from the tender in any respect within the period of validity of their tender. The successful bidder's earnest money shall be forfeited if they fail to furnish the balance amount of Performance security within the aforementioned period.

16.8 **Security Deposit** will be released upon completion of all contractual obligations, including Defect Liability Period + 60 days.

17. **Tender Validity:**

17.1 The Bids shall remain valid for acceptance for a period of **90 days** from the date of tender opening prescribed in the tender document. Any bid valid for a shorter period shall be treated as unresponsive and rejected summarily.

17.2 In exceptional cases, the bidders may be requested by IUCAA to extend the validity of their bids up to a specified period. Such request(s) and responses thereto shall be conveyed by e-mail followed by registered-post/courier. In all such cases, the bidders will (i) have to extend the bid validity without any change or modification in their original tender and (ii) extend the validity period of the EMD accordingly. However, EMDs of those bidders who express

their inability to do so shall not be forfeited and their bids shall not be considered for further process.

17.3 In case the day up to which the tenders are to remain valid falls on/ is subsequently declared as a holiday or closed day for IUCAA the tender validity shall automatically be extended up to the next working day.

18. Withdrawal of Tender: No tender should be withdrawn after the deadline for submission of tender and before expiry of the tender validity period. If a bidder withdraws the tender during this period, it will result in forfeiture of the earnest money furnished by the bidder in its tender.

19. Preparation of Bids:

19.1 For preparation of bids, the bidders shall search the tender from the published tender list available on site and download the complete tender document and shall consider corrigendum issued, if any, before submitting their bids. After selecting the tender document, the same shall be moved to the 'My favorite' folder of the bidders account, from where the bidder

can view all the details of the tender document.

19.2 Bidder shall go through the tender document carefully to understand the documents required to be submitted as part of the bid. Bidders shall note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of their bid.

19.3 Any pre-bid clarifications if required, then same may be obtained online through the tender site, or through the contact details given in the tender document.

19.4 Bidders should get ready in advance the bid documents in the required format (pdf/xls/rar/dwf/jpg formats) to be submitted as indicated in the tender document/schedule. **Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.**

19.5 Bidders can update well in advance, the documents such as experience certificates, annual report, PAN, GST & other details etc., under "My Space / Other Important Document" option, which can be submitted as per tender requirements. This will facilitate the bid submission process faster by reducing upload time of bids.

19.6 The tender documents may be downloaded from http://eprocure.gov.in/eprocure/app till the last date of submission of tender. The Tender must be submitted online through CPP Portal http://eprocure.gov.in/eprocure/app

19.7 **The bidder should submit the bid online in two parts viz. Technical Bid and Financial Bid.** Technical Bid in cover-1 & Financial Bid in ".xls" format in Cover-2

20. Submission of Technical and Financial Bids:

20.1 All pages of the bid (except for un-amended printed literature) shall be initialed by the person or persons signing the bid. The bidder's name stated on the proposal shall be the exact legal name of the firm.

20.2 Any other condition or guideline for submission of the bids shall be notified by IUCAA if it finds necessary.

20.3 IUCAA may, at its discretion, extend the deadline for the submission of bids by amending the bidding documents, in which case all rights and obligations of IUCAA and Bidder previously subject to the deadline will thereafter be subject to the deadline as extended.

20.4 At any time prior to the deadline for submission of bids, IUCAA may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, notify changes in the bidding documents through an amendment.

20.5 The amendments, if any, shall be notified on the CPP portal and the amendments shall be binding on all the bidders. Hence, the bidders shall view the notification in complete before submitting their bids.

20.6 The bidder responding to announcement shall be deemed to have read and understood the

documents in complete. Where counter terms and conditions have been offered by the bidder, the same shall not be deemed to have been accepted by IUCAA, unless a specific written acceptance thereof is obtained.

20.7 **SUBMISSION OF BIDS:**

i. Bidder should log into CPP Portal well in advance for bid submission so that he/ she upload the bid in time i.e., on or before the bid submission time. Bidder will be responsible for any delay.

ii. Bidder should submit the tender fee and EMD as per the instructions specified in the NIT / tender document. The details of tender fee and EMD should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise, the uploaded bid will be rejected.

iii. While submitting the bids online, the bidder shall read the terms & conditions (of CPP portal) and accept the same in order to proceed further to submit their bid.

iv. Bidder shall digitally sign and upload the required bid documents one by one as indicated in the tender document.

v. Bidders shall note that the very act of using Digital Signature Certificate (DSC) for downloading the tender document and uploading their offers is deemed to be a confirmation that they have read all sections and pages of the tender document without any exception and have understood the complete tender document and are clear about the requirements of the tender document.

vi. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document. For the file size of less than 1 MB, the transaction uploading time will be very fast.

vii. If price quotes are required in xls format, utmost care shall be taken for uploading Schedule of quantities & Prices and any change/ modification of the price schedule shall render it unfit for bidding.
Bidders shall download the Schedule of Quantities & Prices, in .xls format and save it without changing the name of the file. Bidder shall quote their rate in figures in the appropriate cells, thereafter save and upload the file in financial bid cover (Price bid) only. If the template of Schedule of Quantities & Prices file is found to be modified/corrupted in the eventuality by the bidder, the bid will be rejected, including forfeiture of EMD.
The bidders are cautioned that uploading of financial bid elsewhere i.e. other than in cover 2 will result in rejection of the tender.

viii. Bidders shall submit their bids through online e-tendering system to the Tender Inviting Authority (TIA) well before the bid submission end date & time (as per Server System Clock). **The TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders at the eleventh hour**.

ix. After the bid submission **(i.e. after Clicking "Freeze Bid Submission" i**n the portal), the bidders shall **take print out of system generated acknowledgement** number and keep it as a record of evidence for online submission of bid, which will also act as an entry pass to participate in the bid opening.

x. Bidders should follow the server time being displayed on bidder's dashboard at the top of the tender site, which shall be considered valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system.

xi. All the documents being submitted by the bidders would be encrypted using PKI (Public Key Infrastructure) encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology.

xii. Technical & Financial bids has to be uploaded on or before **Bid Submission End Date & Time** mentioned in the tender documents

20.8 Assistance to Bidders

i. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contract person indicated in the tender. The contact number for the IUCAA helpdesk is 020-25604134/36 between 10:30 hrs to 17:00 hrs.

ii. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24X7 CPP Portal Helpdesk. The 24 x 7 Help Desk Number 0120-4200462, 0120-4001002 and 0120-4001005. The helpdesk email id is support-eproc@nic.in

iii. All interested eligible bidders are requested to submit their bids online on CPP Portal http://eprocure.gov.in/eprocure/app as per the criteria given in this document:
   a) Technical Bid should be uploaded online in cover-1.
   b) Financial Bid should be uploaded online in cover-2

Both Technical and Financial Bid covers should be placed online on the CPP Portal (http://eprocure.gov.in/eprocure/app).

20.9 TECHNICAL BID (Cover-1): Signed and scanned copies of the Technical bid documents as under must be submitted online on CPPP Portal: http://eprocure.gov.in/eprocure/app. **At the time of submission of tender, the following list of documents (Sr. No. - i to xiii) must be scanned and uploaded (under Cover-1 – Technical Bid) otherwise the tender will be rejected.**

i. Scanned Copy of Tender Fee Paid Receipt.

ii. Scanned Copy of EMD paid receipt.

iii. Scanned copy of duly filled **'Technical Bid form (Section I)'** along with supporting documents & commercial/legal terms & conditions with proper seal and signature of authorized person on each page of the bid submitted.

iv. Scanned copy of Completion Certificate of valid registered contractor for One Institutional/ Similar type of Electrical HT Work Project of costing not less than Rs. 48 Lacs in last three financial years (i.e., 22-23, 23-24, 24-25) Or Two Institutional/Similar type of Electrical HT Work Project of more than 36 Lacs in last 3 financial years, Or Three Institutional/Similar type of Electrical HT Work Project more than 30 Lacs in last 3 financial years from Government / Semi Government/Public sector or reputed private bodies (in **Form I**). The contractor will have to produce a certificate from an officer not below the rank of Deputy Engineer for the works pertaining to Govt. Dept. or Semi Govt. Institutes / Dept. or equivalent from their respective Heads. The details of ongoing works (Forms II).

v. Scanned copy of the work done in HT Electrical work (annual financial turnover) in the last three financial years should not be less than Rs. 1.20 crore (Rupees One Crore Twenty Lakh) per year. (i.e., 22-23, 23-24, 24-25) (Form III). The work done certificates issued by Govt./Semi Govt./Reputed private bodies to be attached in support of turnover. The certificate shall have name of work, date of start, date of completion and amount of work done of in last three financial years as above. The turnover certified by chartered accountant shall not be accepted. Income tax returns certificate should be attached.

vi. Scanned copy of duly filled Undertaking / Acceptance Letter (Form III).

vii. Scanned copies of the duly filled Declaration Form (Form IV& VI) & Form V.

viii. Scanned copy of valid Electrical Contractor's License and Contractor's 'A' Class PWD Registration certificate.

ix. Scanned copy of Partnership Deed / Certificate of Registration in case of Pvt. Ltd. Company with list of Directors, their names and address with telephone numbers, if the tenderer is a partnership firm / Pvt. Ltd. Company, Power of Attorney / Resolution of Board of Directors for authorized signatory.

x. Scanned copy of Declaration regarding any ongoing disputes/litigations (or any history thereof) with respect to any work executed/being executed by the tenderer, with details of disputes/litigations, if applicable

xi. Filled and Scanned copy of make of goods/items offered as per 'Approved make list' **(Annexure -3).**

xii. Filled and Scanned copy of 'Compliance sheet of 11 kV, 800 Amp. VCB and 11 kV, 630 Amp. Ring

Main Units **(Annexure 1 & 2).**

xiii. Scanned documents of all eligibility criteria should be attached Copy of work orders, ESI, PF, GST, PAN, Shop Act License, IT returns etc.

20.10 FINANCIAL BID (Cover-2) :

i. The currency of all quoted rates shall be Indian Rupees.

ii. In preparing the financial bids, bidders are expected to consider the requirements and conditions laid down in this Tender document. The financial bids should be uploaded online as per the specified **".xls"** format i.e. Price Bid Excel sheet attached as **'.xls'** with the tender and based on the scope of work, service conditions and other terms of the tender document. It should include all costs associated with the Terms of Reference/Scope of Work of the assignment.

21. Tender Opening:

21.1 IUCAA will open the tenders at the specified date and time and at the specified place as indicated. In case the specified date of tender opening falls on declared holiday or closed day for the purchaser, the tenders will be opened at the appointed time and place on the next working day.

21.2 In the case of two-bid system mentioned above, the technical bids are to be opened in the first instance, at the prescribed time and date. These bids shall be scrutinized and evaluated by the competent authority / committee with reference to parameters prescribed in the tender document. Thereafter, in the second stage, the financial bids of only the technically qualified / acceptable offers (as decided in the first stage) shall be opened for further scrutiny and evaluation by giving an advance intimation to the technically successful bidders. IUCAA reserves the right to select the vendor on the basis of past performance and experience of the firm. The decision of IUCAA shall be final and representation of any kind shall not be entertained on the above. IUCAA shall have no obligation to convey reason for rejection of any bid.

22. Preliminary Scrutiny of Tenders:

22.1 The tenders will first be scrutinized to determine whether they are complete and meet the essential and important requirements, conditions etc. as prescribed in the tender enquiry document. The tenders, which do not meet the basic requirements, are liable to be treated as unresponsive and shall be ignored.

22.2 The following are some of the important aspects, for which a tender may be treated to be unresponsive and shall be ignored;

a) Tender is unsigned incomplete.
b) Tender is submitted without necessary supporting papers.
c) Tender validity is shorter than the required period.
d) Required tender fee and EMD has not been provided/paid.
e) Bidder has not agreed to give the required performance security.
f) Bidder has not agreed to essential condition(s) specially incorporated in the tender enquiry.
g) Tender submitted is a conditional.
h) Annexure - 1, 2 and 3 is not filled completely and not submitted with the technical bid.

23. Minor Informality / Irregularity / Non-Conformity: If during the preliminary examination, IUCAA finds any minor informality or irregularity or non-conformity in a tender, IUCAA may waive the same, provided it does not constitute any material deviation or financial impact and, also, does not prejudice or affect the ranking order of the bidders. In case, if IUCAA conveys its observation on such 'minor' issues to the bidder by asking the bidder to respond by a specified date, and the bidder does not reply by the specified date or gives evasive reply without clarifying

the point at issue in clear terms, such tender will be liable to be ignored.

If IUCAA observed, that contractor had inadvertently missed out to submit some documents asked in the technical bid form, then IUCAA may ask contractor to submit the same. IUCAA may convey its observation on such 'minor' issues to the bidder by registered/speed post/email/fax etc. asking the bidder to respond by a specified date. If the bidder does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, such tender shall be liable to be rejected/ignored.

24. <u>Code of Integrity in Public Procurement; Misdemeanors and Penalties:-</u>

24.1 **Code of Integrity:** Procuring authorities as well as bidders, suppliers, contractors, and consultants - should observe the highest standard of ethics and should not indulge in following prohibited practices, either directly or indirectly, at any stage during the Tender Process or during the execution of resultant contracts:

1. **"Corrupt practice"** - making offer, solicitation or acceptance of a bribe, reward or gift or any material benefit, in exchange for an unfair advantage in the Tender Process or to otherwise influence the Tender Process;
2. **"Fraudulent practice"** - any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. Such practices include a false declaration or false information for participation in a tender process or to secure a contract or in the execution of the contract;
3. **"Anti-competitive practice"** - any collusion, bid-rigging or anti-competitive arrangement, or any other practice coming under the purview of the Competition Act, 2002, between two or more bidders, with or without the knowledge of the Procuring Entity, that may impair the transparency, fairness, and the progress of the Tender Process or to establish bid prices at artificial, non-competitive levels;
4. **"Coercive practice"** - harming or threatening to harm persons or their property to influence their participation in the Tender Process or affect the execution of a contract;
5. **"Conflict of interest"** –participation by a bidding firm or any of its affiliates who are either involved in the Consultancy Contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if their personnel have a relationship or financial or business transactions with any official of procuring entity who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from the Procuring Entity with an intent to gain unfair advantage in the Tender Process or for personal gain;
6. **"Obstructive practice"** - materially impede procuring entity's investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/ or by coercive practices mentioned above, to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the procuring entity's rights of audit or access to information;

24.2 **<u>Obligations for Proactive Disclosures:</u>**

a) Procuring authorities, bidders, suppliers, contractors, and consultants are obliged under this Code of Integrity to *suo-moto* proactively declare any conflict of interest (coming under the definition mentioned above - pre-existing or as and as soon as these arise at any stage) in any Tender Process or execution of the contract. Failure to do so shall amount to a violation of this code of integrity.

b) Any bidder must declare, whether asked or not in a bid-document, any previous transgressions of such code of integrity during the last three years or of being under any category of debarment by the Central Government or by the Ministry/ Department of the Procuring Organisation from participation in Tender Processes. Failure to do so shall amount to a violation of this code of integrity.

24.3 **<u>Misdemeanors and Penalties:</u>** The following shall be considered misdemeanors - if a bidder/

contractor either directly or indirectly, at any stage during the Tender Process or during the execution of resultant contracts:

i. violates the code of Integrity mentioned herein or the Integrity Pact, if included in the Tender/ Contract;
ii. has been convicted of an offence:
    a. under the Prevention of Corruption Act, 1988; or
    b. the Indian Penal Code or any other law for the time being in force for causing any loss of life or property or causing a threat to public health as part of the execution of a public procurement contract.
iii. It is determined by the Government of India to have doubtful loyalty to the country or national security consideration.
iv. Employs a government servant, who has been dismissed or removed on account of corruption or employs a non-official convicted for an offence involving corruption or abetment of such an offence, in a position where he could corrupt government servants or employs a government officer within one year of his retirement, who has had business dealings with him in an official capacity before retirement.

24.4 **Penalties for Misdemeanors:** Without prejudice to and in addition to the rights of the procuring entity to other remedies as per the Tender-documents or the contract, if the procuring entity concludes that a (prospective) bidder/ contractor directly or through an agent has violated this code of integrity or committed a misdemeanor in competing for the tender or in executing a contract, the procuring entity shall be entitled to take appropriate measures, including the following:

(a) **if his bids are under consideration in any procurement:**
- Enforcement of Bid Securing Declaration in lieu of forfeiture or encashment of Bid Security.
- calling off of any pre-contract negotiations, and;
- rejection and exclusion of Bidder from the Tender Process

(b) **if a contract has already been awarded:**
- Termination of Contract for Default and availing all remedies prescribed thereunder;
- Encashment and/ or Forfeiture of any contractual security or bond relating to the procurement;
- Recovery of payments including advance payments, if any, made by the procuring entity along with interest thereon at the prevailing rate (MIBID - Mumbai Interbank Bid Rate);

(c) **Remedies in addition to the above:** In addition to the above penalties, the procuring entity shall be entitled, and it shall be lawful on his part to:
- File information against Bidder or any of its successors, with the Competition Commission of India for further processing, in case of anti-competitive practices;
- Initiate proceedings in a court of law against Bidder or any of its successors, under the Prevention of Corruption Act, 1988 or the Indian Penal Code or any other law for transgression not addressable by other remedies listed in this sub-clause.
- Remove Bidder or any of its successors from the list of registered suppliers for a period not exceeding three years. Suppliers removed from the list of registered bidders or their related entities may be allowed to apply afresh for registration after the expiry of the period of removal.
- Initiation of suitable disciplinary or criminal proceedings against any individual or staff found responsible.

25. Opening of Financial bids:

25.1 The Financial bids of all eligible, technically qualified and shortlisted bidders will be opened. The date and time of opening of financial bids shall be informed only to the shortlisted

bidders.

25.2 IUCAA- reserves the right to accept the offer in full or in parts or reject summarily or partly & cancel the bid without giving any reason.

26. Bidder's capability to perform the contract:

26.1 IUCAA, through the above process of tender scrutiny and tender evaluation will determine to its satisfaction whether the bidder, whose tender has been determined as the lowest evaluated responsive tender is eligible, qualified and capable in all respects to perform the contract satisfactorily.

26.2 The above-mentioned determination will, inter alia, consider the bidder's financial, professional capabilities for satisfying all the requirements of IUCAA as incorporated in the tender document. Such determination will be based upon scrutiny and examination of all relevant data and details & supporting document submitted by the bidder in its tender as well as such other allied information as deemed appropriate by IUCAA.

27. Notification of Award: IUCAA will notify the successful bidder that its tender for additional HT electrical Work of IUCAA-2 building, has been accepted. The notification of award shall constitute the conclusion of the contract. IUCAA will inform the successful bidder in due course by e-mail.

28. Issue of Contract: After notification of award, IUCAA will send the duly executed contract/work order to the successful bidder by email/registered/speed post etc. The successful bidder shall return a copy of the order, duly executed and dated, to IUCAA in person / by registered / speed post / courier within fifteen days of receipt of the same from IUCAA, failing which IUCAA may treat the contract to be repudiated.

29. Taxes and Duties, Fees etc.: Bidder shall be entirely responsible for payment of all taxes, duties, fees, levies, applicable cess etc. during the contract period.

30. ESI, PF & other regulatory rules & laws: Agency has to cover his workers & staff under ESI & PF scheme and comply with local laws & statutes dealing with employment of persons necessary reports to be submitted.

31. Security Deposit (SD) : Initially SD will be 5 % of the work order value and at the time of final billing, 5% SD of the final bill value will be deducted (i.e. 5% of the final bill value). EMD will be converted in to the SD and balance amount of SD will be recovered from first RA bill. Security Deposit will be refunded to the vendor on completion of all contractual obligations including the Defect Liability Period + 60 days.

32. Performance Guarantee / Performance Bank Guarantee: Within 21 days from the date of receipt of letter of intent/Work Order, the successful bidder shall submit a Performance Security for 5% amount of the accepted contract value. The PG shall be paid through NEFT/RTGS/PBG. Photo copy of transaction ID or UTR no. must be provided. In the event of any amendment issued to the contract, the bidder shall, within 21 days of issue of the amendment, furnish the performance guarantee of the corresponding amendment value, rendering the same valid in all respects in terms of the contract, as amended. If bidder fails to submit balance performance guarantee amount within 21 days, from the date of award of Contract / Work Order / Amendment, there shall be a penalty of Rs. 5000/- per day (Rupees Five Thousand only per day) up to a maximum of 5% of the WO/Contract value.

32.1 Failure of the successful bidder in providing performance guarantee and/ or returning contract copy duly signed in terms of GCC above shall make the bidder liable for forfeiture of its EMD and, also, for further actions by IUCAA against it.

32.2 Subject to above, IUCAA will release the performance guarantee without any interest to the

bidder after satisfactory completion of all contractual obligations including the Defect Liability Period + 60 days.

32.3 If the bidder furnishes Performance Bank Guarantee to IUCAA for an amount equal to five per cent (5%) of the total value of the contract valid up to contract period (satisfactory completion of work), then the amount of Performance Guarantee will be refunded. Performance Bank Guarantee must be issued by a **Nationalized Bank** in India and in the prescribed form.

32.4 In the event of any loss due to bidder's failure to fulfill its obligations in terms of the contract, the amount of the performance guarantee shall be payable to IUCAA to compensate for the same. IUCAA shall have the right to deduct full or part of the performance guarantee and shall refund the balance amount, if any, to the Agency on the termination/completion of the term of the Contract.

33. Payment:

33.1 The payment will be made as per the exact measurement basis.

33.2 The minimum running (R.A) certified bill value shall be of minimum Rs 20/- Lacs. In order to facilitate the speed of electrification work, IUCAA will offer 75% ad-hoc payment on assessed RA bill from the contractor. The advance will be adjusted against final certification of RA bill. The final bill payment will be made within 30 days after satisfactory completion of the work. All payments shall be made through RTGS/NEFT/LC.

33.3 GST will be paid as per prevailing rates, TDS & other taxes will be recovered as per prevailing rates of Income tax act.

34. Termination and Penalty/Liquidated Damage (LD): It shall be the primary responsibility of the contractor that the work contract is executed as per terms and conditions stipulated under this contract to the complete satisfaction of IUCAA. If the completion of project is delayed beyond stipulated time period, then the penalty shall be applicable at the rate of 0.5% per week of incomplete project cost, up-to maximum of 5% of the work order value. In extreme cases, IUCAA may issue show cause notice to Agency giving 15 (fifteen) days for improvement, failing which the work contract shall be liable to be terminated along with forfeiture of the performance guarantee. Decision of IUCAA in this regard shall be treated as final and binding on the Agency. If the Agency refuses to carry out the work under this contract at any stage before the expiry of the period of contract, the work contract shall be liable to be terminated by IUCAA without giving any notice along with forfeiture of the performance guarantee. In such situations IUCAA may get the work done from any other person/firm at the risk and cost of the Agency till new contract is awarded or 60 days period whichever is earlier. An expenditure so incurred by IUCAA shall be deducted from the payments due to the Agency.

34.1 **Termination for insolvency:** If the bidder is declared by any competent authority/court as bankrupt or otherwise insolvent, the contract shall be deemed to be terminated from the date of such declaration however, such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to IUCAA.

34.2 **Termination for convenience:** IUCAA reserves the right to terminate the contract, in whole or in part, by serving written notice to the bidder at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of IUCAA. The notice shall also indicate inter alia, the extent to which the bidder's performance under the contract is terminated, and the date with effect from which such termination will become effective.

The goods and services which are complete and ready in terms of the contract for delivery and performance within thirty days after the bidder's receipt of the notice of termination may be accepted by IUCAA following the contract terms, conditions and prices. For the remaining goods and services, IUCAA may decide:

a) to get any portion of the balance completed and delivered at the contract terms, conditions and prices; and / or
b) to cancel the remaining portion of the goods and services and compensate the bidder by paying an agreed amount for the cost incurred by the bidder towards the remaining portion of the goods and services.

34.3 IUCAA, reserves the right to terminate the said contract at any time on the ground of ineffective services rendered by the agency. IUCAA will be the sole judge to determine the facts.

35. Force Majeure: Notwithstanding the provisions contained in tender document clauses, the bidder shall not be liable for imposition of any such sanction so long the delay and/or failure of the bidder in fulfilling its obligations under the contract is the result of an event of force majeure.

35.1 For purposes of this clause, force majeure means an event beyond the control of the bidder and not involving the bidder's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to, acts of IUCAA either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, and freight embargoes.

35.2 If a force majeure situation arises, the bidder shall promptly notify IUCAA in writing of such conditions and the cause thereof within twenty-one days of occurrence of such event. Unless otherwise directed by IUCAA in writing, the bidder shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

35.3 If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of force majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.

35.4 In case due to a force majeure event IUCAA is unable to fulfill its contractual commitment and responsibility, IUCAA will notify the bidder accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.

36. Settlement of Disputes:

36.1 Any dispute arising out of the terms of this contract or in the interpretation of any clause herein shall be settled by mutual discussion between the nominated authorities of IUCAA and the Agency or their authorized representatives. The Director of IUCAA will be the final authority in resolving such disputes.

36.2 In the event of a dispute or difference which cannot be resolved by mediation, the same shall be referred to an Arbitration Tribunal consisting of three members. Either party shall give notice to the other regarding its decision to refer the matter to arbitration. Within 30 days of such notice, one Arbitrator shall be nominated by each party and the Umpire Arbitrator shall be nominated by agreement between the parties to this agreement. The venue of the arbitration will be Pune. Subject to the aforesaid, the Arbitration and Conciliation Act, 1996 with amendments and the rules there under and any statutory modification thereof for the time being in force shall apply to the Arbitration proceedings.

37. Governing language: The contract shall be written in English language following the provision as contained in tender document. All correspondence and other documents pertaining to the contract, which the parties exchange, shall also be written accordingly in English language.

38. Applicable Law: The contract shall be interpreted in accordance with the laws of India.

39. Contacting IUCAA Authorities: No bidder shall contact any of the IUCAA authorities on any matter relating to their bid, from the time of the opening of the bids to the time the contract is awarded.

40. **Committee Duly Constituted by IUCAA Reserves the Right to Accept any Bid and to Reject Any or All Bids**: A committee duly constituted by IUCAA reserves the right to reject, accept or prefer any bid and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the ground for its actions and decisions. IUCAA also reserves the right to accept any bid in part or split the contract between two or more bidders.

41. **Eligibility of bidders from specified countries:** Orders issued by the Government of India restricting procurement from bidders from certain countries that share a land border with India shall apply to this procurement.

1. Any bidder from a country that shares a land border with India (https://mea.gov.in/india-and-neighbours.htm), excluding countries as listed on the website of the Ministry of External Affairs (http://meadashboard.gov.in/indicators/92), to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects (hereinafter called 'Restricted Countries') shall be eligible to bid in this tender only if Bidder is registered (https://dipp.gov.in/sites/default/files/Revised-Application-Format-for-Registration-of-Bidders-15Oct2020.pdf) with the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT). Bidders shall enclose the certificate in this regard from appropriate Government of India authority.
   In Bids for Turnkey contracts, including Works contracts, the successful bidder shall not be allowed to sub-contract works to any contractor from such Restricted Countries unless such contractor is similarly registered.

   If Bidder has proposed to sub-contract Services or incidental Goods directly/ indirectly from the vendors from such countries, such bidder/vendor shall be required to be registered with the Competent Authority. However, if Bidder procures raw material, components, and sub-assemblies from such countries' vendors, such vendors shall not require registration.

1) "Bidder from such Restricted Countries" means: -
   a) An entity incorporated, established, or registered in such a country; or
   b) A subsidiary of an entity incorporated, established, or registered in such a country; or
   c) An entity substantially controlled through entities incorporated, established, or registered in such a country; or
   d) An entity whose beneficial owner is situated in such a country; or
   e) An Indian (or other) agent of such an entity; or
   f) A natural person who is a citizen of such a country; or
   g) A consortium/ joint venture where any member falls under any of the above
2) The beneficial owner shall mean:
   a) In a company or Limited Liability Partnership, the beneficial owner is the natural person(s). Whether acting alone or together or through one or more juridical persons, controlling ownership interest or exercises control through other means.

Explanation-

"Controlling ownership interest" means ownership of or entitlement to more than twenty-five percent of the company's shares or capital or profits.

"Control" shall include the right to appoint a majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholder agreements or voting agreements;

(a) In the case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together or through one or more juridical persons, has ownership of entitlement to more than fifteen percent of capital or profits.

(b) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person,

has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

(c) Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.

(d) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

SECTION-III

GENERAL RULES AND DIRECTIONS FOR THE GUIDANCE OF BIDDERS

1. The IUCAA authority competent to dispose of the tender shall have the right of rejecting all or any of the tender.

2. No receipt for any payment, alleged to have been made by a contractor in regard to any matter relating to his tender or the contract, shall be valid and binding on IUCAA of Pune unless it is signed by the Estate Manager.

3. All works shall be measured net by standard measures and according to the rules and customs of the Public Works Department and their rates shall be without references to any local custom.

4. Under no circumstances shall any contractor be entitled to claim enhanced rates for any items in this contract.

5. The measurements of work will be taken according to the usual methods as in use in P.W.D. Red Book / I.S. Codes and no proposals to adopt alternative methods will be accepted. The Engineer-in-charge decision as to what is the usual method in use in the Department will be final.

6. Successful tenderer will have to produce PAN-Card, GST certificate issued by Income Tax Department otherwise their R.A. Bills will not be paid by the IUCAA, Pune

7. The contractor will have to construct shade for storing controlled and valuable materials brought by the contractor at the work site, having double locking arrangements at contractor's cost. The materials will be taken for use in the presence of the departmental person. No material will be allowed to be removed from the site of works.

8. In case any non-tendered item is required to be executed during the course of the work, the contractor's profit on such item shall be deemed as 10%.

9. The contractor will have to make his own security arrangement for the protection of material and the equipment. The owner security arrangement for the protection of material and the equipment. The owner /IUCAA will be not responsible for any theft.

10. The RMU & VCB Panel shall be subjected to inspection & tests at factory before dispatch & at IUCAA site after installation in the presence of IUCAA's & MSEDCL representative with consultant. All consumables required during testing at factory & site testing shall be included in the scope of bidder. The test shall be carried out as per Technical Specification & records to be submitted for approval. All the arrangements of factory testing and visit of MSEDCL & IUCAA engineers/consultant including stay if required, shall be in the scope of bidder.

11. It shall be the responsibility of the bidder to obtain statutory clearances from the authorities like MSEDCL (Testing and O&M), PWD Electrical Inspector, SPPU, PMC etc. for installation and commissioning of the RMU & VCB Panel as per prevailing norms/rules. The bidder shall prepare the necessary documents/drawings and submit it to IUCAA for approval before submitting it to the MSEDCL/PWD authorities. Please note that any statutory payment to MSEDCL/PWD department should be made by the bidder separately. On submission of the original payment receipt in the name of 'IUCAA', the same amount will be refunded.

12. The contractor shall prepare the GA/shop drawings as per the requirements of the MSEDCL and/or any other local authority and shall obtain necessary approvals from them. Any charges for approvals/ /sanction/liaisoning/installation of the local government body/organization/MSEDCL/PWD or any other charges shall be borne by the bidder and no separate payment shall be made to the bidder by IUCAA.

13. Tap off's for temporary water and electricity shall be provided on site at single source (free of cost). The Contractor shall make its own arrangement thereafter from the Tap off's for Works and all costs in relation thereto shall be borne solely by the Contractor.

SECTION - IV

TECHNICAL SPECIFICATIONS FOR 11 KV, 800Amp, 21 kA INDOOR VCB PANEL INTEGRATED WITH CONTROL AND RELAY PANEL FOR REMOTE OPERATIONS FOR 11 KV MSEDCL SUBSTATION :

1.0 Scope of Work :

Supply , Installation , testing and commissioning of 11 kV, 800 A, 21 kA, indoor type 'VCB Panel with C & R panel' to be coupled with existing CG make VCB panels at MSEDCL Substation. The scope of work is as follows –

1.1. The bidder shall be responsible for preparing the GTP/GA and/or shop drawings in accordance with the requirements of MSEDCL/PWD Electrical Inspector's office and/or any other relevant authority. The bidder will also have to also obtain all necessary sanctions and approvals from these authorities. All expenses related to approvals, sanctions, liaisoning, installations, or any other charges levied by local government bodies, MSEDCL, PWD, or any other relevant organization shall be borne entirely by the Bidder. No separate payment for these activities shall be made by IUCAA.

1.2. Getting permission from MSEDCL officials to carry out the work at MSEDCL Sub station.

1.3. Loading, Unloading and Installation of 11 kV horizontal draw out type VCB panel with C & R panel at MSEDCL Substation.

1.4. Coupling of new VCB panel to existing CG make VCB panel with necessary coupling/adopter panel at MSEDCL Substation.

1.5. SITC of C & R panel with required relays & accessories in control room at MSEDCL Substation.

1.6. Supply and laying of required control cables between VCB panel and C and R panel and complete testing and commissioning of VCB panel as per MSEDCL requirement.

1.7. Obtaining sanction for VCB panel, RMUs installed at MSEDCL Substation and necessary charging permission from PWD Electrical Inspector's office. Successful commissioning of new VCB panel and hand it over to MSEDCL with proper approval & documentation.

1.8. This Specification covers the basic requirements in respect of 11 kV, 21 kA (with highest system voltage of 12 kV) indoor switchgear integrated with associated indoor Control desk/ Control and Relay (C&R) panels for installation at MSEDCL sub-station Pune. Clause 5 of the Specification covers the requirements of indoor switchgear with relays & controls. The control and relay panel should form integral part of the switchgear. In addition to this an operator's supervisory control desk with interconnecting equipment viz. control cables, connectors, coupling to the existing CG make VCB panel etc. should be provided having facility of remote closing, tripping of every switchgear panel and a repeat annunciation and indication system showing status of the circuit breaker.

1.9. The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

1.10. It is not the intent to specify herein complete details of design and erection/construction. The equipment offered shall conform to the relevant IS/BIS standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements. In actual practice, notwithstanding any anomalies, discrepancies,

omissions, in-completeness, etc. in these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.

1.11. The bidder/supplier shall bind himself to abide by these considerations to the entire satisfaction of the purchaser and will be required to adjust such details at no extra cost to the purchaser over and above the tendered rates and prices.

2.0 Tolerances:

Tolerances on all the dimensions shall be in accordance with provisions made in the relevant Indian/IEC standards and in these specifications. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

3.0 <u>SERVICE CONDITIONS:</u>

3.1. System particulars:

a.	Nominal system voltage	...	11 kV
b.	Corresponding highest system voltage	...	12 kV
c.	Frequency	...	50 Hz±3%
d.	Number of phases	...	3
e.	Neutral earthing	...	Solidly grounded
f.	Short Current Rating	...	21 kA

3.2. Equipment supplied against the specification shall be suitable for satisfactory operation under the following tropical conditions:-

a.	Max. ambient air temperature	:	50 Deg. C
b.	Max. relative humidity	:	100 %
c.	Max. annual rainfall	:	1450 mm
d.	Max. wind pressure	:	150 kg/sq.m.
e.	Max. altitude above mean sea level	:	1000 mtrs.
f.	Isoceraunic level	:	50
g.	Seismic level(Horizontal acceleration)	:	0.3 g.
h.	Climetic condition Moderately hot and humid tropical climate conducive to rust and fungus growth.		
i.	Reference Ambient Temperature for temp. rise	:	50 deg C

The climatic conditions are prone to wide variations in ambient conditions and hence the equipment shall be of suitable design to work satisfactorily under these conditions.

3.3. Auxiliary supplies available at the various sub-stations are as follows:-

3.3.1. Rating :

i.	A. C. Supply	240 volts with ± 10% variation
ii	D.C. Supply	24/30 V DC with +10% to – 15% variation

iii	Frequency	50 Hz with ± 3% variation

4.0 **Codes and Standards :**

4.1. The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety codes. NOTHING IN THIS SPECIFICATION SHALL BE CONSTRUED TO RELIEVE THE BIDDER/TENDERER OF THIS RESPONSIBILITY.

IEC/ISO/BS	IS	Subject
IEC:56 IEC:62271-100 & 200		High Voltage alternating current circuit breaker general requirement
IEC:694	IS : 12729	Common clauses of high voltage switch-gear and control gear standards (for voltage exceeding 1000 V).
IEC:60	IS : 9135	High Voltage testing techniques.
IEC:427	IS:13516	Method of synthetic testing of HV .A.C circuit breakers.
IEC: 1233		HV. AC. Circuit breakers- inductive load switching.
IEC: 17A/CD:474		HV. AC. Circuit breakers- capacitive switching.
IEC:529	IS: 13947	Degree of protection provided by enclosure.
IEC:137	IS: 2099	Insulating bushing for A.C. voltages above 1000V
IEC:233	IS : 5621	Hollow insulators for use in electrical equipment & testing.
IEC:273	IS: 5350	Characteristics of indoor and outdoor post insulators for systems with nominal voltages greater than 1000V.
IEC:815	IS: 13134	Guide for selection of insulators in respect of polluted conditions.
IEC: 34	IS : 996	A.C motors
ISO:1460 BS:729	IS:2629	Hot dip galvanizing
	IS:2633	Method of testing uniformity of zinc coated articles.
	IS: 5	Colour for ready missed paints and enamels
	IS: 6005	Code of practice for phosphating or iron and steel.
IEC: 227	IS:1554	P.V.C Insulated cables for voltages up to and including 1100 Volt.
IEC:269	IS:13703	Low voltage fuses for voltages not exceeding 1000volt.
ISO:800	IS:1300	Phenolic molding materials.
	IS:13118	Guide for uniform marking and identification of conductors and apparatus terminals.
IEC: 185	IS: 16227 part I &II	Current transformers.
IEC:186	IS: 16227 Part I & III	Potential Transformers
	IS:14697, ,IS:15959	Specification for TOD DLMS Energy Meter(C1 Category).
		Specification for 3 O/C +Numerical Protection Relay

Unless otherwise specified, the equipment offered shall confirm to the latest applicable Indian, IEC, British or U.S.A Standards and in particular, to the following:-

4.2. In the event of offered equipment confirming to standards other than the above, the salient points of comparison between the standard(s) adopted and the relevant IS shall

be indicated in the technical offer. Copies of the standard adopted shall be invariably furnished with the offer.

5.0 GENERAL TECHNICAL REQUIREMENTS :

5.1. 11KV INDOOR SWITCHGEAR :

5.1.1. Switchgear for Indoor installation shall be metal clad, draw-out type and fully compartmentalised having 21 kA short time current rating. All panels shall be of unitized construction providing facility for extensions on both sides. Three types of switchgear panels are required, viz. the incomer and outgoing feeder panel.

5.1.2. The switchgear will be installed in a separate switchgear room, but the controls under normal conditions will be from the 11 kV remote supervisory control desk installed in the main control room.

5.1.3. Circuit Breakers used shall be VCB of specified rating for the various types. The design of the breaker truck shall be such that there will be flexibility of interchanging between incomer and feeder trucks, where similar rated breakers are offered.

5.1.4. Bill of materials :

Bill of materials for the incomer and feeder panels shall be as follows:

5.1.4.1. Incomer and feeder panel :

i. One draw out type Vacuum circuit breaker having 800 Amps. Continuous current rating and 21 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.

ii. 3 Nos. Current Transformers of ratio 800-400 /5-5 A.

iii. 3 Nos. single phase PTs of ratio 11KV/110V connected to the incomer with proper V3/V3 HRC fuse protection arrangement.

iv. One mechanical ON/OFF indicator

v. One mechanical 'spring charged' indicator.

vi. One T-N-C control switch for circuit breaker.

vii. Remote-Local switch for circuit Breaker

viii. Relay instruments etc. as per clause 5.7

ix. Set of MCBs, stud type terminals and control wiring.

x. Fuse and link for Motor Starter

xi. Two Nos. of space heaters with thermostat control & toggle switch, one each for the breaker chamber and the CT/cable chamber alongwith a common MCB mounted inside LT control wiring.

5.2. BUSBAR :

5.2.1. 11 kV bus bars shall be of electrolytic copper and shall be rated for 2000 Amps continuous current. Cross sectional area shall not be less than 1250 sq. mm. Current density of 1.6 Amps/sq. mm shall be considered for the bus bars. The bus bar edges/ends shall be rounded off/chamfered so that there will not be any sharp edges/projections.

5.2.2. 11 kV bus support insulators and other equipment insulators shall have a minimum creepage distance of 127 mm. These insulators shall be of solid core porcelain or epoxy resin cast, with suitable petticoat design. Insulators shall have cantilever strength of not less than 1200 KgF.

5.2.3. All fasteners (Nuts Bolts) used for bus bar connections shall be of non-magnetic stainless steel. Only belleville type washers shall be provided for each nut bolt. If the fasteners used are not of stainless steel the bidder/bidder/tenderer shall state in their offer the

material used and confirm that the same is non-magnetic and is superior to stainless steel.

5.2.4. The bus bars alongwith their supporting insulators etc. shall have a short time current rating of 21 kA for 3 sec. This shall be confirmed by the bidder/tenderers in their technical offer.

5.2.5. Clearances between phases and between phase and earth shall be kept liberally so as to obtain high reliability. However minimum clearances as shown below shall be kept.

Sr. No.		for busbar Chamber	for breaker Chamber
1.	Phase to Phase	127 mm	127 mm
2.	Phase to earth	77 mm	77 mm

5.2.6. If any special insulating material is proposed to achieve the effect of above clearances details of the same shall be furnished in the technical offer.

5.2.7. Test certificate of bus bar for rated STC rating shall be submitted, alongwith offer, otherwise necessary confirmation shall be given in the offer for submitting the same for approval of C.E.(Testing), MSEDCL prior commencement delivery.

5.3. VACUUM CIRCUIT BREAKER :

5.3.1. The circuit breaker offered shall be Vacuum Circuit Breakers and of horizontal draw out Horizontal Isolation type. Breakers shall be of 3 pole design for use in 11 kV indoor switchgear.

5.3.2. The circuit breaker shall be suitable for rapid reclosing cycle O-0.3sec-CO-3min-CO. First pole to clear factor shall be 1.5.

5.3.3. The circuit breaker shall have 21 kA for 3 sec. short time current rating. The circuit breaker for incomer and bus section shall have 800 Amps continuous current rating. Circuit breaker shall be suitable for rapid reclosing cycle. The circuit breaker shall be provided with motor operated spring charged closing. Spring charging motor shall be suitable for 240V, 50 Hz, single phase AC. Suitable rating starter shall be provided for Motor protection. Spring release coil for closing shall be suitable for 24/30V DC. Provision shall be available for charging the springs manually as well, and to close CB mechanically.

5.3.4. Tripping of the circuit breakers shall be through "Shunt trip" coils rated for 24/30V DC auxiliary supply. It shall be possible to trip the breaker manually in case of necessity.

5.3.5. All circuit breakers shall have mechanical ON/OFF indicator and spring charge indicator. These shall be visible from the front without opening the panel door. Also, there shall be provision for mechanical (manual) tripping and also for manual charging of the springs.

5.3.6. Each operating mechanism of the circuit breaker shall be provided with adequate number of Cam/Snap type auxiliary switches of normally open and normally closed contacts for the control and operation of the equipment with continuous current rating of 10 Amp. The Breaking capacity of the contacts shall be minimum 2 A with circuit time constant less than 20 milli seconds at the rated D.C. voltage. Normal position of auxiliary switches refers to contact position when circuit breaker is open.

5.3.7. Adequate numbers of "NO/NC" contacts of the C.B. shall be wired upto the terminal block for connection to the remote supervisory desk for indication. interlocks, etc., as

described under Cl.5.8 of this specification. Following contacts shall be wired up to the terminals and clearly marked up in the relevant drawings.

a. Terminal for remote indication of breaker ON/OFF.

b. Terminal for remote indication of spring charge.

c. Terminal for remote indication of trip circuit healthy (Pre-close and post close)

Minimum 4 pair each of "NO/NC" contacts shall be available as spare for use in the remote control desk for various/interlocks, voltage selection etc.

5.3.8. Insulation level of auxiliary contacts shall be 1100 volts, 2.5 kV for 1 min.

5.3.9. Safety shutters which close automatically to prevent accidental contact with the live bus after withdrawal of the Circuit Breaker shall be provided.

5.3.10. The bidder/tenderer shall offer suitable earthing trolleys to facilitate earthing of out-going feeder circuits. Unit prices of earthing trolleys shall be quoted, per set two earthing trolleys are required.

5.3.11. Electrical anti pumping device shall be provided for breaker.

5.3.12. Principal parameter for the circuit breaker will be :

i.	Rated voltage	: 12 kV
ii.	Rated insulation level	: 12/28/75 kV
iii.	T.R.V peak value	: 20.6 kV
iv.	Rated symmetrical current breaking	: 21 kA
v.	Rated making current (Peak)	: 62.5 kA
vi.	Short time current rating	: 21 kA for 3 Seconds

5.3.13. Circuit Breakers Control Switch :

5.3.13.1. Circuit Breakers Control Switches should have finger touch proof terminals. For the convenience of maintenance, screw driver guide should be from top/bottom of the switch and not from the side. Terminal wire should be inserted from the side of the switch terminal.

5.3.13.2. Terminal screws must be captive to avoid misplace during maintenance.

5.3.13.3. Switch shall be with 48 mm x 48 mm escutcheon plate marked with Trip & Close.

5.3.13.4. Circuit Breakers control switch shall be Non- discrepancy type

5.3.13.5. Trip-neutral-close, with pistol grip handle must be pushed in to spring return to either trip or close position from Neutral position for safety and not just turn to trip.

5.3.13.6. One contact to close in each position of Trip and Close. Contact not required in Neutral position. Contact rating shall be 12 A at 30 V DC

5.3.14. Protective Relays :

5.3.14.1. Numerical biased protection relays shall be suitable for auxiliary supply (24/30 V D.C.) and shall have a reset push button and a test push button to test the relay function with

provision to trip bypass push button.

5.3.14.2. For Incomer and feeder, non-directional, 1 Over current and 1 Earth fault numerical relays shall be provided as per the technical specification

5.3.14.3. For incomer and feeder, high speed tripping relay shall be provided. Over current & Earth fault relay shall be connected to trip coil through high speed trip relay.

5.3.14.4. All relays should be suitable for flush mounting on C & R panel and all connections should be on backside. The relay should be draw –out type preferably with automatic shorting of CT circuit at a time of removal of relay from the casing.

5.3.14.5. LED Display : Relay should have 12 mm LED backlit display.

5.3.14.6. Trip circuit supervision scheme shall be such that testing of trip circuit healthiness is possible irrespective of whether the Circuit Breaker (CB) is in the closed or open position. The Trip Circuit Healthy LED should glow continuously in CB 'ON' Position and on demand in CB. 'OFF" position. The rating of dropping resistance in series with Trip Circuit Healthy LED shall be such that the Trip Coil should not get damaged because of continuous current flowing through it.

5.3.14.7. Test terminal blocks used in metering circuit shall be suitable for 3 phase 4 wire type connections.

5.4. CURRENT TRANSFORMERS :

5.4.1. The CTs. being prone to failure due to various reasons, the quality and reliability of the CTs are of vital importance. CT shall be rated for 21 kA for 3 sec. short time current. Insulation used shall be of very high quality, details of which shall be furnished in the technical offer.

5.4.2. The instrument security factor for metering core shall be low enough but not greater than 5 at lower ratio. This shall be demonstrated on metering core in accordance with the procedure specified in relevant IS/IEC

5.4.3. Primaries shall be wound or bar type, rigid, high conductivity grade copper conductor. Unavoidable joints on the primary conductor shall be welded type, preferably lap type. The current density at any point shall not exceed 1.6 A/sq. mm.

5.4.4. Suitable insulated copper wire of electrolytic grade shall be used for CT secondary winding. Multi ratio in CT shall be achieved by reconnection of secondary winding tapping.

5.4.5. Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The stud, nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.

5.4.6. The CTs shall be resin/epoxy cast. Contact tips on primary terminals shall be silver plated. Correct polarity shall be invariably marked on each primary and secondary terminals.

5.4.7. Details of CTs :

i. IS : 16227-2 / IEC 61869 Part I & II

ii. Insulation level : 12/28/75 kV

iii. Class of Insulation : Class B

iv. Short time current : 21 kA for 3 Sec

v. CT Details Incomer

a. Ratio 800-400/5-5A

vi. Class of accuracy :

a. Core I 0.2

b. Core II 5P10

vii. Purpose of each core :

a. Core I Metering

b. Core II Protection

viii. BURDEN :

a. Core I 2.5 VA

b. Core II 2.5 VA

5.5. POTENTIAL TRANSFORMER :

5.5.1. Potential transformers shall be single phase units connected to the line side in the respective incomer. H.V side shall be connected in star formation and L.V. side in star/open delta formation. Three numbers of HRC fuses of suitable rating shall be provided for HV side.

5.5.2. PT may be provided in a separate compartment. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed.

5.5.3. P.T. shall be epoxy/resign cast. Contact tips of primary/secondary contacts shall be silver plated. Correct polarity shall be distinctly marked on primary and secondary terminal

5.5.4. Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The stud, nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.

5.5.5. Details of PTs :

i. IS: 16227 Part I & III / IEC 61869 Part I & II

ii. Insulation level : 12/28/75 kV

iii. Class of Insulation : Class B

iv. Rated voltage factor : 1.2 continuous & 1.5 for 30 Sec.

v. Ratio :

$$\frac{11KV/\sqrt{3}}{110V/\sqrt{3}}$$

vi. Burden : Core I - 50 VA

vii. Class of accuracy: Core I - Class 0.2

viii. Purpose : Core I - Metering

ix. Connection : Star/Star

x. Each secondary core will be protected by suitable MCB.

5.6. CUBICLE :

The switchgear outer enclosure cubicle (panel) shall be made of CRCA sheet of thickness not less than 2 mm and shall be free standing floor mounting indoor type. The inner tank shall be made of stainless steel tank with 3 mm thickness. There shall be sufficient reinforcement to have level surfaces resistance to vibration and rigidity during transportation & installation. The compactness of the CB shall be made use of by the designer to make the switchgear panels as compact as possible. Cubicle shall be dust, moisture & vermin proof, and shall provide degree of protection not less than IP54 in accordance with IS 12063/1987. The cubicle shall be designed such that in both the test and isolated position of the CB truck, the front cover of the cubicle shall remain closed.

5.6.1. Design & construction of the switchgear panel shall be of the highest order. All sheet steel work shall be treated as per the seven tank powder coating process thickness of 80 microns. For the final coat (stowed) color shade of DA/dove grey to shade No. 694/632 as per IS:5 shall be used. The panels after final powder coating shall present an aesthetically pleasing appearance, free of any dent or uneven surface.

5.6.2. Two separate earthing terminals shall be provided in each panel and shall be connected to the earth bus within the panel. The earth bus shall be of copper and shall have adequate cross sectional area.

5.6.3. Each of the Switchgear panel shall be of unitised construction with all necessary accessories like end covers etc. However, the design shall allow for extension on both sides without limit. Busbar design shall be such that panel to panel interconnection can be carried out without difficulty as and when required.

5.6.4. Explosion vents of suitable design shall be provided on the roof sheet of the busbar/cable/CT's chambers so as to enable discharge of explosive gases from inside during a flashover. However, the provision of explosion vent shall not affect the degree of protection/vermin proofing of the panel.

5.6.5. Power cable Compartment :

5.6.5.1. Power cable compartment shall be provided at the rear of the switchgear panels and shall be suitable for cable entry from the bottom cable trenches. Rear bottom plates of the cable compartment shall be fitted with removable gland plates of adequate size for fixing the cable glands.

5.6.5.2. Cable compartments for the incomer shall be suitable for terminating 2 Nos. of 3x400 sq.mm XLPE cables and that for feeder shall be suitable to accommodate 2 Nos. of 3x400 sq.mm. XLPE cables. Copper terminator strip of suitable size shall be provided for termination of cables and shall have adequate height inside to accommodate the heat shrinkable type indoor cable termination. Cable compartment shall be robust enough & self supporting. The design shall be such that the weight of the power cable within the compartment shall not cause direct pressure on the CT studs. Suitable clamping arrangement shall be provided at the bottom of the cable compartment. Each power cable shall be terminated independently.

5.6.6. CONTROL WIRING :

5.6.6.1. All wiring shall be carried out with 1100 volts FRLSH grade single core, multistrand flexible tinned copper wires with PVC insulation. The conductor size shall 2.5 sq mm (minimum) for circuits. Wiring trough may be used for routing the cables. Wire numberings and colour code for wiring shall be as per IS:5578/1984. The wiring diagram for various schematics shall be made on thick and durable white paper in permanent black ink and same should be encased in plastic cover, thermally sealed. It should be kept visibly in a pocket of size 350 x 400 mm of MS sheet of 1 mm thickness,

on the interior surface of the door of C & R Panel.

5.6.6.2. All front mounted as well as internally mounted items including MCBs shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation.

5.6.6.3. Further it shall be ensured that any control wiring if at all routed through the HT chamber is properly insulated and provided with metallic barriers to prevent damages due to heat.

5.6.7. Wiring and control wiring terminals :

5.6.7.1. Terminal blocks shall be of clip-on design made out of non-trackable insulating material of 1100 V grade. All terminals shall be stud type, with all current carrying and live parts made of tinned plated brass. The studs shall be of min 4 mm dia brass. The washers, nuts, etc. used for terminal connectors shall also be of tinned plated brass.

5.6.7.2. The terminal connector/blocks shall be disconnecting type terminal connectors with automatic shorting of CT secondary terminals shall be provided in CT secondary circuit. All other terminal connectors shall be Non- disconnecting type. Terminal should be shock protected in single moulded piece. Terminal block should have screw locking design to prevent loosening of conductor.

5.6.7.3. At least 20% spare terminals shall be provided. All terminals shall be provided with ferrules indelibly marked or numbered and identification shall correspond to the designations on the relevant wiring diagrams. The terminals shall be rated for adequate capacity which shall not be less than 10 Amps for control circuit. For power circuit it shall not be less than 15 Amps.

5.6.7.4. All front mounted as well as internally mounted items shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation. Labeling shall be on aluminium anodised plates of 1 mm thickness, letters are to be properly engraved.

5.6.7.5. All fuses used shall be of HRC type. The fuse base and carrier shall be plug-in type moulded case kitkat of backelite/DMC. All current carrying and live parts shall be of tinned/nickel plated copper. No fuse shall be provided on DC negatives and AC neutrals. Tinned copper links shall, however, be provided on DC negatives and AC neutrals.

5.6.8. All MCBs as per IS:8828/1993 (amended upto date) of adequate rating shall be used

5.7. CONTROL AND RELAY PORTION OF 11 kV INDOOR SWITCHGEARS :

5.7.1. Bill of materials :

5.7.1.1. The relays, meters and equipment as described below should be provided on the switchgear for each for incomer and feeder as follows:-

Sr. No.	**Description**	**Incomer**
1	Circuit label	1 No.
2	Vacuum Circuit Breaker 12 kV, 800 Amps, 21 kA	1 No.
3	Motor for spring charge	1 No.
4.	Starter with fuse and link for Motor.	1 No.
5.	Ammeter, 48x96 sq. mm	1 No.
6.	Ammeter selector switch	1 No.
7.	Voltmeter, 48x96 sq. mm	1 No.

8.	Voltmeter selector switch.	1 No.
9.	Digital Frequency Meter	1 No.
10	Control switch for circuit breaker.	1 No.
11	Local/Remote selector switch.	1 No.
12	Auto/Manual selector Switch.	1 No.
13	Indicating LED (Amber colour) for 'Trip Circuit Healthy'	1 No.
14	Push button for 'Trip circuit Healthy Test'	1 No.
15	Indicating LED (White colour) for 'spring charged'	1 No.
16	Indicating LED (Red colour) for C.B. 'ON"	1 No.
17	Indicating LED (Green colour) for C.B. 'OFF"	1 No.
18	Indicating LED for Auto Trip	1 No.
19	Mimic diagram section	1 set
20	Numerical non-directional combined 3O/C+1E/F relays (IDMT 3-sec relays.)	1 set
21	Numerical High Speed Master Trip Relay	1 set
22	TOD with DLMS Energy Meter with RS 232 port as per MSEDCL approved	1 No
23	Single phase Current Transformer 800-400/5-5 Amp	3 Nos.
24	Single phase Potential Transformer	3 Nos.
25	Alarm scheme consisting of alarm relay(s), indicating LED and Accept/Reset push button(s)	-
26	Alarm bell/hooter	-
27	Voltage selection Scheme consisting of auxiliary relays and PT-1/PT-2 fail indicating LEDs.-	-
28	Space heater along with MCB	1 set
29	Thermostat	1 No.
30	Toggle switch for Heater	1 No.
31	Cubicle illumination lamp alongwith door operated control switch.	1 set
32	Power plug alongwith control switch.	1 set
33	Wiring alongwith MCBs, terminal blocks and terminal connectors	1 set

Scheme features :

5.7.1.2. Trip circuit supervision scheme as per clause no. 5.3.14.7 shall be provided for each circuit breaker.

5.7.1.3. When two or more incomers are required at one station, suitable voltage selection scheme to select the correct PT supply will be essential . Voltage selection scheme offered shall be suitable to select (automatically) the PT supply as follows

i. Both incomers 'ON' and both PTs healthy- PT supply from respective incomer shall feed all circuits in that section.

ii. Both incomers 'ON' and one PT fails : PT supply shall change over, provided the bus-section breaker is closed.

iii. One incomer out, P.T. supply shall change over, provided the bus-section breaker is closed.

5.7.1.4. PT supply to all the panels including the incomer shall be routed through the voltage selection scheme. When one of the PTs fails, the same shall be indicated automatically by the respective PT fail indicating LED. All necessary relays/contacts for above schemes shall be accommodated in empty chamber of adopter panel inside front door.

5.8. SUPERVESORY C & R PANEL :

5.8.1. The The operator's supervisory control panel should include following facilities.

i. Mimic diagram depicting the bus and positions of breakers for the panel on the Switchgear Board.

ii. Discrepancy switches for remote closing and tripping of the breaker on the Board.

iii. Flasher relay for discrepancy switch suitable for 24/30 V DC.

iv. Repeat annunciation system both visual and audio i.e. alarm bell with accept, reset & LED test push buttons.

v. Indication for 'spring charged' status.

vi. HT Static tri-vector TOD Energy meter (MSEDCL approved & tested) for measurement of voltage, current, PF, kW, KVA, KVAr, kWh, KVAh, Maximum demand in KVA for 15/30 minutes interval- one for each circuit breaker as per MSEDCL latest technical specification .

vii. Test Terminal Block for each metering equipment.

viii. All the control cables, connectors, accessories, etc. for connecting the control desk to the switchgear Board for ready connection and commissioning. (distance between the switchgear board and control desk should be 100 meters approx.)

ix. Space heater with thermostat and toggle switch.

Annunciators :

x. One No. of 8 Window annunciators suitable for the visual and audible alarm annunciation shall be provided on the supervisory control desk for following. These shall be micro processor based units using bright LEDs.

xi. Annunciator facia units shall have translucent plastic windows for each alarm point.

xii. Annunciator facia plate shall be engraved in black lettering with respective alarm inscription as specified. Alarm inscriptions shall be engraved on each window in not more than three lines and size of the lettering shall be about 5 mm. The inscriptions shall be visible only when the respective facia LED is glow.

xiii. Annunciator facia units shall be suitable for flush mounting on panels. Replacement of individual facia inscription plate and LED shall be possible from front of the panel.

xiv. Annunciator shall be provided with 'Accept', 'Reset' and 'Test' push buttons, coloured red, yellow and blue respectively.

xv. Special precaution shall be taken by the supplier to ensure that spurious alarm

conditions do not appear due to influence of external magnetic fields on the annunciator wiring and switching disturbances from the neighbouring circuits within the panels.

xvi. In case 'RESET' push button is pressed before abnormality is cleared, the LEDs shall continue to glow steady and shall go out only when normal condition is restored.

xvii. Any new annunciation appearing after the operation of 'Accept' for previous annunciation, shall provide a fresh audible alarm with accompanied visual, even if the process of "acknowledging" or "resetting" of previous alarm is going on or is yet to be carried out.

xviii. Provision for testing healthiness of visual and audible alarm circuits of annunciator shall be available.

Mounting	Flush	
No. of facia windows	8	
No. of windows per row	4	
Supply voltage	24/30 V DC	
No. of LEDs per window	2	
Lettering on facia plate	Properly engraved	
8 Window Annunciation Scheme to indicate following functions for Incomer & Outgoing Feeder		
1	Main protection (O/C) Trip for incomer	1 no.
2	Main protection (E/F) Trip for incomer	1 no.
3	Main protection (O/C) Trip for incomer	1 no.
4	Main protection (E/F) Trip for incomer	1 no.
5	Spare	1 no.
6	Spare	1 no.
7	Spare	1 no.
8	Spare	1 no.

The operator's supervisory C & R panel be made of sheet steel of thickness not less than 2 mm. and shall be free standing floor mounting indoor type. The desk should be dust moisture and vermin proof. It should be elegant in appearance and should be treated and powder coated as detailed in clause No.5.1.8.2.

5.8.2. The desk should be modular in construction. Each module should be accommodated controls, indications and metering equipment for feeder breakers and one module for the incomer & feeder.

6.0 <u>TESTS</u> :

6.1. Type Tests :

6.1.1. The equipment offered in the tender should have been successfully type tested at NABL laboratories or any international accredited laboratories for following tests in line with the relevant IEC/IS standard and technical specification, within the last 5 (five) years from the date of offer. The bidder shall be required to submit complete set of the

following type test reports alongwith the offer.

A. Switchgear Panel (with circuit breaker installed) :

a. Lightning Impulse Voltage withstand Test

b. Out of phase making & breaking test

c. HV dry 1 min power frequency withstand test

d. Short time and peak withstand current test

e. Short circuit test with basic duties

f. Single phase breaking capacity test.

g. Cable charging breaking current test

h. Temperature Rise test

i. Internal Arc test for as IEC 62271-200

B. Circuit Breaker :

a. Mechanical Endurance Test (M2 Class)

C. Current Transformer :

a. Short Time Current Test

b. Impulse Voltage Withstand Test

c. Power frequency withstand(Dry and Wet) test

d. Temperature Rise Test

e. Partial Discharge Test

f. Determination of errors and dimension test

D. Potential Transformer :

a. Impulse Voltage Withstand Test

b. Temperature Rise Test

c. Power frequency (Dry & Wet) withstand test

d. Partial Discharge Test

e. Accuracy Class

E. Switchgear Panel

a. IP 54 Test

6.1.2. In case these type tests are conducted beyond five years, the said type tests shall be carried out as per the relevant IS/IEC standard by the successful bidder at NABL or international accredited laboratories in presence of purchaser's representative free of cost before commencement of supply. The undertaking to this effect should be furnished along with the offer without which the offer shall be liable for rejection.

6.1.3. If above tests are carried out on higher capacity of offered equipment, then the offer is considered for placement of order. However, successful bidders have to carry out the said type tests on offered type equipment before commencement of supply at their own expense.

6.1.4. Bidders have to submit a set of above type test reports with the technical bid. Original type test reports have to be made available for verification.

6.2. Acceptance and Routine Tests :

6.2.1. All acceptance and routine tests as stipulated in relevant IS/IEC shall be carried out by the supplier in the presence of purchaser's representative without any extra cost to the purchaser.

6.2.2. After finalization of the program of type/acceptance/routine testing, the supplier shall give three weeks advance intimation to the purchaser, to enable him to depute his representatives for witnessing the tests.

7.0 INSPECTION :

7.1. The inspection & required tests shall be carried out by the Purchaser at any stage of manufacture. The successful bidder/tenderer shall grant free access to the purchaser's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser, shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

7.2. The supplier shall keep the purchaser informed in advance, about the manufacturing program so that arrangement can be made for stage inspection.

7.3. The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the purchaser informed, in advance, about such testing program.

8.0 QUALITY ASSURANCE PLAN :

8.1. The bidder/tenderer shall invariably furnish following information alongwith his offer, failing which his offer shall be liable for rejection. Information shall be separately given for individual type and current rating of circuit breaker/CTs/PTs/Panel mounting & accessories.

i. Statement giving information about names of sub-suppliers, list of testing standards, list of tests normally carried out for bought out item.

ii. Copies of test certificates in respect of following bought out items.

a. Vacuum Interrupter.

b. Insulators

c. Bus Bar Material

d. Instrument transformers.

e. Terminal connectors

iii. List of areas in manufacturing process, where stage inspection are normally carried out by the bidder/tenderer for quality control and details of such tests and inspections.

iv. List of testing equipment available with the bidder/tenderer for final testing of breakers vis- a-vis the type, special, acceptance and routine tests specified herein.

8.2. The successful tender shall submit the routine test certificates of bought out accessories at the time of routine testing of the fully assembled breaker for the goods manufactured within purchaser's country. The supplier shall also submit the central excise passes for the raw material at the time of routine testing of the fully assembled breaker.

9.0 PERFORMANCE GUARANTEE :

All equipment supplied against this specification shall be guaranteed for a period of 66 months from the date of receipt at the MSEDCL Substaion/ IUCAA or 60 months from

the date of commissioning, whichever is earlier. However, any engineering error, omission, wrong provision, etc. which do not have any effect on the time period shall be attended to as and when observed/pointed out without any price implication.

10.0 DOCUMENTATION :

10.1. After receipt of letter of Award /work order, the successful bidder/tenderers shall submit 3 sets of complete GA drawings alongwith detailed bill of materials for approval to the IUCAA and Chief Engineer, (Testing), 5th floor, Prakashgad, MSEDCL, Bandra (E). Space for stamp and signature of approving authority shall be kept at right hand bottom corner above name block. If any modifications are required on these, the same will be conveyed to the supplier who shall modify the drawings accordingly and furnish final drawings for approval. **In no case delivery extension will be granted for any delay in drawing approval.**

10.2. The manufacturing of the equipment shall be strictly in accordance with the approved drawings and no deviation will be permitted without the written approval of the Distribution Department. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the suppliers risk.

10.3. After approval of the drawings and bills of materials, the suppliers shall submit detailed packing lists for approval. After approval, copies of these packing lists shall be forwarded to the respective consignees. Copies of packing lists shall also be submitted to the IUCAA alongwith the bills for payment.

10.4. Six set of final drawings, bill of materials, wiring schedules, technical literature and commissioning manuals shall invariably be forwarded to the consignee alongwith the each panel consignment, and shall be listed out in the packing list when submitted for approval. All drawings shall preferably be of A3 size. No drawing of width more than 35 cm will be acceptable.

10.5. In case the supplier fails to furnish contractual drawings and manuals even at the time of supply of equipment, the date of furnishing of drawings/manuals will be considered as the date of supply of equipment for the purpose of computing penalties for late delivery.

10.6. List of drawings to be submitted alongwith the offer are as under :

i. GA of 11KV VCB (Indoor Type) Switchgear Panel Board.

ii. Typical single line diagram for11KV VCB (Indoor Type) Switchgear Panel Board .

iii. Sectional view of incomer.

iv. GA of Circuit Breaker truck.

v. GA of Current Transformer

vi. GA of Potential Transformer.

vii. GA Drawing for Control Desk.

viii. Bill of material for complete switchgear.

ix. Technical Details of Switchgears.

10.7. Successful bidder/tenderer shall furnish all above drawings and following additional drawings for approval before commencement of supply.

i. Foundation details for 11 kV Panel Switchgear.

ii. Equipment door layout for incomer.

iii. Schematic Diagram for incomer section of Switchgear

iv. Protection Circuit for incomer section of Switchgear

v. DC control circuit for incomer.

vi. Metering circuit for incomers.

vii. Annunciator and Alarm scheme.

viii. PT supply change over scheme.

ix. Terminal block details for incomer.

x. Cross section view for CTs.

xi. Name Plate & Connection diagram for CTs.

xii. Cross section view for PTs.

xiii. Name Plate & Connection diagram for PTs.

xiv. Schematic Diagram for Control Desk.

xv. GA Drawing for Chair.

xvi. GA Drawing for Sliding Door Unit.

11.0 PACKING AND FORWARDING :

11.1. The equipment shall be packed in crates suitable for vertical/horizontal transport as the case may be and the packing shall be suitable to withstand handling during the transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit, due to improper and inadequate packing. The easily damageable materials shall be carefully packed and marked with the appropriate caution symbols. Wherever necessary, proper arrangement for lifting, such as lifting hooks etc. shall be provided. Any material found short inside the packing cases shall be supplied by the supplier without any extra cost.

11.2. Each consignment shall be accompanied by a detailed packing list containing the following information :

a. Name of the consignee

b. Details of consignment.

c. Destination

d. Total weight of consignment

e. Sign showing upper/lower side of the crate.

f. Handling and unpacking instructions.

g. Bill of material indicating contents of each package.

11.3. All the equipment covered in this specification shall be delivered to the MSEDCL Substation at Pune University Campus, Ganeshkhind, Pune- 411007 or as will be intimated to the successful bidder/tenderers. The equipment shall be delivered to these substation/store only by road transport, and shall be suitably packed to avoid damages during transit in the case of indigenous supplies.

11.4. The bidder/tenderer shall be delivered the various equipment, and shall stick-on to the committed delivery. The delivery period will be counted from the date of issue of detailed work/purchase order. It may clearly be noted that the delivery period will under no circumstances be linked up with other formalities like drawing approval, etc. It is therefore the responsibility of the successful bidder/tenderer to submit the drawings, bill of materials, packing lists etc. in time and get these approved by the concern IUCAA and MSEDCL authorities.

12.0 SUPERVISORY ERECTION & COMMISSIONING :

The erection and commissioning of the equipment covered by this specification with necessary power and control cabling/wiring will be carried out by the bidder/tenderer under the supervision of MSEDCL and IUCAA authorities.

13.0 <u>INFORMATION TO BE FILLED IN & FURNISHED INVARIABLY BY THE BIDDER/TENDERERS :</u>

13.1. The offers shall be complete in all respects, failing which the same are liable for rejection. In the bill of materials for each items, the bidder/tenderer shall state the type designation and make of each item/equipment. Unit prices of all items and sub-components shall be quoted. The list of items for which unit prices are quoted (without the price part) shall be submitted alongwith the technical offer. Guaranteed technical particulars for various equipment shall be elaborate and complete in all respects. It may be noted that the technical evaluation of the tender is made mainly based on the guaranteed technical particulars furnished alongwith the technical offer. Technical offer shall be submitted in triplicate and each set shall include all the necessary particulars including the technical literature on various equipment.

15.0 Qualifying Requirement : As per tender.

16.0 Final Inspection :

16.1. MSEDCL official from testing and inspection wing / divisional engineers and IUCAA engineers will be carried out the final testing and inspection of equipments.

17.0 Following documents shall be submitted along with offer :

17.1. Test certificates of Bus Bar for STC rating or undertaking in this respect.

17.2. Quality Assurance Plan.

17.3. Names of sub-suppliers.

17.4. List of testing equipment available with the bidder/tenderer for final testing of breakers.

17.5. Following Type Test Reports.

A. Switchgear Panel (with circuit breaker installed)

a. Lightning Impulse Voltage withstand Test

b. Out of phase making & breaking test

c. HV dry 1 min power frequency withstand test

d. Short time and peak withstand current test

e. Short circuit test with basic duties

f. Single phase breaking capacity test.

g. Cable charging breaking current test

h. Temperature Rise test

B. Circuit Breaker

a. Mechanical Endurance Test

C. Current Transformer

a. Short Time Current Test

b. Impulse Voltage Withstand Test

c. Temperature Rise Test

D. Potential Transformer

a. Impulse Voltage Withstand Test

b. Temperature Rise Test

E. Control & Relay Panel

a. IP Test

17.6. Copies of test certificates in respect of following bought out items.

a. Vacuum Interrupter.

b. Insulators

c. Bus Bar Material

d. Instrument transformers.

e. Terminal connectors

18.0 GENERAL REQUIREMENTS FOR PROTECTIVE,MEASURING & CONTROL EQUIPMENTS :

Principal requirements of protective relays, metering equipment, auxiliary relays breaker control switches etc. are as follows:

18.1 High Speed Master Trip Relay hand reset type conforming IS: 3231

Aux. voltage	24/30 V, DC
Coil rating	24/30 V.DC, Voltage band for satisfactory operation – 50 to 120 % of rated voltage.
Operating time	10 milli sec nominal at rated voltage
Burdon of relay coil	low burdon 40 watt at rated voltage
Contact configuration	3 NO + 2 NC combination with additional hand reset coil cut of contact (seal in intact)
Contact ratings	
Make and carry	A.C. – 1250 VA with max 5 amp & 660 volts, D. C. – 1250 w dc with max 5 amp & 660 Volts
Make and carry for 3 sec	A.C. – 7500 VA with max 30 amp & 660 volts, D.C. – 7500 W dc with max 30 amp & 660 volts
Break	A.C. – 1250 VA with max 5 amp & 660 volts, D.C. – 100 W resistive 50 watt inductive with max 5 amp & 660 volts
Insulation	2 KV RMS , 50 Hs for 1 min. 2.5 KV/ 1 sec between all terminals & case as per IS 3231 1 KV RMS , 50 Hz for 1 min. across open contact
Operating Temp	-10 degree C to 55 dg C
Operation indication	Mechanical red colour flag

18.2 a. Ammeter :

Each circuit one ammeter and associated selector switch shall be provided.

Mounting	Flush
Size	48 x 96 sq. mm. case

Response Time	1 second
Operating Temperature	Up to 55°C
Dielectric Strength	2 kV RMS for 1 minute
Frequency	50 Hz
Operating Current	5 A from CT Secondary.
Type	Panel Mounting with $3^1/_2$ Digital Display

18.2 b. Ammeter selector switch :

Ammeter Selector switch shall be a four-position (3 way with off) rotary type with R, Y, B and 'OFF' positions marked clearly on 48x48 mm brushed aluminum plate with black handle. Switch should be single hole mounting and not screw mounting. Switches should have finger touch proof terminals. Terminal wire should be inserted from the side of the switch terminal. Terminal screw must be captive to avoid misplace during maintenance.

Rated Insulation Voltage	1100 V
Rated Impulse withstand voltage	6 kV
Rated Operational Current	12 A

18.3 a. Volt Meter :

Mounting	Flush
Size	48 x 96 sq. mm. case
Response Time	1 second
Operating Temperature	Up to 55°C
Dielectric Strength	2 kV RMS for 1 minute
Auxiliary Supply	110 V
Frequency	50 Hz
Operating Voltage	110 V from PT Secondary.
Type	Panel Mounting with $3^1/_2$ Digital Display

18.3 b. Volt Meter selector switch :

Voltmeter Selector Switch shall be seven position type (6 way & off) with 3 Phase to Phase and 3 phase to neutral position marked clearly on 48x48 brushed aluminum plate with black handle. Switch should be single hole mounting and not screw mounting. Switches should have finger touch proof terminals. Terminal wire should be inserted from the side of the switch terminal. Terminal screw must be captive to avoid misplace during maintenance.

Rated Insulation Voltage	1100 V
Rated Impulse withstand voltage	6 kV
Rated Operational Current	12 A

18.4. Space Heater

Capacity	80 Watts
Voltage	240 V AC
Type	Strip type

18.5. Thermostat

Voltage	240 V AC
Range	30-90 Deg.C

18.6. Contactor for antipumping duty

Contacts	2 N/O + N/C
Coil voltage	24/30V DC.

18.7. L/R. Switch

4 way, 2 positions stay put handle

Contacts	2 contacts to close in each position

18.8. Auxiliary contactor

Contacts	ARR 2 N/O+2 N/C
Auxiliary voltage	24/30 V DC

18.9. Auto manual selector switch

Stay put type, pistol grip handle, 2 contacts to close in each position

Auxiliary voltage	24/30 V DC

18.10. Micro switch

Voltage	240 V AC
Contacts	1 N/C

18.11.. D.C. snaper switch with blow out magnet

Type	EX 110 of Elmex or equivalent
Current	5 Amps.

18.12. Discrepancy type control switch suitable for remote control of circuit breaker

Bulb voltage	24/30 V DC

18.13. Digital Frequency Meter.

Mounting	Flush in 96 sq.mm. case
Size	96 mm x 96 mm x 70 mm
Range	45 Hz to 55 Hz
Dielectric Strength	2 kV RMS for 1 minute

Power Consumption	Less than 6 VA
Type	Electronic 4 Digit Digital frequency meter.
Display	Seven segment red colour LED Display with 0.5” height
IS Reference	IS:1248

18.14 Terminal Connector

Material	Nickel plated Brass
Size of Stud	Minimum 4 mm dia
Current capacity	
a. Normal	10 amps
b. breaking	4 amps
Insulation	1100 V/3 kV of 1 min

18.15 : 1 O/C + 1 E/F Numerical Protection relay with IEC -103 Communication Protocol

1	Elements	1 O/C + 1 E/F + High set for both O/C & E/F separately
2	CT Secondary input current to relay	Selection for 1 A / 5 A through software & shall be possible at site
3	Operating Characteristics selectable	1. IDMT – 3Sec. 2. IDMT- 1.3sec. 3. Very Inverse 4. Extremely Inverse 5. Definite time 6. User defined inverse 7. Long time inverse
4	Auxiliary supply	18 V to 250 V DC/ AC
5	Instantaneous O/C Plug setting	5 % to 200% in steps of 1%
6	Instantaneous E/F Plug setting	5 % to 200 % in steps of 1 %
7	High Set O/C setting	5 % to 2500 % in steps of 1 %
8	High Set E/F setting	5% to 2500 % in steps of 1 %
9	Time multiplier setting for O/C & E/F	0.01 sec to 10.0 in steps of 0.01.
10	Memory storage for fault information	Storing of latest 100 events with date & time stamping fault amplitude, type of fault, faulty phase with FIFO feature (available on display & shall be retrievable through software)

11	Thermal overload function	To protect cables & transformers from the effects of long-term degradation on overloading, the relay shall have the thermal overload setting as per IEC.
12	Auto reclose function	Four shot, three phase auto reclose facility with independent time setting shall be available
13	Pre-Logic	User programmable facility to achieve customized functions, create logics with external information through DI/DO etc.
14	Mounting	1) All relay connections should be from back side. 2) Relay should be DRAWOUT type model with automatic shorting of CT circuit at a time of removal relay from casting
15	LED indications	6 programmable LEDs & 1 LED for healthy indication. Color of LED 01– Green 02- Yellow 03 to 07 -Red
16	Push buttons	Reset push button for resetting the relay manually. Functional keys should be available for separate trip command.
17	Output contacts	The relay shall 6 NO + 2 changeovers potential free and heavy-duty Programmable contacts.
18	Contact rating	Continuous carry -5A, Make & Carry for 0.5 sec-30A Make & a Carry for 3 sec-15 A
19	Self-diagnosis feature	Relay should have self-diagnosis for its healthiness of functioning & should show indication in case of its failure
20	Password protection	The relay should have provision password protection for the applied settings
21	Selectivity of primary CT current	The relay should have facility to select the primary CT current from 50A to 1600A in steps of 50A. The relay should display the CT primary current.
22	Operational indicator	LED

23	IS reference	IEC 60255, IEC 103, IS 3231 amended up to date
24	LCD Display	Relay shall have minimum 2 line LCD backlit display
25	Features	Minimum 2 setting groups (3 phase and 1 phase)
26	Disturbances recorder	The DR shall capture waveforms of analogue channels, and all the DI channels & the DO channels. It shall be possible to configure and capture in DR, all the internal functions like over current start etc. for better analysis of the fault information. It shall have a minimum storage of 10 records of 2sec each(total memory 20sec).It shall have facility to record information prior to fault incidence with approx-trigger time setting of 25% (programmable).
27	Communication port	Relay should have RS 485 communication port compatible for integration with SCADA RTU
28	Diagnostic Port	Relay Should have diagnostic port for configuration /downloading
29	Communication protocol	1) IEC -60870-5-103

Note :

1. CT/PT connectors on relay shall be screw type
2. Relay shall communicate following data to RTU -
    a. 3 phase online current voltages
    b. Trip events after faults with time stamp
    c. Pick up events after fault with time stamp
    d. Recorded fault currents
3. Relay shall accept time synchronization from SCADA RTU periodically.
4. Relay shall be supplied with license software for relay setting, retrieving DR, event log, trip log shall be supplied by bidder free of cost. Necessary multiuser/corporate license software is to be supplied to MSEDCL for installation on all Testing division PC's.

TECHNICAL SPECIFICATION FOR 11 kV, 630 A, MOTORISED SCADA COMPATIBLE RING MAIN UNIT

(4 Way (2+2) & 5 Way (2+3)) :

1.0 **Scope of Work :**

Supply , Installation , testing and commissioning of 11 kV, 630 A, Motorised SCADA Compatible 21 kA, Outdoor type 'RMU Panels' at MSEDCL Substation / IUCAA Campus. The scope of work is as follows –

1.12. The bidder shall be responsible for preparing the GTP/GA and/or shop drawings in accordance with the requirements of MSEDCL/PWD Electrical Inspector's office and/or any other relevant authority. The bidder will also have to also obtain all necessary sanctions and approvals from these authorities. All expenses related to approvals, sanctions, liaisoning, installations, or any other charges levied by local government bodies, MSEDCL, PWD, or any other relevant organization shall be borne entirely by the Bidder. No separate payment for these activities shall be made by IUCAA.

1.13. Getting permission from MSEDCL officials to carry out the work at MSEDCL Sub station.

1.14. Loading, Unloading and Installation of 11 kV Outdoor type RMU panels at MSEDCL Substation / IUCAA Campus.

1.15. Supply and laying of required control cables and complete testing and commissioning of RMU panels as per MSEDCL requirement.

1.16. Obtaining sanction for RMU panels, RMUs to be installed at MSEDCL Substation / IUCAA Campus and necessary charging permission from MSEDCL Officials and PWD Electrical Inspector's office. Successful commissioning of new VCB panel and hand it over to MSEDCL with proper approval & documentation.

1.6 This specification covers Design, Engineering, Manufacture, Assembly, Stage testing, Inspection, Testing before supply, packing and delivery to MSEDCL Substation at SPPU Campus, Ganeshkhind, Pune 411007. 11 kV Ring Main Units non extensible outdoor type comprising –

i) 11 kv, SF6 Motorised SCADA Compatible RMU - 2 numbers Load Break Isolators and two numbers Circuit Breakers.

ii) 11 kv, SF6 Motorised SCADA Compatible RMU - 2 numbers Load Break Isolators and three numbers Circuit Breakers.

The RMU to be supplied against this specification are required for vital installations where continuity of service is very important. The design, materials and manufacture of the equipment shall, therefore, be of the highest order to ensure continuous and trouble-free service over the years.

1.7 The RMU offered shall be compact, maintenance free, easy to install reliable, safe and easy to operate and complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

1.8 It is not the intent to specify herein complete details of design and construction. The offered equipment shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently

long life in service as per statutory requirements. In actual practice, notwithstanding any anomalies, discrepancies, omissions, in-completeness, etc. in these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.

1.9 The bidder /tenderer shall bind himself to abide by these considerations to the entire satisfaction of the purchaser/MSEDCL and will be required to adjust such details at no extra cost to the purchaser over and above the tendered rates and prices.

1.10 Tolerances:

Tolerances on all the dimensions shall be in accordance with provisions made in the relevant Indian/IEC standards amended upto date and in this specification. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

1.11 Recommended spares:

The tenderer shall furnish in his offer a list of recommended spares with unit rates for each set of equipment that may be necessary for satisfactory operation and maintenance of circuit breaker and Isolators for a period of 5 years. The purchaser reserves right of selection of items and quantities of these spares to be ordered. The cost of such spares shall not be considered for tender evaluation.

1.12 Erection and maintenance tools :

The tenderer shall submit a list and unit rates of all the special tools, equipment and instruments required for erection, testing, commissioning and maintenance of the equipment. The purchaser shall decide the quantity of tools to be ordered. Prices of these tools shall not be considered for tender evaluation. However, the list of necessary tools/equipment which will be supplied free of cost with each Ring Main Unit may be furnished separately.

2.0 SERVICE CONDITIONS:

2.1 System particulars:

2.1.1	Nominal system voltage	...	11 kV
2.1.2	Corresponding highest system voltage	...	12 kV
2.1.3	Frequency	...	50 Hz ± 3%
2.1.4	Number of phases	...	3
2.1.5	Neutral earthing	...	Solidly Grounded
2.1.6	Fault level (minimum)	...	21 kA for 3 sec for 11kV

2.2 Equipment supplied against the specification shall be suitable for satisfactory operation under the following tropical conditions:-

2.2.1	Max. ambient air temperature	:	50 Deg. C
2.2.2	Max. relative humidity	:	100 %
2.2.3	Max. annual rainfall	:	1450 mm
2.2.4	Max. wind pressure	:	150 kg/sq.m.

2.2.5 Max. altitude above mean sea level : 1000 mtrs.

2.2.6 Isoceraunic level : 50

2.2.7 Seismic level (Horizontal acceleration) : 0.3 g.

2.2.8 Climatic Condition : Moderately hot and humid tropical climate conducive to rust and fungus growth.

2.2.9 Reference Ambient Temperature for temperature rise : 50 deg C

Note : The climatic conditions are prone to wide variations in ambient conditions and hence the equipment shall be of suitable design to work satisfactorily under these conditions.

3.0 APPLICABLE STANDARDS :

The RMU Switchgear shall comply with the requirements stated in the following standards and specifications amended upto date :

IEC 62271- 200/ IEC 60 298/ IS 12729 : 1988	General requirement for Metal Enclosed Switchgear
IEC 265	Medium Voltage Switches
IEC 60129/ IEC 62271 – 102/ IS 9921	Alternating Current disconnectors (Load Break Isolators) and earthing switch
IEC 62271-100/IEC 60056/ IS 13118 : 1991	Specification for alternating current breakers
IEC 62271 – 1/ IEC 60694	Panel design, SF6/ Vacuum Circuit Breakers
IEC 60044 –1/ IEC 60185/ IS 2705:1992	Current Transformers
IEC 60265/IS 9920 : 1981	High voltage switches
IEC 376	Filling of SF6 gas in RMU
IEC 60273/ IS : 2099	Dimension of Indoor & Outdoor post insulators with voltage > 1000 V
IEC 60273/ IS 13947 (Part 1)	Degree of protection provided by enclosures for low voltage Switchgear and control gear.
All Indian Electricity Rules/ Bills amended upto date applicable for clearances, safety and operation of the equipment.	

The RMU meeting with the requirements of any other authorities standards, which ensures equal or better quality than the standard mentioned above shall also be acceptable. If the equipments, offered by the bidder conform to other standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule. In case of any difference between provisions of these standards and provisions of this specification, the provisions contained in this specification shall prevail. One copy of such standards with authentic English Translations in Hard Copy shall be furnished along with the offer.

4. General Requirement:

The Ring Main Unit shall be installed at 11 kV junction points such as 1000 KVA distribution transformers centres to isolate faulty section. The RMU shall be both Non extensible/extensible. Two Load break isolators for incoming & outgoing cables and one Circuit breaker for transformer protection shall be enclosed in the main tank using SF6 gas as insulating and vacuum as arc quenching medium or SF6 gas as both insulating and arc quenching medium.
The main tank shall be stainless steel sheet of minimum 2mm thickness and robotically welded with a pressure relief arrangement.
Both the load break switches and circuit breaker shall be suitable for motorization in future
The total breaking time for transient fault should not exceed 40-60 mS (CB + Relay+ trip coil).

The main tank (Inner enclosure of Circuit Breaker & Load break Isolators assembly) and all Switchboard assembly shall be housed in a single compact metal clad suitable for both indoor/outdoor applications.

The design of enclosure for Switchgear, RMU & Switchboard housing shall be in accordance with IEC 298. The design of RMU shall be in accordance with the Specific Technical Requirement as given in the Annexure-I enclosed with the Specification. The switchgear and switchboard shall be designed such that the position of the different devices shall be visible to the operator on the front of switchboard and easy to operate and prevent access to all live parts during operation without the use of tools. There shall be no access to exposed conductors.

An absorption material such as activated alumina in the tank shall be provided to absorb the moisture from the SF6 gas to regenerate the SF6 gas following arc interruption. A temperature compensating gas pressure indicator offering a simple indication shall constantly monitor the SF6 insulating medium.

Sulphur Hexa Fluoride Gas (SF6 GAS):

The SF6 gas shall comply with IEC 376,376A and 376B and shall be suitable in all respects for use in RMUs under the stipulated service conditions. The SF6 shall be tested for purity, dew point air hydrolysable fluorides and water content as per IEC 376,376A and 376B and test certificate shall be furnished to the bidder indicating all the tests as per IEC 376 for each lot of SF6 Gas.

5.0 Configurations recommended:

The following configurations of RMUs are recommended:

1) Non extensible RMU with Two numbers of 630A vacuum circuit breakers for transformers protection upto 1000 KVA and two number of Load Break Isolators for network sectionalising with earth isolators.
2) Non Extensible RMU with Three numbers of 630A vacuum circuit breakers for transformers protection upto 1000 KVA and two number of Load Break Isolators for network sectionalising with earth isolators.

6.0 ENCLOSURE :

6.1.1 Outer Enclosure :

The RMU enclosure (Outer) shall be made up of GI/CRCA of 2 mm thickness thickness. The rating of enclosure shall be suitable for operation on three phase, three wire or 11 KV, 50 cycles,

A.C. System with short-time current rating of 21 kA for 3 seconds for supply with Panels. The complete RMU enclosure shall be of degree of protection **IP 54** (Main Door close) and **IP** 5**4** (Main Door open).

The enclosure shall provide full insulation, making the Switchgear insensitive to the environment like temporary flooding, high humidity etc. The active parts of the Switchgear shall be maintenance-free and the unit shall be minimum -maintenance.

The complete RMU unit shall be powder coating of Dark Grey Code 632 as per BS 381C. Each switchboard shall be identified by an appropriately sized label which clearly indicates the functional units and their electrical characteristics.

The RMU metal parts shall be made of high thickness high tensile steel which must be grit/short blasted, thermally sprayed with Zinc alloy (not for galvanised), phosphate and subsequently painted with Polyurethane based powder paint, the overall (including outer and inner paint layer), the thickness of paint layer shall be not less than 150 microns.

6.1.2 Inner Enclosure (Main tank)

The tank shall be robotically welded stainless steel sheet of minimum 2mm thickness. The tank shall be sealed and no handling of gas is required throughout the 25 years of service life. However, the SF6 gas pressure inside the tank shall be constantly monitored by a temperature compensating gas pressure indicator offering a simple go, no-go indication. The gas pressure indicator shall be provided with green pressure and red pressure zones. There shall be one Non – return valve to fill up the gas. The manufacturer shall give guarantee for maximum leakage rate of SF6 gas will be lower than 0.1 % / year. An absorption material such as activated alumina in the tank shall be provided to absorb the moisture from the SF6 gas to regenerate the SF6 gas following arc interruption. The degree of protection of the inner enclosure shall be IP 67.

Oil or Air filled Switchgear will not be considered. The temperature rise test shall be carried out on complete RMU unit and test reports shall be submitted with the offer.

The compact RMU Unit shall be provided with a pedestal made up of M.S. Angle to mount the unit on plain surface. The height of the bottom of cable box shall be 310 mm to provide the turning radius for the HT cable termination.

6.2 BUSBARS :

The three nos of continuous Busbars made up of EC grade tinned copper of rating current 630A shall be provided. The Short time rating current shall be 21 kA for 3 seconds for 11 kV. The Busbar connections shall Anti- oxide greased.

6.3 Load Break Switches (Isolators)

The Load Break Isolators for Incoming and Outgoing supply must be provided and the load break isolators are fully insulated by SF6 gas. The operating mechanism shall be spring assisted mechanism with operating handle for ON /OFF. Earth positions with arrangement for padlocking in each position. Also, independent manual operations with mechanically operated indicator. The earth switch shall be naturally interlocked to prevent the main and earth switch being switched „ON‟ at the same time. The selection of the main and earth switch is made by a lever on the facia, which is allowed to move only if the main or earth switch is in the off position. The load break isolators should have the facility for future remote operation. Each load break switch shall be of the triple pole, simultaneously operated, non automatic type with quick break contacts and with integral earthing arrangement. The rated current of Isolator shall be 630 Amps continuous at maximum ambient temperatures. No Derating shall be allowed. For the isolator at an Ambient temperature of 50°C, which means that Isolator rating should be 630 A maximum ambient temperature of 50 °C. The relevant type test report to prove the temperature rise below 55°C shall be submitted by the bidder with the offer.

6.4 EARTHING OF ISOLATORS AND DISTRIBUTION TRANSFORMER BREAKERS (EARTH SWITCH) :

The unit shall consist of a 630 Amp Tee Off spring assisted three position rotating arc type SF6 circuit breaker unit, with integral fault making/dead breaking earth switch, the function shall be naturally interlocked to prevent the main and earth switch from being switched `ON` at the same time and the CB not allowed to close in `Earth On` position. The selection of the main/earth switch lever on the fascia, which is allowed to move only if the main or earth switches in the off position. The lever may be padlocked in either the main or earth position.

The cables shall be earthed by an integral earthing switch with short-circuit making capacity, in compliance with IEC 129 standard. The earthing switch shall be operable through the main circuit mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action.

6.5 CIRCUIT BREAKER (SF6 or Vacuum media for arc quenching) :

The 3 Pole circuit breaker for the protection of Distribution transformers shall be enclosed in the main tank. The rated breaking and making current at rated voltage shall be as follows:

For 11 kV system : Rated breaking capacity shall be 21 kA for 3 second. Rated making current shall be 50 kA for 3 second

The manual operation of the circuit breaker shall not have an effect on the spring charging mechanism.

The circuit breaker shall be fitted with a mechanical flag, which shall operate in the event of fault occurrences. The breaker indications **ON** and **OFF** positions shall be indicated by suitable flag. For **ON** position indication by Red flag and **OFF** position indication by Green flag shall be provided.

The circuit breaker shall be operated by the same unidirectional handle or switch. The rated operating sequence shall be **O-3min-CO-3 min- CO**.

The protection on the circuit breaker :

The circuit breaker unit fitted with 3 Nos. protection CT"s (tape wound) of ratio 100-50A/1 A, 5P10 class, having low burden and trip coil and auxiliary switch assembly allowing the use of a **Self powered non directional IDMT (I**nverse Definite Minimum Time) **Over Current and Earth Fault Relays (Micro processor based)**. One Three Element Relay having two O/C elements and one E/F element shall be provided for this purpose. All these relays shall be of 3 seconds IDMT characteristics, the O/C elements current setting variable from 10% to 200% of CT secondary ratings, and the E/F elements having current setting variable from 10% to 40%. The protection curves and all other settings shall be adjustable from touch panel.

6.6 BUSHINGS :

All the bushings shall be of same height, parallel, on equal distances from the ground and protected by a cable cover. It is preferable to have bushings accessible from the rear side of the RMU.

6.7 CABLE BOXES :

All cable boxes shall be air insulated suitable for dry type cable terminations. The cable boxes at each of the two ring switches suitable HV cables of size 3C x 300 sq.mm and circuit breaker cable suitable up to 3C x 300 sq.mm. Necessary right angle Boot should be supplied to the cable terminations. Compound filled cable boxes are not acceptable. The cable box shall be arc resistant as per IEC 62271-200 amended upto date. The internal arc fault test on cable box shall

be carried out for 11 kV system for 21 kA for 1 second and for system for 16 kA for 1 second. The clearance between phase to phase and phase to earth shall be as per IEC 61243 – 5 amended upto date. The cable termination and gland arrangements shall be appropriate for the type and style of cables used at the time.

6.8 VOLTAGE INDICATOR LAMPS AND PHASE COMPARATORS :

The RMU shall be equipped with a voltage indication. There should be a facility to check the synchronization of phases with the use of external device. It shall be possible for the each of the function of the RMU to be equipped with a permanent voltage indication as per IEC 61958 to indicate whether or not there is voltage on the cables.

The capacitive dividers will supply low voltage power to sockets at the front of the unit, an external lamp must be used to indicate live cables.

Three outlets can be used to check the synchronization of phases with the use of an external device.

6.9 WIRING & TERMINALS :

The wiring should be of high standard and should be able to withstand the tropical weather conditions. All the wiring and terminals (including take off terminals wiring for future automation, DC, Control wiring), Spare terminals shall be provided by the contractor. The wiring cable must be standard single-core multi stranded, non-sheathed, Core marking (ferrules), stripped with non-notching tools and fitted with end sleeves, marked in accordance with the circuit diagram with printed adhesive marking strips.
All wiring shall be provided with single core multi-strand copper conductor wires with P.V.C insulation and shall be flame retardant low smoke type.

The wiring shall be carried out using multi-strand copper conductor super flexible FRLSH PVC insulated wires of 1.1 KV Grade for AC Power, DC Control and CT circuits. Suitable coloured wires shall be used for phase identification and interlocking type ferrules shall be provided at both ends of the wires for wire identification. Terminal should be suitably protected to eliminate sulphating. Connections and terminal should be able to withstand vibrations. The terminal blocks should be stud type for controls and disconnecting link type terminals for CT leads with suitable spring washer and lock nuts.

Flexible wires shall be used for wiring of devices on moving parts such as swinging Panels (Switch Gear) or panel doors. Panel wiring shall be securely supported, neatly arranged readily accessible and connected to equipment terminals, terminal blocks and wiring gutters. The cables shall be uniformly bunched and tied by means of PVC belts and carried in a PVC carrying trough.

The position of PVC carrying trough and wires should not give any hindrance for fixing or removing relay casing, switches etc., Wire termination shall be made with solder less crimping type of tinned copper lugs. Core identification plastic ferrules marked to correspond with panel wiring diagram shall be fitted with both ends of each wire. Ferrules shall fit tightly on the wire when disconnected. The wire number shown on the wiring shall be in accordance with the IS.375.

All wires directly connected to trip circuits of breaker or devices shall be distinguished by addition of a red colour unlettered ferrule.

Inter-connections to adjacent Panels (Switch Gear) shall be brought out to a separate set of Terminal blocks located near the slots or holes to be provided at the top portion of the panel.

Arrangements shall be made for easy connections to adjacent Panels (Switch Gear) at site and wires for this purpose shall be provided and bunched inside the panel. The bus wire shall run at the top of the panel. Terminal block with isolating links should be provided for bus wire. At least 10% of total terminals shall be provided as spare for further connections. Wiring shall be done for all the contacts available in the relay and other equipment and brought out to the terminal blocks for spare contacts. Colour code for wiring is preferable in the following colours.

Voltage supply : Red, Yellow, Blue for phases, Black for Neutral
CT circuits : Similar to the above
250 V AC Circuits: Black for both phases and neutral Earthing Green

The wiring shall be in accordance to the wiring diagram for proper functioning of the connected equipment. Terminal blocks shall not be less than 1100V grade and shall be piece-moulded type with insulation barriers.

The terminal shall hold the wires in the tight position by bolts and nuts with lock washers. The terminal blocks shall be arranged in vertical formation at an inclined angle with sufficient space between terminal blocks for easy wiring.

The terminals are to be marked with the terminal number in accordance with the circuit diagram and terminal diagram. The terminals should not have any function designation and are of the tension spring and plug-in type.

6.11 EARTHING :

The RMU outdoor metal clad, Switch Gear, Load break isolators, Distribution Transformer, R.S. Joists, M.S. Channels / M.S. Angles etc, shall be equipped with an earth bus securely fixed along the base of the RMU.

When several units of the RMU (Extra Isolators / Breakers) are mounted adjoining to each other, the earth bus shall be made continuous and necessary connectors and clamps for this purpose shall be included in the scope of supply. The size of earth busbar of **tinned copper flat** shall be as per IEC/IS standards and shall be fixed inside the **RMU.** Provision shall be made on end of RMU for connecting the earth bus to the earth grid by erecting suitable 2 earth pipes of 40 mm diameter MS rod of 3 meters in pits. Both the earth pipes are also to be connected in a grid formation. Necessary terminal clamps and connectors shall be included in the scope of supply.

6.12 TAKE OFF TERMINAL UNITS FOR FUTURE AUTOMATION :

The RMU should be provided with necessary take off terminal units for future automations. Remote operation of the RMU‟s line switches must be possible using motors fitted to the operating mechanism.

It shall be possible to fit the motors either directly in manufacturing plant or on site as and when required. Installation on site shall be possible with the RMU fully energised and manufacturer should provide detailed instructions for installation to the control mechanism.

The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operation of the switches or circuit breaker.

The tenderer may wish to advice of options and cost for remote supervisory control units of the RMU and MV network supervisory control system.

Complete Ring Main Unit shall be capable of withstanding 11 kV, 630A current without any damage being caused, in accordance with the recommendations IEC 694 and IEC 298.

6.13 FAULT PASSAGE INDICATORS / Earth Fault Indicators (FPI/EFI) :

These shall facilitate quick detection of faulty section of line. The fault indication may be on the basis of monitoring fault current flow through the device. The unit should be self- contained requiring no auxiliary power supply. The FPI shall be integral part of RMU.

6.14 TROPICALISATION :

Due regard should be given to the climatic conditions under which the equipment is to work. Ambient temperature normally varies between 20 °C and 32 °C, although direct sun temperature may reach 50 °C. The climate is very humid and rapid variations occur, relative humidity between 90% and 100% being frequently recorded, but these values generally correspond to the lower ambient temperatures. The equipment should also be designed to prevent ingress of vermin, accidental contact with live parts and to minimize the ingress of dust and dirt. The use of materials, which may be liable to attack by termites and other insects, should be avoided.

6.15 Safety of People :

Any accidental overpressure inside the sealed chamber will be limited by the opening of a pressure limiting device in the enclosure. Gas will be released to the rear of the unit away from the operator. Manufacturer shall provide type test report to prove compliance with IEC 298 appendix AA 'Internal fault'.

6.16 Operating lever :

An anti-reflex mechanism on the operating lever shall prevent any attempts to re-open immediately after closing of the switch or earthing switch.

All manual operations will be carried out on the front of the switchboard.

The effort exerted on the lever by the operator should not be more than 250 N for the switch and circuit breaker.

The overall dimensions of the RMU shall not be increased due to the use of the operating handle. The operating handle should have two workable positions 180° apart

.

6.17 Front plate :

The front shall include a clear mimic diagram which indicates different functions.

The position indicators shall give a true reflection of the position of the main contacts. They shall be clearly visible to the operator.

The lever operating direction shall be clearly indicated in the mimic diagram.

The manufacturer's plate shall include the switchboard's main electrical characteristics.

6.18 Relays :

5. CT/PT connectors on relay shall be screw type.
6. Relay shall communicate following data to RTU -
    a. 3 phase online current voltages
    b. Trip events after faults with time stamp
    c. Pick up events after fault with time stamp
    d. Recorded fault currents

7. Relay shall accept time synchronization from SCADA RTU periodically.
8. Relay shall be supplied with license software for relay setting, retrieving DR, event log, trip log shall be supplied by bidder free of cost. Necessary multiuser/corporate license software is to be supplied to MSEDCL for installation on all Testing division PC's.

6.19 Danger Board :

The danger Board plate as per relevant IS shall be riveted on the front plate of the RMU.

TYPE & ROUTINE TESTS :

7.1 Type tests : The equipment offered in the tender should have been successfully type tested at

NABL laboratories in India or equivalent International Laboratories in line with the relevant standard and technical specification, within the last 5 (five) years from the date of offer. The bidder shall be required to submit complete set of the type test reports in physical format along with the offer.

In case these type tests are conducted earlier than five years, all the type tests as per the relevant standard shall be carried out by the successful bidder at NABL in presence of purchaser's representative free of cost before commencement of supply. The undertaking to this effect should be furnished along with the offer without which the offer shall be liable for rejection.

The list of type tests is as follows:

7.1 Short time current withstand test and peak current withstand test.

7.2 Lightening Impulse voltage with-stand test

7.3 Temperature rise test.

7.4 Short Circuit current making and breaking tests.

7.5 Power frequency voltage withstand test (dry).

7.6 Capacitive current switching test confirming to IEC.

7.7 Mechanical operation test.

7.8 Measurement of the resistance of the main circuit.

7.9 Degree of protection of main tank and outer enclosure

7.10 Switch, circuit breaker, earthing switch making capacity.

7.11 Switch, circuit breaker breaking capacity.

7.12 Internal arc withstand.

7.13 Checking of partial discharge on complete unit.

The details of type test certificate according to the composition of the Switchboard shall be submitted with the offer.

In addition, for switches, test reports on rated breaking and making capacity shall be supplied.

For earthing switches, test reports on making capacity, short-time withstand current and peak short-circuit current shall be supplied.

7.2 ACCEPTANCE & ROUTINE TESTS :

All acceptance and routine tests as stipulated in the respective applicable standards amended up-to-date for all the equipment shall be carried out by the supplier in the presence of purchaser's representative without any extra cost to the purchaser before despatch.
The tenderer shall have full facilities to carry out all the acceptance and routine test as per the applicable standards.

After finalisation of the program of type/acceptance/routine testing, the supplier shall give 15 days advance intimation to the purchaser, to enable him to depute his representatives for witnessing the tests.

The routine tests should be carried out by the manufacturer at his works in presence of EE (testing) MSEDCL and IUCAA Engineers.

The routine tests are as follows:

1. Conformity with drawings and diagrams,
2. Measurement of closing and opening speeds,
3. Measurement of operating torque,
4. Checking of filling pressure,
5. Checking of gas-tightness,
6. Dielectric testing and main circuit resistance measurement.
7. Power frequency voltage
8. Resistance test for the circuit
9. Mechanical operation tests.

All major type tests shall have been certified at an independent authority with the tests carried outside country of manufacture shall be translated in English and submitted in hard copy.

The supplier in the presence of IUCAA and MSEDCL"s representative shall carry out all above acceptance and routine tests. The supplier shall give at least 15 days advance intimation to the MSEDCL to enable them to depute their representative for witnessing the tests. The cost towards transport, stay and other expenses shall be borne by the supplier.

The IUCAA and MSEDCL reserves the right for carrying out any other tests of a reasonable nature at the works of the supplier/laboratory or at any other recognized laboratory/research institute in addition to the above mentioned type, acceptance and routine tests at the cost of the Contractor to satisfy that the material complies with the intent of this specification.

8.0 INSPECTION :

The inspection may be carried out by the purchaser at any stage of manufacture. The successful bidder/tenderer shall grant free access to the MSEDCL & IUCAA's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser, shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

The supplier shall keep the purchaser informed, in advance, about the manufacturing programme so that arrangement can be made for stage inspection.

The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the purchaser informed, in advance, about such testing programme.

9.0 PROTOTYPE SAMPLE :

The successful bidders should manufacture 3 Nos. of prototype RMUs as per the specification and keep ready at their works for the purpose of sample inspection and testing. The MSEDCL at their option may sent a team of Engineers to the works. Prior intimation of this inspection may not be given to the Bidder.

10.0 MANUFACTURING FACILITIES :

As RMU are having sealed pressure system in compliance with IEC 298, manufacturer shall have complete facility with state of the art equipments for ensuring the quality of product delivered strictly adhering to IEC 298 GUIDELINES. Following are the work station at manufacturer place to ensure the adherence: -

1. Robotic welding station for stainless steel main tank ensuring the leak rate less than 0.1% per annum
2. Work stations with adjustable work benches and torque wrenches, giving flexibility to workmen for proper tightness of internal components of sealed tank.
3. State of the Gas leak testing system ensuring the quality of sealing and have precision to measure leak rate less than 0.1% per annum.
4. High voltage testing station to have high voltage power frequency test and partial discharge measurement.
5. Computerized system to measure time travel characteristic of breaker before sealing the tank.

11.0. QUALITY ASSURANCE PLAN :

The bidder shall invariably furnish following information along with his offer.

(1) Statement giving list of important raw materials including but not limited to
(a) Contact material
(b) Insulation
(c) Sealing material
(d) Contactor, limit switches, etc. in control cabinet.

Name of sub-suppliers for the raw materials, list of standards according to which the raw materials are tested, list of test normally carried out on raw materials in presence of Tenderer's representative, copies of test certificates.

2) Information and copies of test certificates as in (i) above in respect of bought out accessories.

3) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.
4) Special features provided in the equipment to make it maintenance free.
5) List of testing equipment available with the Bidder for final testing of RMU and associated combinations vis-à-vis, the type, special, acceptance and routine tests specified in the relevant standards. The supplier shall, within 15 days from the date of receipt of

Purchase Order submit following information to the MSEDCL/IUCAA :

i) List of raw materials as well bought out accessories and the names of sub-suppliers selected

from those furnished along with offer.
ii) Necessary test certificates of the raw material and bought out accessories**.**

iii) Quality Assurance Plan (QAP) withhold points for IUCAA/MSEDCL‟s inspection. The quality assurance plan and hold points shall be discussed between the IUCAA/MSEDCL and supplier before the QAP is finalized.

The supplier shall submit the routine test certificates of bought out items and raw material, at the time of routine testing of the fully assembled breaker.

12.0 DRAWINGS :

All drawings shall conform to relevant IEC Standards Specification. All drawings shall be in ink.

The Tenderer shall submit along with his tender dimensional general arrangement drawings of the equipments, illustrative and descriptive literature in triplicate for various items in the RMUs, which are all essentially required for future automation.
The Tenderer shall submit following documents along with the tender :

i) Schematic diagram of the RMU panel
ii) Instruction manuals iii) Catalogues of spares recommended with drawing to indicate each items of spares iv) List of spares and special tools recommended by the supplier. v) Copies of Type Test Certificates as per latest IS/IEC.
vi) Drawings of equipments, relays, control wiring circuit, etc.
vii) Foundation drawings of RMU. viii) Dimensional drawings of each material used for item Vii. ix) Actual single line diagram of RMUs with or without extra combinations shall be made displayed on the front portion of the RMU so as to carry out the operations easily.

Operation, Maintenance and erection instruction manual in English language shall be also supplied alongwith each RMU to the respective consignee as per the despatch instructions given from Material Management Cell under CE (Stores), Corporate Office, Mumbai. The successful tenderer to submit the drawings, bill of materials, packing lists, etc. in time and get these approved from the IUCAA and office of Chief Engineer (Testing), I st floor, Prakashgad, MSEDCL, Mumbai.

13.0 NAME PLATE :

Each RMU and its associated equipments shall be provided with a nameplate legible and indelibly marked with at least the following information.

(a) Name of manufacturer, (b) Type, (c) Serial number, (d) Voltage , (e) Current,
(f) Frequency , (g) Symmetrical breaking capacity, (h) Making capacity
(i) Short time current and its duration, (j) Purchase Order number and date
(k) Month and Year of supply, (l) Rated lighting impulse withstand voltage

14. PACKING & FORWARDING :

The equipment shall be packed in crates suitable for vertical/horizontal transport as the case may be and the packing shall be suitable to withstand handling during the transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit, due to improper and inadequate packing. The easily damageable materials shall be carefully packed and marked with the appropriate caution symbols. Wherever necessary, proper arrangement for lifting, such as lifting hooks etc. shall be provided. Any material found short inside the packing cases shall be supplied by the supplier without any extra cost.

Each consignment shall be accompanied by a detailed packing list containing the following information:

Name of the consignee. Details of consignment.

Destination :

Total weight of consignment.

Sign showing upper/lower side of the crate.

Handling and unpacking instructions.

a) Bill of material indicating contents of each package.

All the equipment covered in this specification shall be delivered to the MSEDCL Substation/IUCAA centre as will be intimated to the successful tenderers. The equipment shall be delivered to these centres only by road transport and shall be suitably packed to avoid damages during transit in the case of indigenous supplies.

The tenderer shall quote delivery periods for various equipment and shall stick to the committed delivery. The delivery period will be counted from the date of receipt of letter of award of the contract. It is therefore, the responsibility of the successful tenderer to submit the drawings, bill of materials, packing lists, etc. in time and get these approved from the IUCAA and office of Chief Engineer (Testing), I st floor, Prakashgad, MSEDCL, Mumbai.

It may clearly be noted that the delivery period will under no circumstances be linked up with other formalities like drawing approval, etc.

15.0 TRAINING :

All successful tenderers for switchgear shall provide training facilities for the MSEDCL's Engineers. The training shall be for not less than 8 man weeks. Syllabus and other details of the training shall be finalised in consultation with the MSEDCL. Boarding, lodging and traveling expenses for the deputed trainees will be borne by the MSEDCL. Charges for training shall be quoted in the offer separately. These will not be considered for evaluation of the offer.

16.0 PERFORMANCE GUARANTEE:

All equipment supplied against this specification shall be guaranteed for a period of 66 months from the date of receipt at the consignee's Stores Centre or 60 months from the date of commissioning, whichever is earlier. However, any engineering error, omission, wrong provision, etc. which do not have any effect on the time period, shall be attended to as and when observed/pointed out without any price implication.

17.0 DOCUMENTATION :

17.1 After issue of letter of acceptance, the successful tenderers shall submit 3 identical sets of complete drawings along with detailed bill of materials for approval, to the IUCAA & Chief Engineer, (Testing), Ist floor, Prakashgad, MSEDCL, Bandra(E),Mumbai - 400 051. If any modifications are required on these, the same will be conveyed to the supplier who shall modify the drawings accordingly and furnish final drawings for approval. In no case delivery extension will be granted for any delay in drawing approval.

17.2 The manufacturing of the equipment shall be strictly in accordance with the approved drawings and no deviation will be permitted without the written approval of the Distribution department. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the supplier's risk.

17.3 After approval of the drawings and bills of materials, the suppliers shall submit detailed packing lists for approval. After approval, copies of these packing lists shall be forwarded to the respective consignees. Copies of packing lists shall also be submitted to the IUCAA along with the bills for payment.

17.4 Before dispatch of equipment to various consignees, the suppliers shall furnish sets of final drawings, including bills of materials and wiring schedules and also sets of technical literature and commissioning manuals. These shall be in Five sets and shall be furnished to the IUCAA and office of CE(Testing), Ist floor, Prakashgad, Bandra(E), Mumbai positively before the dispatch of equipment. All drawings shall preferably be of A3 size. No drawing of width more than 35 cm will be acceptable. One set each of the final drawings, bill of materials, wiring schedules and commissioning manuals shall invariably be forwarded to the consignee along with each switchgear consignment and shall be listed out in the packing list, when submitted for approval.

17.5 In case the supplier fails to furnish contractual drawings and manuals even at the time of supply of equipment, the date of furnishing of drawings/manuals will be considered as the date of supply of equipment for the purpose of computing penalties for late delivery.

18.0 SCHEDULES :

18.1 The tenderer shall fill-in the following schedules which is part and parcel of the tender specification and offer. If the schedules are not submitted duly filled-in with the offer, the offer shall be liable for rejection.

Schedule 'A' ... Guaranteed and technical particulars.

18.2 Any additional information may be furnished separately by the tenderer, if felt necessary by him.

19.0 GUARANTEED TECHNICAL PARTICULARS

The bidder should fill up the details in schedule A – „Guaranteed Technical Particulars‟ and the statement such as “as per drawing enclosed”, “as per MSEDCL requirement”, “as per IS”, “as per specification” etc. shall be considered as details not furnished and such offers will be rejected.

20.0 QUALIFYING REQUIREMNET :

20.1 The Tenderer should have proven experience of not less than 10 years in design, manufacture, supply and testing at work for equipment / materials offered for equal or higher voltage class. The equipment/ material offered by tenderer should be in the successful operation, at least for five years as on the date of submission of the tender.

20.2 The tenderer should have adequate in house testing facilities for conducting acceptance tests in accordance with relevant IS.

20.3 Tenderer should have a minimum turnover of 60% of the value of the material offered in any one financial year during the previous 3 years. However, being commercial aspect, CPA is requested to verify this point.

20.4 The tenderer should furnish all the relevant documentary evidence to establish the fulfilment of the above requirement.

20.5 The bidders not meeting the requirement at clause No. 20.1 can also participate, provided they have valid ongoing collaboration with a manufacturer who has at least 10 years’ experience in the design, manufacture and testing of the equipment of the type and class

offered which have been in satisfactory service for a period of at least five years. In such an event the bidder shall furnish along with the bid the documentary evidence for the same and undertaking from the bidder and collaboration accepting joint and several liability for all obligations under the contract.

Annexure-A

Specific Technical Requirement for 11 kV, 630 A, Motorised SCADA Compatible 21 kA, Outdoor type 'RMU Panels :

Sr. No.	Description	Required Parameters
1.0	**SWITCHGEAR ASSEMBLY**	
1.1	Make	Mfg to give details
1.2	Type	Outdoor
1.3	Reference Standard	IEC 56, IEC 129, IEC298, IEC694, IEC 265
1.4	Voltage (Normal/Max.) kV	11kV/12 kV
1.5	Phase (Nos.)	3 Nos.
1.6	Frequency (HZ)	50 ± 3 Hz
1.7	Short Circuit rating	
	a) Breaking Symmetrical (KA)	21 kA
	b) Breaking Asymmetrical (KA)	21 kA
	c) Short time for 1 Sec. (KA)	21 kA
	d) Short time for 3 Sec. (KA)	21 kA
1.8	Insulation Level	
	a) Impulse withstand (KV peak)	75 kVp
	b) 1 Minute 50 Hz. Voltage withstand (KV rms)	28 kV
1.9	Metal Clad Construction	Yes
1.10	a) Degree of protection for outer enclosure: b) Degree of protection for main tank	IP 54 IP 67
1.11	Switchgear completely wire and tested at factory (yes/No)	Yes
2.0	**CONSTRUCTION**	
2.1	Overall Dimensions	Mfg to give details
a	Total Non Extensible 3 Way RMU	
	i) Width (W) (mm)	Mfg to give details
	ii) Depth (D) (mm)	
	iii) Height (mm)	
2.2	Overall Weight of Total Non Extensible 3 way RMU Unit	Mfg to give details
3.0	**Bus bar**	
3.1	Make	Mfg to give details
3.2	Material & Grade	Copper
3.3	Reference Standard	IEC 129
3.4	a) Cross sectional area (mm2)	

	b) Size (mm2)	400 sq.mm
3.5	Continuous Current	
	a) Standard	630 A
	b) At site conditions and within cubicle	630A
3.6	Maximum temperature rise over ambient (c)	55 °C (above ambient of 50 °C)
3.7	Short time current for 1 Sec. (KA rms)	21 kA
3.8	Minimum clearance from bare bus bar connection	Mfg to give details
	a) Phase to phase (mm)	
	b) Phase to Earth (mm)	
3.9	Bus Bar provided with	
	a) Insulation Sleeve	Yes
	b) Phase barriers	Yes
	c) Cast Resin shrouds for joints	Yes
3.10	Busbar connection	
	a) Silver Plated	Yes
	b) Made with anti-oxide grease	Yes
3.11	Bus Bar support spacing (mm)	Mfg to give details
3.12	Bus support insulators	
	a) Make	
	b) Type	
	c) Reference Standard	
	d) Voltage Class (KV)	
	e) Minimum creepage distance (mm)	
	f) Cantilever strength Kg/mm2	
	g) Net Weight (Kg)	
3.13	SF6 gas pressure (filing pressure at 20 deg. C)	Mfg to give details
4.0	**SF6/VCB CIRCUIT BREAKER**	
4.1	Make	Mfg to give details
4.2	Type (Vacuum/ SF6)	Mfg to give details
4.3	Reference Standard	IEC 56
4.4	Rated Voltage	11 kV
4.5	Rated Frequency	50 Hz
4.6	No. Of Poles	3
4.7	Rated Current	
	a) Normal (Standard) Amps	630 A
	b) Rated (Site) Amps	630 A

4.8	Maximum temperatures rise over ambient. (deg. C)	55 °C (above ambient of 50 °C)
4.9	Rated operating Duty	O- 3min- CO-3min- CO
4.10	Rupturing capacity at rated voltage (MVA)	400
4.11	Breaking Capacity at rated voltage & operating duty	
	a) Symmetrical (KA rms)	21 kA
	b) Asymmetrical (KA rms)	21 kA
4.12	Rated making current (KA peak)	50 kA
4.13	a) Short time current for 1 Sec.(KA rms)	21 KA
	b) Short time current for 3 Sec.(KA rms)	21 kA
4.14	Transient Recovery Voltage	
	a) Rate of rise (KV/ms)	0.34 KV/micro sec(as per IEC)
	b) Peak Voltage (KV)	23 (35 % DC component)
4.15	Insulation Level	
	a) Impulse Voltage with stand on 1/50 full wave	75
	b) 1 minute 50Hz voltage withstand	28
4.17	Opening time Maximum No load condition (ms)	40-60
4.18	Opening and closing time under SF6 gas loss or vacuum loss condition (ms)	40-60
4.19	At 100% Breaking capacity	
	a) Opening time – max (ms)	40-60
	b) Arcing time – max (ms)	6-9
	c) Total break time (ms)	40-60
4.20	At 60% Breaking capacity	
	a) Opening time – max (ms)	40-60
	b) Arcing time – max (ms)	6-9
	c) Total break time (ms)	40-60
4.21	At 30% Breaking capacity	
	a) Opening time – max (ms)	40-60
	b) Arcing time – max (ms)	6-9
	c) Total break time (ms)	40-60
4.22	At 10% Breaking capacity	
	a) Opening time – max (ms)	40-60
	b) Arcing time – max (ms)	6-9
	c) Total break time (ms)	40-60
4.23	Number of breaks per pole	Single

	4.24	No of breaker operations permissible without requiring inspection replacement of contacts and other main parts.	
		a) At 100% rated current	2000 & 40 Nos at 21 kA
		b) At 100% rated breaking current	
	4.25	Type of contacts	
		a) Main	Copper chromium, Butt type
		b) Arcing	Copper chromium
4.26		Material of contacts	
		a) Main	Copper chromium
		b) Arching	NA for VCB 1260 N (126 kg)
		c) Whether contacts silver plated	NA
		d) Thickness of silver plating	NA
4.27		Operating mechanism- closing	
		a) Type	STORED ENERGY
		b) No of breaker operations stored	One Tripp free
		C) Trip free or fixed trip	NA (Anti reflex on Earthing)
		d) Anti pumping features provided	
		e) Earthing for operating mechanism and metal parts furnished	Mfg to give details
		f) Earth terminal size and material	Mfg to give details
4.28		Operating mechanism- tripping	
		a) Type	Mfg to give details
		b) No of breaker operations stored	One
		c) Trip free or fixed trip (V)	Tripp free
		d) Anti pumping features provided (%)	NA
		e) Earthing for operating mechanism and metal parts furnished	Mfg to give details
		f) Earth terminal size and material	
4.29		Spring charging mechanism	
		2) Make	Mfg to give details
		3) Type	
		4) Size	
		5) Rating	
4.30		Breaker suitable for capacity switching 4 operating duty 5Max.rating of capacitor bank that can be safely controlled	Yes
4.31		Tripping coil	

	a) Voltage	Mfg to give details
	b) Permissible voltage variation (%)	Mfg to give details
	c) Tripping current at rated voltage (A)	
	d) Power at rated voltage (W)	
	e) 2-Over current trip with TLF (5A) and 1-earth fault furnished as specified	
4.32	Breaker /Accessories such as control switch indication Lamps etc. furnished	Mfg to give details
	as specified :(please attach separate sheet giving details of all accessories, inter locks and safety shutters)	
	a) Mechanical safety Interlock	Yes
	b) Automatic Safety Interlock	No
	C) Operational Interlock	Yes
	d) Emergency manual trip	Yes
	e) Operation counter	Yes
	f) Charge /discharge indicator	Yes
	g) Manual spring charging facility	Yes
4.33	Impact load foundation design (to include dead load plus impact value On opening at maximum interrupting rating) (KG)	Mfg to give details
5.0	**Isolators**	
5.1	Make	Mfg to give details
5.2	Type	Mfg to give details
5.3	Reference standard	IEC129
5.4	Rated voltage (KV)	12
5.5	Rated Frequency HZ	50
5.6	No. Of poles (No)	3
5.7	Rated current	
	) Normal (Standard) Amps	630 A
	j) Derated (site) Amp	630 A
5.8	Maximum temperature rise over ambient Deg. C	55 °C (above ambient of 50 °C)
5.9	Rated operation duty	O – 3min-CO-3min-CO
5.10	Rupturing Capacity at rated voltage MVA	Mfg to give details
5.11	Rated making current KA peak	Mfg to give details
5.12	Short time current	
	a) For 1 sec KA rms	21 kA
	b) For 3 sec KA rms	21 kA
5.13	Impulse voltage withstand on 1/50 full wave	75

5.14	Maximum over voltage factor when switching off a) Loaded feeder cable	Mfg to give details
5.15	Operating SF6 Gas pressure	0.5 bar G at 20 deg C
5.16	No of isolator operation permissible without requiring inspection, replacement of contacts and other main parts At 100% rated current	Yes
	At 100% rated breaking current	
5.17	Isolator provided with the following Mechanical safety Mechanical ON, OFF, CABLE EARTH indicators Operation counter Manual spring charging facility	Yes
5.18	Impact load for foundation design (To include dead load plus impact Values on opening at maximum interrupting rating) Kg	Mfg to give details
6.0	**CURRENT TRANSFORMER**	
6.1	Make	Mfg to give details
6.2	Type & voltage level	Mfg to give details
6.3	Reference standard	IEC 298
6.4	C.T. ratio as specified	100-50/1 A
6.5	Rated frequency	50
6.6	Short circuit withstand i) Short time current for 1 sec. KA rms j) Short time current for 3 sec. KA rms k) Dynamic current KA peak	Mfg to give details
6.7	Class of insulation	Mfg to give details
6.8	Temperature rises over ambient. Deg. C	Mfg to give details
6.9	Basic insulation level	
6.10	For tripping CT RATIO Class of accuracy	
	Rated Burden VA	
	Knee Point Voltage V	
	Excitation Current at Vk/2 Amps	
	Rated Saturating Current Amps	
	Over Current Rating	
	Continuous % Over Load %	
7.0	**Cable terminations**	
7.1	Circuit Breaker	
	Type	
	Materials	

	Dimensions	Mfg to give details
	Size	
	Height of Cable box from ground Level	
	Arrangement for supplying bus end cable box furnished for extensible ring main Unit	Mfg to give details
	Arrangement for mounting an extra cable box on each equipment furnished	
7.2	Isolator	
	Type	Mfg to give details
	Materials	
	Dimensions	
	Size	
	Height of Cable box from ground Level	
	Arrangement for supplying bus end cable box furnished for extensible ring main Unit	
	Arrangement for mounting an extra cable box on each equipment furnished	Mfg to give details
8.0	**Name Plate**	
8.1	Material	Mfg to give details
8.2	Thickness	
8.3	Size for	
	Breaker Cubicle	
	Instruments / Devices	
9.0	**Painting**	Mfg to give details
9.1	Finish of Breaker	
	Inside	
	Outside	
9.2	Finish of Isolator	
	Inside	
	Outside	
10.0	**Drawing / Data**	
10.1	General arrangement for Panel Board	Mfg to give details
10.2	Foundation plan	
10.3	SF6/VCB tripping and material Schematic	
10.4	Bill of Material	
10.5	SF6/VCB LT panel wiring diagram	

SECTION-VI

TECHNICAL SPECIFICATION OF 11KV 10 kA LIGHTNING (SURGE) ARRESTOR

1. SCOPE :

This section covers the specification of 11 kV voltage station Lightning (Surge) Arrestors for installation on outdoor type 11kV switchgear, transmission lines, transformers etc. 11kV side. Surge arrestors shall be complete with fasteners for stacking units.

2. STANDARDS :

The design, manufacture and performance of Surge Arrestors shall comply with IS: 3070 Part-3 and other specific requirements stipulated in the specification. Unless otherwise specified, the equipment, material & processes shall conform to the latest amendments of the following:

IS:2071-1993 (Part-I)	Methods of High Voltage Testing General Definitions & Test Requirements.
IS:2071-1974 (Part-2)	Test Procedures.
IS: 2629-1985	Recommended Practice for hot dip galvanizing on Iron & Steel.
IS: 2633-1986	Method for Testing uniformity of coating of zinc coated Articles.
IS:3070-1993 (Part – 3)	Specification for surge arrestor for alternating current systems. Metal-Oxide lightening Arrestors without gaps.
IS: 4759-1996	Specification for hot dip zinc coating on structural steel and other allied products.
IS: 5621-1980	Hollow Insulators for use in Electrical Equipment.
IS: 6209-1982	Methods of Partial discharge measurement.
IS: 6745	Method for determination of mass of zinc coating on zinc coated iron and steel articles.
ANSI/IEEE-C.62.11	Metal oxide, Surge Arrestor for AC Power Circuits.
IEC –60099-4	Surge Arrestors.

The equipment complying with any other internationally accepted standards shall also be considered if it ensures performance equivalent to or superior to the Indian Standards.

3. GENERAL REQUIREMENT :

3.1. The metal oxide gap less Surge Arrestor without any series or shunt gap shall be suitable for protection of 11 kV side of power transformers, associated equipment and 11 kV lines from voltage surges resulting from natural disturbance like lightning as well as system disturbances.

3.2. The surge arrestor shall draw negligible current at operating voltage and at the same time offer least resistance during the flow of surge current.

3.3. The surge arrestor shall consist of non-linear resistor elements placed in series and housed in electrical grade porcelain housing / silicon polymeric of specified Creepage distance.

3.4. The assembly shall be hermetically sealed with suitable rubber gaskets with effective sealing system arrangement to prevent ingress of moisture.

3.5. The surge arrestor shall be provided with line and earth terminals of suitable size. The ground side terminal of surge arrestor shall be connected with 25x6 mm galvanized strip, one end connected to the surge arrestor and second end to a separate ground electrode. The bidder shall also recommend the procedure which shall be followed in providing the earthing system to

the Surge Arrestor.

3.6. The surge arrestor shall not operate under power frequency and temporary over voltage conditions but under surge conditions, the surge arrestor shall change over to the conducting mode.

3.7. The surge arrestor shall be suitable for circuit breaker performing 0-0.3 min-CO-3 min-CO- duty in the system.

3.8. Surge arrestors shall have a suitable pressure relief system to avoid damage to the porcelain/ silicon polymeric housing and providing path for flow of rated fault currents in the event of arrestor failure.

3.9. The reference current of the arrestor shall be high enough to eliminate the influence of grading and stray capacitance on the measured reference voltage.

3.10. The Surge Arrestor shall be thermally stable and the bidder shall furnish a copy of thermal stability test with the bid.

3.11. The arrestor shall be capable of handling terminal energy for high surges, external pollution and transient over voltage and have low losses at operating voltages.

3.12. ARRESTOR HOUSING :

3.12.1. The arrestor housing shall be made up of silicon polymeric housing and shall be homogenous, free from laminations, cavities and other flaws of imperfections that might affect the mechanical and dielectric quality. The housing shall be of uniform Grey (for silicon polymeric) colour, free from blisters, burrs and other similar defects. Arrestors shall be complete with insulating bases, fasteners for stacking units together and terminal connectors.

3.12.2. The housing shall be so coordinated that external flashover shall not occur due to application of any impulse or switching surge voltage upto the maximum design value for arrestor. The arrestors shall not fail due to contamination. The 11kV arrestors housing shall be designed for pressure relief class as given in Technical Parameters of the specification.

3.12.3. Sealed housings shall exhibit no measurable leakage.

3.13. FITTINGS & ACCESSORIES :

3.13.1. The surge arrestor shall be complete with fasteners and terminal connectors.

3.13.2. The terminals shall be non-magnetic, corrosion proof, robust and of adequate size and shall be so located that incoming and outgoing connections are made with minimum possible bends. The top metal cap and base of surge arrestor shall be galvanized. The line terminal shall have a built in clamping device which can be adjusted for both horizontal and vertical take off.

4. TECHNICAL PARTICULARS: The surge arrestors shall conform to the following standard technical requirements. The Insulation values shall be enhanced considering the altitude of operation & other atmospheric conditions.

4.1. System Parameters :

i) Nominal system voltage : 11kV
ii) Highest system voltage : 12 kV
iii) System earthing : Effectively earthed system
iv) Frequency (Hz) : 50
v) Lightning Impulse withstand : 75 Voltage (kVP)
vi) Power frequency withstand : 28 Voltage (kV rms)
vii) Arrestor duty

-- Connection to system : Phase to earth
-- Type of equipment to be protected : transformers & switchgear

4.2. Surge Arrestors :

i) Type ; Gapless Metal oxide outdoor

ii) Arrestor rating (kV rms) ; 9
iii) Continuous Operating voltage : 7.65 (kV rms)
iv) Standard Nominal Discharge Current Rating : 10 kA
v) Degree of protection : IP 67
vi) Line discharge Class : 2
vii) Steep current at 10 kA : 45
viii) Lightning Impulse at 10 kA : 40
ix) Energy capability corresponding to

a) Arrestor rating (kj/kV) : 4.5
b) COV (kj/kV) : 4.9

4.3. Insulator Housing :

i) Power frequency withstand test voltage (Wet) (kV rms) : 28
ii) Lightning impulse withstand/tests voltage (kVP) : 75

5. TESTS

5.1. Test on Surge Arrestors

The Surge Arrestors offered shall be type tested and shall be subjected to routine and acceptance tests in accordance with IS : 3070 (Part-3)-/IEC:600994. In addition, the suitability of the surge arresters shall also be established for the following:

i) Acceptance tests :
   a) Measurement of power frequency reference voltage of arrester units.
   b) Lightning impulse residual voltage on arrester units (IEC clause 6.3.2).
   c) Internal ionization or partial discharge test
ii) Special Acceptance tests :
   a) Thermal stability test (IEC clause 7.2.2).
   b) Watt loss test.
iii) Routine tests :
   a) Measurement of reference voltage.
   b) Residual voltage test of arrester unit.
   c) Internal ionization or partial discharge test.
   d) Sealing test.
   e) Verticality check on completely assembled surge arresters as a sample test on each lot if applicable.
iv) Type Tests :

Following shall be type test as per IS 3070 (Part 3): 1993 or its latest amendment :

SN	Description of test
1	Insulation Withstand test
	a) Lightning Impulse
	b) Power Frequency (Dry/Wet)
2	Residual Voltage Test
	a) Steep current impulse residual voltage test

	b) Lightning impulse residual voltage test
	c) Switching Impulse Residual voltage test
3	Long duration current impulse withstand test
4	Switching surge operating duty test
5	Power frequency voltage Vs. Time characteristics
6	Accelerated Ageing test
7	Pressure relief test
	a) High Current
	b) Low Current
8	Artificial pollution test (for porcelain housing)
9	Seismic Test
10	Partial Discharge test
11	Bending test
12	a) Temperature cycle test (for porcelain housing)
	b) Porosity test (for porcelain housing)
13	Galvanising test on metal parts
14	Seal Leakage test (for porcelain housing)
15	Seal leak test and operation tests (for surge monitor)
16	Weather ageing test (for polymer housing)

5.2. The maximum residual voltages corresponding to nominal discharge current of 10 kA for steep current, impulse residual voltage test, lightning impulse protection level and switching impulse level shall generally conform to Annex-K of IEC-99-4.

5.3. The contractor shall furnish the copies of the type tests and the characteristics curves between the residual voltage and nominal discharge current of the offered surge arrestor and power frequency voltage v/s time characteristic of the surge arrestor subsequent to impulse energy consumption as per clause 6.6 of IS:3070 (Part-3) offered alongwith the bid.

5.4. The surge arrestor housing shall also be type tested and shall be subjected to routine and acceptance tests in accordance with IS :5621.

5.5. Galvanization Test : All Ferrous parts exposed to atmospheric condition shall have passed the type tests and be subjected to routine and acceptance tests in accordance with IS:2633 & IS 6745.

6. NAME PLATE

6.1. The name plate attached to the arrestor shall carry the following information:

- Rated Voltage
- Continuous Operation Voltage
- Normal discharge current
- Pressure relief rated current
- Manufacturers Trade Mark

- Name of Sub-station
- Year of Manufacturer
- Name of the manufacture
- Name of Client
- Purchase Order Number along with date

7. DRAWINGS AND INSTRUCTION MANUALS

Within 15 days of receipt of the order, the successful tenderer shall furnish to the purchaser, the following drawings and literature for approval:

(i) Outline dimensional drawings of Surge Arrestor and all accessories.

(ii) Assembly drawings and weights of main component parts.

(iii) Drawings of terminal clamps.

(iv) Arrangement of earthing lead.

(v) Minimum air clearance to be maintained of line components to ground.

(vi) Name plate.

(vii) Surge monitor, if applicable.

(viii) Instructions manual.

(ix) Drawing showing details of pressure relief valve.

(x) Volt-time characteristics of surge arrestors.

(xi) Detailed dimensional drawing of porcelain housing/Silicon polymeric i.e. internal diameter, external diameter, thickness, height, profile, creepage distance, dry arcing distance etc.

Section VII – Approved Makes

Sr. No.	Name of Item	Make Approved
1	11 kV VCB Panel with C & R Panel	Lucy/Popular/Megawin/C&S/CG
2	11 kV RMU	Lucy/Popular/Megawin/C&S/CG
3	MCB Distribution Boards	Wipro/ North West/Siemens / ABB
4	LOAD BREAK SWITCH 12 kV, 630A, 21 KA FOR 3 SECS	Lucy/Popular/Megawin/C&S/CG
5	CIRCUIT BREAKER 12 kV, 630A, 21KA FOR 3 SECS	Lucy/Popular/Megawin/C&S/CG
6	SELECTOR SWITCH / DISCONNECTOR 12kV, 630A, 21KA FOR 3 SECS	Lucy/Popular/Megawin/C&S/CG
7	CABLE BOX WITH SPLIT TYPE CLAND PLATE	Lucy/Popular/Megawin/C&S/CG
8	OPERATING HANDLE	Lucy/Popular/Megawin/C&S/CG
9	SF6 GAS PRESSURE GAUGE MANOMETER MIN PRESS:— 0.05 BAR	LANSO/WIKA/REGENCY/ELECTRON SYSTEM
10	VACUUM INTERRUPTERS (1 X3) 12kV, 630A, 21KA FOR 3 SECS	Lucy/Popular/Megawin/C&S/CG
11	CAPACITIVE VOLTAGE INDICATION (VPIS) SUITABLE FOR 12 KV SYSTEM	C&S/MUP ELCTRO NICS
12	OVER CURRENT & EARTH FAULT RELAY SELF POWERED	ASHIDA/C&S
13	FAULT PASSAGE INDICATOR CSFPI WITH SC & EF PROTECTION	C&S
14	PROTECTION CT'S	VIDYUT UDYOG/SHREE ENGINEERING/NPT /ERICON/ECS/G&M
15	METERING CT'S	VIDYUT UDYOG/SHREE ENGINEERING/NPT /ERICON/ECS/G&M
16	POTENTIAL TRANSFORMER	VIDYUT UDYOG/SHREE ENGINEERING/NPT /ERICON/ECS/G&M
17	AUXILIARY TRANSFORMER	VIDYUT UDYOG/SHREE ENGINEERING/NPT /ERICON/ECS/G&M
18	RIGHT ANCLE BOOTS SILICON COATED TOUCHPROOF SUITABLE FOR 12KV SYSTEM	RAYCHEM
19	BATTERY	EXIDE / QUANTA / PANASONIC
20	BATTERY CHARGER	ALAN/GOGATE/CHHABI ELECTRIC/NHP
21	AC SUPPLY MCB	SCHNEIDER/SIEMENS/L&T/LEGRAND/C&S
22	CONTROL CARD FOR ISOLATOR & CIRCUIT BREAKER	MUP ELECTRONICS/GOGATE
23	LOCAL REMOTE SWITCH AND PUSH BUTTON ASSEMBLY	MUP ELECTRONICS/ C&S
24	WATER LEVEL FLOAT SWITCH SUITABLE FOR 12KV SYSTEM	GOGATE
25	AUXILIARY RELAY (INTERPOSING)	PHOENIX/OMRON/TYCO
26	PVC FRLSH WIRE / CABLE	FINOLEX/RRKABEL/KEI/POLYCAB
27	ANNUNCIATIONS AND HOOTERS	ALAN

Sr. No.	Name of Item	Make Approved
28	TERMINAL PROTECTOR	RAYCHEM
29	PROTECTION RELAYS	ASHIDA/C&S
30	11 kV Thyrite Arrester	As per MSEDCL Approved make list
31	MCB Distribution Boards	Wipro/ North West/Siemens / ABB
32	Moulded Case Circuit Breaker	Siemens /ABB/ L& T/ North West
33	Switch Fuse Units	Siemens /ABB/ L& T/ North West
34	ELCB/RCCB	Siemens /ABB/ L& T/ North West
35	Push Buttons	L&T / Technic/C&S
36	Indicating Lamps	L&T / Technic/C&S/ABB
37	MSEDCL Approved Trivector / Digital KWH Meters with RS 485 Ports	As per MSEDCL approved list
38	Indicating / Measuring Instruments	Conzerv, HPL, Secure, L&T
39	Terminals / Terminal Blocks	Elmex / Connectwell
40	HT / LT Cables	Finolex / RR Kables / KEI/Gloster
41	Timer	L&T/ABB/Minilec
42	Cable Glands Single/Double Compression	Braco / Dowells
43	PVC rigid conduits & Accessories	Precision/ Astral/Anchor Panasonic
44	Switches, Sockets, Plugs etc	Wipro North West Nowa
45	Industrial Sockets	Legrand / L&T/ABB/North West
46	Bi-metalic Crimping Type Lugs	Dowells
47	Steel Tubular Poles	National Tube Co. / Unique Pole
48	Multi Function Meter	L & T / Conzerv/ HPL / C&S
49	Anchor Fasteners	Hilti / Shakti
50	HT cable joint Kits	Raychem
51	MS Angle/Pipe	TATA / Jindal / SAIL
52	Fuel Level Indicator	Honeywell / Jonson/ Siemens
53	Space Heater	APT
54	Thermostat	APT
55	Earthing Rods/Plates	Electrostem, Sarvadnya
56	MS Steel	Tata, Jindal, SAIL
57	PVC Trunking & Accessories	Legrand / Precision
58	RCC Chamber Frame & Cover	Deccan/Chandrai
59	GI Precoated Corrugated Sheet	Tata, JSW, Ispat, Sail

SEAL & SIGNATURE OF BIDDER

FORM - I

DETAILS OF WORKS OF ALL SIMILAR TYPE AND MAGNITUDE CARRIED OUT BY THE CONTRACTOR (REFER ELIGIBILITY CRITERIA (SECTION II – Point No. 3) OF **COMPLETED WORKS**) (DETAILS OF PROJECTS SHALL BE FILLED IN THE CHART AS PER REQUIREMENT WITH PROOF)

NAME OF THE CONTRACTOR:

Sr. No.	Name of work	Name and address of the organization from whom the work was done	Place and Country	Agreement No.	Date of commencement	Tendered cost (In Lakhs)	Total cost of work done (In Lakhs	Date of Completion	Principle Features in brief
1	2	3	4	5	6	7	8	9	10

Signature of Contractor

Note: - This is only a standard form. Details are to be furnished in this format in the form of type written statements which shall be scanned and attached in COVER No. I. The work done certificates shall be attached in support of the works claimed in this form. The work done certificates shall be duly signed by the officer not below the rank of Deputy Engineer.

FORM - II

STATEMENT SHOWING **ON-GOING WORK** OF ADDITIONAL ELECTRICAL WORK (DETAILS OF PROJECTS SHALL BE FILL IN THE CHART AS PER REQUIREMENT WITH PROOF)

NAME OF CONTRACTOR :-

Sr. No.	Name of work	Amount Put to Tender/ Tendered cost	Agreement No.	Date of Commencement And Date of Completion (**f** work completed) (Rs. In Lakhs)	Amount of work still remaining to be executed (Rs. In Lakhs)	Remarks
1	2	3	4	5	11	12
Grand Total						
Average Annual Turnover						

Signature of Contractor

Note: - This is only a standard form. Details are to be furnished in this format in the form of type written statements which shall be scanned and attached in COVER No. I. The work done certificates shall be also attached in support of the works claimed in this form. The work done certificates shall be duly signed by the officer not below the rank of Deputy Engineer.

FORM - III

Undertaking/Acceptance
(On Letterhead)

1. I,_____son/ daughter/ wife of Shri. _____
   Proprietor /Director / authorized signatory of the Company / Firm mentioned above, is competent to sign this declaration and execute this tender document.

2. I have carefully read and understood all the terms and conditions of the tender and undertake to abide to them.

3. The information / documents furnished along with the above tender form are true and authentic to the best of my knowledge and belief. I am well aware of the fact that furnishing of any false information / fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.

Place: Pune **Authorised Signatory**

Date : **Sign and Seal**

FORM - IV

Declaration
(On Letterhead)

1. We are not involved in any major litigation that may have any impact of affecting or compromising the delivery of services as required under this tender.

2. We are not black-listed by any Central / State Government / Public Sector Undertaking in India.

3. I/ We hereby declare that I/ We have read and studied in detail the all instructions and conditions of this Contract in the above Clauses, and understood the scope of the project/ work and my/our fundamental duties and responsibilities under this Contract. I/ We unconditionally accept and agree to abide by them.

Yours faithfully,

(Signature of the Authorized person)

Date:

Name:

Place:

Designation:

Seal:

FORM-V

NO RELATIONSHIP CERTIFICATE

(On Company Letterhead)

I/We hereby certify that I/We* am/are* related/not related (*) to any officer of IUCAA Pune. (If related provide the details of the employee)

I/We* am/are* aware that, if the facts subsequently proved to be false, my/our* contract will be rescinded with forfeiture security deposit and I/We* shall be liable to make goods the loss or damage resulting from such cancellation.

I//We also note that, non-submission of this certificate will render my / our tender liable for rejection.

Authorized Signatory
Name:
Designation:
Contact No.:

Date:

Place:

FORM-VI

EMD Refund Request
(To be printed on Letterhead)

To

Estate Manager
Inter-University Centre for Astronomy & Astrophysics
Post Bag - 4, Ganeshkhind,
Pune University Campus,
Pune - 411007.

Sub: - Request for refund of EMD deposited for tender for "Additional HT Electrical work of IUCAA-2 Building at IUCAA Pune."

Sir,

I/We request that EMD deposited by me/ us against the tender above tender due on 14/**08/2025** vide UTR No dated for **Rs. 1 ,20,000/-** for "Additional HT Electrical work of IUCAA-2 Building at IUCAA Pune**.",** may kindly be refunded.

Yours faithfully,

(Signature of the Authorized Person)

Date: **Name:**

Place: **Designation:**

Seal:

FORM-VII

TENDER ACCEPTANCE LETTER
(To be given on Bidder's Letter Head)

To, Date:

_____
_____
_____

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: _____
Name of Tender / Work: -_____
Dear Sir,

1. I/ We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely: _____ as per your advertisement, given in the above-mentioned website(s).
2. I / We hereby certify that I / we have read the entire terms and conditions of the tender document (including all documents like annexure(s), schedule(s), etc.), and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. The corrigendum(s) issued from time to time by IUCAA too have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) / corrigendum(s) in its totality / entirety.
5. I / We do hereby declare that our Firm has not been blacklisted/ debarred/ terminated/ banned by any Govt. Department/Public sector undertaking.
6. I / We certify that all information furnished by our Firm is true & correct and, in the event, that the information is found to be incorrect/untrue or found violated, then your department/ organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.sss
7. Restrictions on procurement from bidders from a country or countries, or a class of countries under Rule 144 (xi) of the General Financial Rules 2017: We certify as under:
   "We have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries, and solemnly certify that we fulfil all requirements in this regard and are eligible to be considered. We certify that:
   - *i. we are not from such a country or, if from such a country, we are registered with the Competent Authority (copy enclosed). and;*
   - *ii. we shall not subcontract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.*

Yours Faithfully,
(Signature of the Bidder, with Official Seal)