

भारतीय प्रबंध संस्थान इंदौर

INDIAN INSTITUTE OF MANAGEMENT INDORE

प्रबंध शिखर, राउ पीथमपुर रोड, इंदौर - 453556 (म. प्र.) भारत

Prabandh Shikhar, Rau-Pithampur Road, Indore - 453556 (M.P.), India

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इ-टेंडर नोटिस न. **E-Tender Notice No.**

आई. आई. एम. आई. /परियोजना/08/2020/100 फ़ाइल न. 442

IIMI/Project/08/2020/100 File No. 442

तकनीकी व्यावसायिक प्रक्रिया

TECHNO COMMERCIAL PROPOSAL

कार्य का नाम: यूटिलिटी -1 में 33KV दोषपूर्ण एचटी ब्रेकर का तत्काल प्रतिस्थापन

Name of work: "Replacement of 33KV defective HT Breaker at Utility-I at IIM Indore."

प्रमाणित किया जाता है कि एनआईटी दस्तावेज़ में क्रमिक रूप से 1 से 29 तक 29 पृष्ठ हैं

Certified that the NIT Document contains 29 pages serially numbered from 1 to 29

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प्रबंध शिखर, राऊ-पीथमपुर रोड, इन्दौर - 453 556 (म.प्र.), भारत

INDIAN INSTITUTE OF MANAGEMENT INDORE

Prabandh Shikhar, Rau-Pithampur Road, Indore - 453 556 (M.P.), India

Dated: September 02, 2020

NOTICE INVITING TENDER

Tender Notice No. IIMI/Project/08/2020/100 File No. 442

IIM Indore invites item rate tender under two bid system (Part-I Processing fees, EMD Declaration and Technical bid & Part-II Financial bid) for the under mentioned work at IIM Indore from the bidders eligible as per the eligibility criteria mentioned in the tender document. Schedule of item & quantity is attached as annexure -B to this notice.

The tender is e-published on CPPP & IIM Indore website under the URL: <https://eprocure.gov.in/epublish/app> & <http://iimidr.ac.in/tenders/>. Interested parties can download the same and submit by post or hand delivery before the due date & time at security office, IIM Indore Main Gate-I.

Part "A" : NIT Details

1	NIT No.: IIMI/Project/08/2020/100 File No. 442	
2	Name of Work	"Replacement of 33KV defective HT Breaker at Utility-I at IIM Indore."
3	Estimated Cost Put to Tender	Rs. 5,00,000 /- (Five Lakhs Only) (Excl. GST)
4	अग्रिम जमा राशि Earnest Money Deposit (Rs.)	Submit Declaration as in given format (Annexure-A) (As EMD is not required) दिए गये प्रारूप में घोषणा प्रस्तुत करें (जैसा कि EMD की आवश्यकता नहीं है).
5	निविदा प्रक्रिया शुल्क Tender Processing Fee (Rs.)	Rs. 500/- by e-payment through electronic mode. (Non-Refundable)
6	समापन की अवधि Completion period	45 Days
7	प्रकाशित करने का दिनांक Publishing Date	September 02, 2020
8	निविदा के जमा करने की अंतिम तिथि और समय Last date & time of receipt of tender	September 09, 2020 up to 03:00 PM in a Sealed cover only addressed to the "Chief Engineer, IIM Indore Prabandh Shikhar, Rau-Pithampur Road Indore-453556, Madhya Pradesh." & to be dropped in tender box kept at Security office at Gate-I
9	तकनीकी बोली के खोलने की तिथि और समय Date & Time of opening of bid	03:30PM on September 09, 2020 in the Office of the Chief Engineer, Administrative Block, IIM Indore M.P. 453556
10	Date and Time of opening of financial bid of qualified bidders	Will be notified at a later date

11	प्रतिभूति जमा Security Deposit	निविदा मूल्य का 2.5 % चल बिल और अंतिम बिल से वसूल की जावेगी 2.5% of tendered value from bills
12	परफॉर्मन्स गारंटी Performance Guarantee	बोली की स्वीकृति पर निविदा मूल्य का 5 (FIVE)% 5% of tendered value on acceptance of bid

Part “B”: Tender Requirements

1. Criteria of eligibility for submission of bid documents:

In order to fulfil eligibility for acceptance, the following criteria will be followed. Bidders are required to submit relevant verifiable and self-attested documents.

a. Performance / Work Experience

The bidder must have experience of successfully completed Electrical works during the last 7 years ending last day of the month previous to the one in which applications are invited. *The works completed up to previous day of last date of submission of tenders shall also be considered.*

One similar completed work of aggregate cost not less than the amount equal to 4,00,000/-

OR

Two similar completed works, costing not less than the amount equal to 2,50,000/-

OR

Three similar completed works costing not less than the amount equal to 2,00,000/-,

Similar work shall mean: HT/LT Electrical equipment- Supply/ Installation related (viz Breaker, Transformer, DG sets, Panels etc.)

Certificates of work experience (Completion Certificates) and other documents as specified in the tender document shall be submitted.

b. Annual Financial Turnover: Should have had average annual financial turnover at least 50% of the estimated cost put to tender during last three years ending March 31, 2019. (Copy of certificate from chartered accountant to be submitted)

c. Certificates: (copy of certificates to be submitted)

- i. Latest IT return
- ii. PAN (Permanent Account Number)
- iii. GST (Goods & Service Tax) Registration Certificate
- iv. Certificate of registration of firm/company
- v. Aadhar card copy of the authorized officer of the company who will be signing agreement etc.
- vi. E-payment details towards cost of tender processing fee & declaration of EMD.
- vii. Bank Account Detail.
- viii. Technical data & make of the items proposed as per tender document.

2. Mode of payment of Tender processing fee:

Bidders may deposit the Tender Processing Fee through NEFT/ RTGS or Direct Credit. Details for the same are as below:

Name of beneficiary	: Indian Institute of Management Indore
Address	: Rau-Pithampur Road, Indore -453556, M.P.
Account No.	: 53018623445
Name of the Bank	: State Bank of India
Address of the bank	: IIM Indore Campus
IFSC Code	: SBIN0030525

Bidders will have to attach Payment details towards cost of tender processing fee during the submission of tender and the same will be accepted only on verification & confirmation by the Institute. Any delay in credit will not be entertained by the Institute.

3. The Tenderer is required to prepare two sealed cover comprising of the following:

Cover-I: Technical Bid

- i) Tender Fee detail / EMD Declaration form
- ii) Documents as mentioned above in the “Criteria of eligibility for submission of bid documents”
- iii) Technical data & make of the items proposed as per tender document.

Cover-II: Financial Bid

- i) Financial Bid (in the format given at Annexure-B)

Both covers should be kept in one main sealed cover super scribed as “NIT No.: IIMI/Project/08/2020/100 File No. 442, “Replacement of 33KV defective HT Breaker at Utility-I at IIM Indore.”

4. The tenderer has to drop the cover sealed in above manner in the Tender Box kept at the “Gate-1, IIM Indore, Rau Pithampur Road, Indore -453556 M.P.” on or before the due date & time positively. The tender shall not be accepted beyond the stipulated date and time under any circumstances whatsoever. Any delay happened in the transition is at the risk of the tenderer and IIM Indore will not be responsible.

Part “C”: Other Terms & Conditions

1. The bid submitted shall become invalid and tender processing fee shall not be refunded if:
 - (i) If the bidder is found ineligible.
 - (ii) If the documents submitted by the successful bidder does not match with the originals before the award of work.
2. The competent authority on behalf of the Director IIM Indore does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.

3. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.
4. The competent authority on behalf of the Director, IIM Indore reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
5. *The bid for the works shall remain open for acceptance for a period of Seventy Five (75) days.*
6. IF ANY INFORMATION FURNISHED by the applicant is found to be incorrect at a later stage, they shall be liable to be debarred from tendering/ taking up works in IIM INDORE.
7. **TAXES :**
 - i) This work comes under Works contract. The taxes as applicable shall be deducted from each bill paid to the contractor.
 - ii) Item rate should be without GST, GST shall be paid extra on submission of proof.
 - iii) Labour Welfare cess @ 1 % of gross value of work done shall be recovered from each bill paid to the contractor.
 - iv) Income Tax and cess as applicable shall be deducted from each bill paid to the contractor.
 - v) Any other taxes/cess as per Government directives shall be deducted from each bill paid to the contractor from time to time.
8. The specifications, Terms & Conditions, other regulations which are not herein mentioned will be guided by relevant CPWD / IS /Other Central Govt. /state Govt. norms, OEM standards applicable for IIM Indore & the decision in this regard will be guided by the decision of the respective authority of IIM Indore which shall be final and binding to the contractor.
9. Performance guarantee in the form BG or FDR or DD @ 5% of tendered amount has to be furnished within 7 days of issue of LOA/LOI.
10. If called for, originals of the document submitted shall be produced.
11. General condition of contract (GCC) 2020 of CPWD will be applicable to the extent relevant to the job.
12. Location: IIM Indore.
13. The work shall be executed as per CPWD general specifications for Civil & electrical works with upto date amendments as per relevant IS and as per directions of Engineer-in-Charge. These additional specifications are to be read in conjunction with above. However, nothing extra shall be paid on account of these additional specifications & conditions as the same are to be read along with schedule of quantities for the work.
14. Necessary clarification required by the IIM Indore shall have to be furnished by the Tenderer within the time given by the IIM Indore for the same. The Tenderer will have to depute his representative to discuss with the officer(s) of the IIM Indore as and when so desired. In case, in the opinion of the IIM Indore a Tenderer is taking undue long time in furnishing the desired clarifications, his bid will be rejected without making any reference.
15. The Tenderer will have to fill up their rates only in the price bid in BoQ format. Tenders in which the price bids are given in any other format are liable to be rejected.
16. A tenderer will also not be allowed to withdraw or modify any condition at a time after the technical bids have been accepted and the decision to open the price bid has been taken by the IIM Indore.

17. The IIM Indore reserves the right to reject any or all the price bids and call for fresh prices/ tenders as the case may be without assigning any reason.
18. All tools, plants and measuring or weighing equipment shall be arranged by the contractor himself and nothing extra shall be paid to the contractor on this account.
19. Any item which is not available in the BOQ shall be paid as per DSR 2018 rates. If it is not available in BOQ & DSR 2018 then extra item shall be worked out as actual cost of the materials and actual cost of the labour plus 15% as overhead and profit and the GST will be paid extra. The decision of Engineer-in-charge will be conclusive and final binding on the contractor.
20. **Security deposit:**
- a. The security deposit will be collected by deductions from the final bill of the contractor at the rate mentioned below. The security deposit can also be deposited in cash or in the form of Government Securities, Fixed Deposit Receipts etc.
 - b. A sum @ 2.5% of the gross amount of the bill will be deducted from final bill of the contractor. Such deductions will be made unless the contractor has deposited the amount of security at the rate mentioned in cash or Government securities or Fixed Deposit Receipts. This is in addition to the performance guarantee that the contractor is required to deposit as per clause mentioned in the tender document.
 - c. The security Deposit shall be refunded to the contractor after the completion of defect liability period of 01 (ONE) year.

21. **Performance Guarantee:**

The contractor whose bid is accepted will be required to furnish performance guarantee of 5% (Five Percent) of the bid amount within Seven days of issue of LOI. This guarantee may be in the form of Banker's cheque of any nationalized bank/Demand Draft of any nationalized bank/ Fixed Deposit Receipts or Guarantee Bonds of any nationalized Bank or the State Bank of India in accordance with the prescribed form in CPWD manual. In case the contractor fails to deposit the said performance guarantee within the period as indicated above, including the extended period (Maximum allowable extension with another 07 days with late fee @ 0.1% per day of Performance Guarantee amount), the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee.

The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that.

22. **Terms of Payment:**

- Payment will be made after completion of the work and submission of final bill duly supported by work completion certificate issued by Engineer In-charge.
 - Final bill from vendor will not be accepted unless accompanied by joint measurement / MB duly filled up & accepted.
- a. Rates, subject to the nomenclature of the item as per schedule of quantities, the specification indicated in the tender documents, the rates quoted shall include charges for forwarding, insurance, freight and delivery, loading, unloading through cranes & civil works (foundations) at site, cost of all materials including royalty & taxes if any, labor, sundry inputs, execution of work at all heights, levels, pattern and design for all leads, lifts and depths including overhead charges and contractor's profit. Nothing extra shall be paid on this account.

23. **DLP:**

The Defect Liability Period (DLP) will be of 12 months from the date of handing over. Nothing extra for this period shall be paid.

24. Proper safety will be exercised during the work and all the personnel protective equipment and tools like helmets, gloves, safety belts, shoes etc. will be provided by the contractor during the work at his own cost.
25. Contractor will ensure proper cleaning of site and hygiene during the work on regular basis.
26. In case of any damage to the property of IIMI / site of work by workers/personnel of contractor, the contractor will be solely responsible and appropriate damage cost along with penalty will be recovered from the contractor's bill/payment/SD etc.
27. All legal and other statutory responsibilities regarding securities of materials, labour, payments, accident, insurance and law suits during the work will be solely borne by contracting agency and IIM Indore shall not be responsible in any manner whatsoever. The contracting agency will ensure proper and disciplined behavior of the workman. If any damages are caused by the contracting agency to the property to the Institute, the same shall be recovered from contracting agency's bill.
28. **Completion Period:** Completion period - 45 Days
29. **Guarantee:** The Job shall be guaranteed for a period of 12 months from the date of taking over by the institute against unsatisfactory performance and/or stability due to defective design, workmanship of material. The material or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-Charge. In case it is felt by the institute that undue delay is being caused by the contractor in doing this, the same will be got done by the IIM Indore at the risk and cost of the contractor. The decision of the Engineer-in Charge in this regard shall be final.
30. **Compliance with regulations and Indian standards:** All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by these specifications.
31. **Indemnity:** The successful tenderer/bidder shall at all times indemnify the IIM Indore, consequent on this works contract. The successful tenderer/bidder shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the IIM Indore shall not be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the structure and ancillary system under the supervision of the successful tenderer/bidder in so far as the latter is responsible. The successful tenderer/bidder shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer/bidder due to the above.
32. **Mobilization advance:** No mobilization advance shall be paid for this work.
33. **Penalty for Delay:** Liquidated damages @1% one percent per month or maximum 10% of the contract value will be levied.
34. **Repeat order:**
Subject to mutual agreement on rates / other items & conditions of the tender, repeat order may be issued based on urgency of the future requirement if any so as to avoid time delay for tendering/processing/award for additional requirement.

AGREEMENT

THIS AGREEMENT made at Indore on the _____ day of _____ 2020 between Indian Institute of Management Indore Rau- Pithampur Road, Indore (hereinafter called "The IIM INDORE" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of the one _____ part AND _____

(herein after called "The Contractor" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the other part.

WHEREAS

The IIM INDORE is desirous of carrying out the "NIT No. IIMI/Project/08/2020/100, File No. 164 for the work of **"Replacement of 33KV defective HT Breaker at Utility-I at IIM Indore."**

The Works are to be executed as per the schedules mentioned in tender document, drawings and specifications describing the works to be done.

The Contractor has agreed to execute the said works subject to the provisions hereinafter contained and subject also to General Conditions of Contract, Special conditions of contract, Safety Code, Model Rules for the protection of health and Sanitary arrangements for workers, Specifications, Preambles and Schedule of Quantities and installation schedule (all of which are hereinafter collectively referred to as the 'said tender conditions') and strictly in accordance with the Scope of work annexed hereto at or for the respective rates set out in the Schedule of Quantities amounting to the sum as there under arrived at or such other sums as shall become payable there under (hereinafter referred to as the said tendered amount).

NOW IT IS HEREBY AGREED AS FOLLOWS: -

1. In consideration of the said tendered amount to be paid by The IIM INDORE to the Contractor at the time and in the manner set forth in the said tender conditions and in accordance with the Schedule of Payments to execute and complete the work shown upon the said Drawings strictly in accordance with the specifications and Schedule of Quantities.
2. The said tender conditions, scope of work and the annexures hereto shall be read and considered as forming part of this contract and the parties hereto shall respectfully abide by to the said conditions and perform the agreement on their part respectively contained in the said conditions.
3. The approved drawings if any, notice inviting tenders technical specification etc. shall also form the basis of this contract.
4. This contract is an item rate Contract and to be carried out and to be paid for according to the Schedule of Payments at the rates contained in the Schedule of Quantities.

5. The contract herein contained shall comprise not only the works mentioned above but all subsidiary works connected therewith within the same site as may be ordered to be done from time to time by the said Engineer In charge for the time being, even if such work may not be shown on the said Drawings or described in the said Specifications and Schedule of Quantities.
6. The IIM INDORE reserves to themselves the right of altering the specifications and the nature of the work by adding to or omitting from the scope of work any item of work or portions of the same without prejudice to this contract.
7. Time shall be considered as the essence of this contract and the Contractor hereby agrees to commence the work within 10 days from the date of work order or from the date of handing over of the site, as provided for in the said terms and conditions, whichever is later, and shall complete the entire work within the specified period, subject nevertheless the provisions for extension of time as may be agreed to by the IIM INDORE and as contained in the said conditions.
8. All payments by the IIM INDORE under this contract shall be made only at Indore.
9. All disputes arising out of or in any way connected with this contract shall be deemed to have arisen at Indore and courts in Indore only shall have jurisdiction to determine the same.
10. That the contract and several parts of this contract have been read by the contractor and fully understood by him. The contractor shall not be entitled for payment beyond tendered quantities unless ordered specifically by written instructions of Director IIM INDORE.
11. This contract shall be signed in duplicate, the original whereof shall be kept in the custody of the IIM INDORE, and the duplicate with the Contractor.

IN WITNESS WHEREOF the IIM INDORE has set his hands hereunto and two duplicates hereof through his duly authorized official and the Contractor has caused these presents and two duplicates hereof under his common seal by his duly authorized representative at the place and on the date month and year first herein above written.

SIGNED, SEALED AND DELIVERED by IIM INDORE, by the hand of

Signature:

Name:

Designation:

IN THE PRESENCE OF

(1) Signature:
Name:
Address:

(2) Signature:
Name:
Address:

SIGNED, SEALED AND DELIVERED BY the Contractor M/s. _____
_____.

Signature:
Name:
Designation:

IN THE PRESENCE OF

Name:

(1) Signature:
Address:

(2) Signature:
Name:
Address:

Form of Performance Security (Guarantee) Bank Guarantee Bond

In consideration of the Director, IIM Indore (hereinafter called "The IIM Indore") having offered to accept the terms and conditions of the proposed agreement between.....and (hereinafter called "the said Contractor(s)") for the work..... (hereinafter called "the said agreement") having agreed to production of an irrevocable Bank Guarantee for Rs. (Rupees only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We, (hereinafter referred to as "the Bank") hereby undertake to pay to the IIM Indore an amount not exceeding Rs. (Rupees..... Only) on demand by the IIM Indore.

2. We,(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the IIM Indore stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupeesonly)

3. We, the said bank further undertake to pay the IIM Indore any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We, (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the IIM Indore under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in- Charge on behalf of the IIM Indore certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We, (indicate the name of the Bank) further agree with the IIM Indore that the IIM Indore shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the IIM Indore against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the IIM Indore or any indulgence by the IIM Indore to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the IIM Indore in writing.

8. This guarantee shall be valid up tounless extended on demand by the IIM Indore. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupees) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged. Dated the day offor.....(indicate the name of the Bank).

Scope of work, Technical Specifications & Approved makes

1. Scope of Work:

The scope of work shall include the following.

- a. "Supply & Installation (on civil foundations) of 33KV HT Breaker Panel, CT, PT & Relay panel complete as per technical specifications and handing over to the IIM Indore.
- b. Any other work related to but not specifically mentioned above, required for completion of the job as per the scope of work.
- c. Construction of RCC Foundation & associated works required for installation of items mentioned in the tender.
- d. Providing all-inclusive service including all supplied materials, labour etc. during defect liability period (DLP) of 1 (ONE) years from the date of completion.

2. Technical Specifications:

33KV Outdoor Vacuum Circuit Breaker:

Make: BHEL/ABB/Siemens/Schneider

1. Scope:

This specification covers design, manufacture, assembly, testing at manufacturer's works, packing and forwarding of 36KV Vacuum Circuit Breakers with all accessories and galvanized supporting structures for breaker mounting.

2. Standards:

The Circuit Breakers shall comply in all respect with the requirements of latest issue of IEC62271-100.

3. Specific Technical Requirement:

The equipment to be supplied under this specification is outdoor type Vacuum power circuit breakers for use in 36 kV system.

The Circuit Breaker shall have identical pole units, operated through a common shaft (gang operated) and interlinked mechanically to the common operating mechanism unit and complete with all devices including galvanized breaker supporting structures.

The circuit breaker shall have vacuum interrupters as interrupting medium, designed to provide a long contact life at all currents upto rated making and breaking current during switching operation. The vacuum interrupters should be sealed for life and shall be encapsulated by porcelain insulators for outdoor installation requirement of the circuit breakers. The offered breakers shall be suitable for outdoor operation under climatic conditions specified without any protection from sun, rain and dust storm.

The vacuum interrupters of each phase shall be housed in a separate porcelain insulator. The three identical poles shall be mounted on a common base frame and the contact system of three poles should be mechanically linked to provide three pole gang opening/closing for all type of faults.

- i. The offered equipment shall be practically maintenance free over a long period.
- ii. All mechanical parts and linkages shall be robust in construction and maintenance free, over at least 10,000 switching operations, except for lubrication of pins/articulated joints.
- iii. Similar parts shall be strictly interchangeable without special adjustment of individual fittings. Parts requiring maintenance shall be easily accessible, without requiring extensive dismantling of adjacent parts.

- iv. The circuit breaker shall be supplied complete with all auxiliary equipment, meant necessary for the safe operation, routine and periodic maintenance. All internal wiring including those of spare auxiliary contacts shall be complete and wired upto terminal blocks.
- v. The breaker shall be totally re-strike free under all duty conditions. The details of any device incorporated to limit or control the rate of rise of re-striking voltage across the circuit breaker contacts shall be stated.
- vi. The breaker shall be suitable for three phase re -closing operation.
- vii. An operation counter, visible from the ground level even with the mechanism housing closed shall be provided.

4. Temperature Rise:

The maximum temperature attained by any part of the equipment when in service at side and under continuous full load conditions and exposed to the direct rays of the sun shall not exceed the permissible limits fixed by IEC.

5. Support Insulator:

The support insulator shall conform to IEC-60137. Minimum clearance between phases, between live parts and grounded objects shall be as per relevant standard and also should conform to local Electricity Rules of the user country. The minimum creepage distance for severely polluted atmosphere shall be 25 mm/KV as per IEC-815-1985.

Sharp contours in conducting parts should be avoided for breakdown of insulation. The insulators shall be capable to withstand the seismic acceleration of 0.6 g in horizontal direction and 0.6g in vertical direction.

6. Operating Mechanism and control cubicle:

The operating mechanism shall be stored energy type and capable of giving specified duty of the breaker (sequence of opening and closing) as specified under O-0.3 sec-CO-3 min-CO. The breaker shall also pass the operational test which ascertains the capabilities of operating mechanism.

The operating mechanism shall be capable to perform 10,000 operations at rated current efficiently. Operating mechanism should also be suitable for three phase auto re-close duty. The closing spring shall be automatically charged by motor immediately after closing operation. In case of failure of supply to the spring charging motor, the spring shall be chargeable by spring charging handle.

The spring charging handle shall be an integral part of the mechanism. Separate spring charging handle is not allowed since it could get misplaced at site.

The operating mechanism should have mechanical anti-pumping feature.

a) Tripping/Closing Coils:

The circuit breakers shall be provided with one trip coils and one closing coil per breaker. The trip coils should be of continuous rating to improve reliability and reduce the possibility of burning of the coils during service.

b) Trip Free Features:

The trip free mechanism shall permit the circuit breaker to be tripped by the protective relay even if it is under the process of closing. An anti-pumping device to prevent the circuit breaker from reclosing after an automatic opening shall be provided to avoid the breaker from pumping i.e., anti pumping relay should interrupt the closing coil circuit.

c) Controls:

The circuit breaker shall be controlled by a control switch located in the control cabinet. The control arrangement shall be such as to disconnect the remote control circuits of the breaker, when it is under test. Local control devices, selector switch and position indicator shall be located in weather and vermin-proof cabinet with degree of

protection not less than IP-55. Local/remote selector switch shall be provided for all breakers for selection of "Local" control/remote control.

Provision shall be made for local manual, electrical and spring controls. Necessary equipment's for local controls shall be housed in the circuit breaker cabinet of weather-proof construction.

Each circuit breaker shall have a mechanical open/closed and spring charge indicator. Mechanically ON/OFF indicator, spring charged indicator and operation counter shall be provided on the front of the control cubicle.

Closing coil shall operate correctly at all value of voltage between 85 % and 110% of the rated voltage. Shunt trip coils shall operate correctly under all operating conditions of the circuit breaker upto the rated breaking capacity and at all values of supply voltage between 70% and 110% of rated voltage. The variation in A.C. supply voltage shall be -15% to +10% while variation in frequency shall be +/- 3%. Working parts of the mechanism shall be noncorrosive material. Bearings which require grease shall be equipped with pressure type fillings. Bearing pins, bolts, nuts and other parts shall be adequately pinned or locked to prevent loosening or changing adjustment with repeated operation of the circuit breaker. It shall be possible to trip the circuit breaker even in the event of failure of power supply.

Operating mechanism and all accessories shall be enclosed in control cabinet.

d) Enclosure:

The enclosure shall be made out of MS sheet metal not less than 2.5 mm thick and of light section structural steel. It should be weather proof as well as vermin proof.

The enclosure shall provide protection against dust and foreign objects. Each cabinet section shall have full width and full length hinged doors mounted on the front that swing fully open. The doors shall be provided with latches to securely hold it with the cabinet.

Doors shall be of sturdy construction, with resilient material covering, fully parametrically contacting the cabinet frame to provide dust protection and prevent metal to metal contact except at the latch points.

All screws and bolts used for assembling and mounting wire and cable termination, supports, devices and other equipment shall be provided with lock washers or other locking devices. All metal parts shall be clean and free of weld splatter, rust and mill scale prior to painting. The mounting structure shall be galvanized.

e) Wiring and Cabling:

- i. Control wire shall be stranded tinned copper switchboard wire with 1.1 kV PVC insulation conforming to the requirements of relevant IEC standards.
- ii. All the control circuit and secondary wiring shall be wired completely and brought out to terminal block ready for external connections in the control cabinet. The cross-section of control wire shall not be less than 2.5 mm² copper.

7. Supporting structure:

The circuit breakers shall be supplied complete with necessary galvanized steel supporting structures, foundation and fixing bolts, etc., the galvanizing shall be as per IS. The mounting of the breaker shall be such as to ensure the safety of the operating staff and should conform to Indian Electricity Rules, 1956. Minimum ground clearance of live part from ground level shall be 3400 mm from finished ground level.

8. Vacuum Interrupter:

Each pole of the circuit breaker shall be provided with vacuum interrupter, one for each phase, hermetically sealed for life and encapsulated by ceramic insulators.

The vacuum interrupter shall be encapsulated with silicone material for long service life and avoid moisture condensation which may lead to flashover from VI's external surface. The interrupter should be such that contact gap setting is not required to be done during service life. VI with contridge cup arrangement of main contacts are not allowed.

The VI should be capable of C2 class operations and should be capable of handling fault currents upto 31.5kA for 3 secs.

9. Tests:

Type Tests:

Each circuit breaker shall comply with requirements of type tests prescribed in 62271-100

- i. Short time and peak withstand current test.
- ii. Short circuit breaking capacity and making capacity.
- iii. Capacitive current switching test: Line charging, cable charging and capacitor bank current breaking test
- iv. Dielectric test i.e., power frequency withstand and impulse withstand test
- v. Temperature rise test.
- vi. Extended Mechanical Endurance Test at ambient temperature.
- vii. Measurement of resistance of the main circuit.

Routine Tests:

Routine Tests as per IEC-62271-100 shall be carried out on each breaker in presence of purchaser's representative at manufacturer's works.

Design Rating:

Sl. No.	Description	Particulars	
1	Type	Outdoor	
2	Reference Standard	IEC 62271-100	
3	Rated Voltage	33kV	
4	Maximum (continuous) rated service voltage	36KV	
5	Nominal current rating	1600A	
6	Frequency	50 Hz	
7	Short Time current rating	26.3kA for 3sec	
8	Breaking capacity	26.3kA	
9	Making capacity	65kA peak	
10	Maximum Temperature rise over ambient	Within limits as per EC 62271-100	
11	Dry - 1 minute power frequency withstand voltage		
	a	between line terminal and grounded objects	70KV rms
	b	between terminals with breaker contacts open	70KV rms
12	1.2/50 micro second full wave impulse withstand test voltage for the two cases above		
	a	Between line terminals and grounded objects	170KV peak
	b	between terminals with breaker contacts open	170KV peak

13	The rating of the circuit breaker for capacitor switching	400A
14	Opening Time	45 (+15/-10) ms
15	Closing Time	65 (±15) ms
16	Total creepage distance	900mm
17	Number of poles of circuit breaker	3
18	Number of breaks per phase	1
19	Number of spare auxiliary contacts provided	
	a Those closed when breaker is closed	6
	b Those open when breaker is closed	6
20	Type of operating mechanism	Spring operated mechanism
21	Control circuit voltage	24V DC
	a Operating voltage of tripping coil	70% to 110% of the Control voltage
	b Operating voltage of closing coil	85% to 110% of the Control voltage
22	Voltage of spring charging motor	230V AC
23	Time required for motor to charge the spring fully.	15 sec (Max)
24	Auxiliary Power Supply	230 VAC - Heater/Illumination/Socket
25	Paint Shade IP Assy./ Control Cubicle	Synthetic Enamel Spray Paint Light Grey to Shade No. 631 of IS:5.
26	Structure	Hot Dip Galvanized

Standards Applicable:

Switchgear	IEC:62271-100/IS:13118-1991/ IS:3427-1969
Statutory regulations	Meets Indian Electricity Rules 1956(Pub.1989) Clause Nos. 29, 35, 48, 51, 64A, 67 & 120.
Seismic level	Upto Zone-V as per IS:1893

Fitment Details of Vacuum Circuit Breaker:

IT.NO.	BRIEF DESCRIPTION	QTY.
1.0	VACUUM CIRCUIT BREAKER RATED: 800A, TYPE VBF or equivalent Comprising:	1
1.1	Vacuum Interrupters Rating: 36kV, 25kA, 1600A.	3
1.2	Set of Porcelain Insulators for housing Vacuum interrupters & glass fiber drive rod.	3
1.3	Galvanized steel support structure complete with foundation bolts (For VCB, CT & PT)	1
1.4	Galvanized steel support structure for CTs/PTs Complete with foundation bolts & CT mounting brackets	2

IT.NO.	BRIEF DESCRIPTION		QTY.
1.5	3 Phase Inter-phase Assembly.		1
1.6		Motor/Manually charged, independent spring closing mechanism comprising:	1
	1.6.1	Mechanical ON/OFF indicator.	1
	1.6.2	Manual trip/close device.	1
	1.6.3	Operation counter.	1
	1.6.4	Spring charging motor & rectifier, 230VAC	1
	1.6.5	Spring charging limit switch	1
	1.6.6	Spring charged indicator.	1
	1.6.7	Auxiliary switch with 6NO+6NC contacts.	1
	1.6.8	Shunt trip coil. (Connected in parallel) - 275 W	2
	1.6.9	Spring release coil. - 275 W	1
1.7		Local control panel, comprising:	1
	1.7.1	Padlocks and duplicating keys	1
	1.7.2	Trip/ Neutral / Close Control Switch	1
	1.7.3	Space heater equipped with industrial grade switch.	1
	1.7.4	Cable gland	1
	1.7.5	Industrial Grade receipt able type 3 pin 15 Amps, power plug & socket with switch.	1
	1.7.6	Local Remote changeover switch.	1
	1.7.7	Manually operated tripping push button / lever (mechanical device convenient located to trip all three phases simultaneously)	1
	1.7.8	Pistol grip circuit breaker control switch having trip/ normal close position.	1
	1.7.9	Terminal boards	1
	1.7.10	Spring charged indicator.	1
	1.7.11	Operation counter.	1
	1.7.12	Fuses /MCBs are required for AC & DC supply	1
	1.7.13	The no. of terminal provided shall be adequate enough to wire out all contacts and control circuits plus 20% spare terminal for owner's use	1
	1.7.14	Manual charging spring operating handle for maintenance	1
	1.7.15	Cubicle lamp with cage & switch	1
	1.7.16	Anti-Pumping Contactor/Plug-in Relay	1
	1.7.17	Gas pressure monitoring device for each pole with suitable glass window to monitor the pressure without opening of CB	1
1.8		Terminal Connectors for Dog ACSR conductor.	6
1.9		Spring charging handle.	1
1.10		MCB for AC supply	1
1.11		MCB for DC supply	1

33kV oil Immersed Outdoor Type Current Transformer, class 1.0:

Make: Laxmi Engineering/Apoorv Electricals/Universal Isolator (Indore)

1.1 Scope:

This specification covers design, manufacturing, testing, and inspection during manufacturing and before dispatch at manufacturer`s works of 33 KV Outdoor Single Phase, Tape/Paper Insulated, Oil Cooled Current Transformers for relaying and metering purpose for 33 KV solidly grounded system complete with Bimetallic Terminal Connectors.

1.2 General Requirement:

- a. The 33 KV current transformers shall be of outdoor type, single phase, oil immersed self cooled dead tank design. These CTs shall also be suitable for operation in humid atmosphere and in the tropical direct sunlight with temperature up to 50°C.
- b. The above 33 KV CTs meant for outdoor application should be suitable for use in areas prone to heavy lightning strokes. The CTs should be suitable for satisfactory operation under all types of adverse climatic conditions, prevailing in the State of M.P.
- c. Further, the above CTs are required to be mounted on a cantilever support provided on outdoor structure of circuit breaker in the switchyard. The CTs will therefore, have suitable mounting holes in the base channel, for clamping on the structure.
- d. The offered CTs will be dead tank design. Live tank designs CTs are not acceptable.
- e. The current transformers shall have the following specifications: -
33KV Outdoor Oil Immersed Dead Tank Single Phase CT. Details as under:-

Ratio	: 100-50/5-5A
Core-I	: 15VA, CL 1.0
Core-II	: 10VA 5P10
STC	: 18.4KA / 3 Sec.
Insulation Level	: 36KV/ 70KV/ 170KVp
Terminal Connector	: 2 No. ACSR DOG
Standard	: IS 2705-1992

1.3 Design:

As stated above, the 33 KV CTs shall be of Tape / Paper insulated, Oil Cooled type housed in steel tank. The steel tank thickness for 33 KV CTs shall not be less than 3mm. Welded joints have to be minimized to avoid possibility of oil leakage in CTs. In any case welding in horizontal plane shall be avoided.

Adequate slop shall be provided on top of the tank to avoid collection of rain water. Besides marking on the name plate, serial number and make shall be additionally engraved on the sides of the CT Units.

1.4 Standards:

The current transformers shall fully comply with the latest issue of Indian Standard 2705 (Part-I, II, III & IV) with latest amendment thereof up to the date of issue of this tender.

1.5 Design and Manufacturing Requirement:

- a. The 33 KV current transformers shall be outdoor single phase, oil cooled type, suitable for the services indicated, complete in all respect conforming to the modern practices of design and manufacturing.
- b. The core shall be of high grade, non-ageing electrical silicon laminated steel of low hysteresis loss and high permeability to ensure high accuracy at both normal and with 25 % over load current.
- c. The current transformers shall be properly sealed to eliminate and prevent entry of air and moisture in the tank. For gasketed joints, wherever used, **joint less nitrite butyl rubber gaskets, minimum thickness 3 mm** neoprene or any other improved material shall be used. The gasket shall be fitted in properly with adequate space for accommodating the gasket under compression. The bidder has to submit complete details, drawings of gaskets for 33 KV CTs, which they have provided between joints and the gasket shall be durable and of proper quality to avoid leakage of oil used for mounting oil level indicator.
- d. The CTs shall be provided with a pressure-relieving device and an explosion vent with diaphragm having a rupture pressure of 0.98 Kg/sq.cm. at suitable places with proper clearances capable of releasing abnormal internal pressures. Design and arrangement of mounting of pressure release device and adequate size of oil level gauge should clearly be indicated in drawing.
- e. The maximum temperature attained by any part of the equipment, when in service, under continuous full load conditions and exposed to direct sun rays, shall not exceed 45 degree centigrade above ambient temperature of 50 °C reached in summer.
- f. The primary winding, terminals, terminal connectors clamps etc. are required to be designed considering the continuous over loading of 25 percent. For continuous over loading, the ratio and phase angle error shall be maintained within the specified limit as per relevant ISS.
- g. The primary terminal to winding joints shall be made by using silver brazing/hydraulically crimp.

1.6 Windings:

- a. The current transformer's **First core to be used for metering** and instrument shall be of accuracy class 1.0 specified in Clause 1.2 above. The primary winding shall be designed considering current density not exceeding 2.2 Amps/Sq.mm. The saturation factor of this core shall be low enough not to cause any damage to measuring instruments in the event of maximum short circuit current.
- b. Current transformer's **Second cores to be used for protective relaying** purposes shall be of accuracy class specified or appropriate class suitable for over current protection. The cores shall be designed for a minimum saturation factor of 10 for the highest setting. The magnetization curves for these cores shall be furnished along with the drawings of CTs.
- c. The winding should be placed inside the transformer tank at least 25mm above the tank floor to protect it, as far as possible, from the moisture(water) that may gradually accumulate at the bottom over a period of time.

- d. The rating of the secondary windings shall be 5A for secondary connections, threaded studs terminal shall be provided and brought out in a compartment on one side of current transformer for easy access. Further, the secondary terminals shall be provided with short-circuiting arrangement. The secondary taps shall be adequately re-enforced to withstand normal handling without damage.
- e. Secondary terminal studs shall be provided with at least three nuts and adequate plain and spring washers for fixing the leads. The studs, nuts and washers shall be brass nickel plated. The minimum outside diameter of the studs should not be less than 6 mm. The length of at least 15 mm shall be available on the stud for inserting the leads.
- f. The secondary terminals shall be invariably marked as follows:
 - i) 1S1 and 1S2 for metering core (ii) 2S1 and 2S2 for protection core
- g. The CTs secondary terminals shall be brought out to a suitable weather proof sheet metal terminal box on side wall of the tank adjacent to the primary outgoing (P2) terminal for termination of multi-core cables. The terminal box shall be provided with one cable gland for each core, which shall be suitable for 4 core 1100 Volt grade PVC/XLPE Insulated 2.5 sq.mm. Copper control cable. The dimension of terminal box and its opening shall be adequate to enable easy access and working space with use of normal tools. The outer cover of the secondary terminal box shall have proper arrangement of sealing.

1.7 Insulation:

- a. The insulating oil filling in each CT shall be in the scope of supplier. Best quality of new EHV Grade Transformer Oil should be used with the equipment with minimum BDV of 70 KV. The test certificate of the transformer oil shall be produced at the time of inspection. The oil shall comply in all respect with the latest version of IS-335:1983.
- b. The CTs shall be single phase, multi core, and separately mounted, freestanding, type for outdoor installation.
- c. All porcelain insulators shall be prepared from wet process porcelain with arrangement for hermetically sealing of the metallic tank containing the core and the secondary winding.
- d. Adequate insulation shall be provided on primary winding to achieve maximum dielectric strength. Also adequate clearances shall be provided between the primary conductor and the metal body.
- e. The terminals of primary and secondary winding shall be clearly marked according to relevant standards.

1.8 Insulation Withstand Characteristics:-

- a. Insulation withstand characteristics of 33 KV CTs shall be as per IS:2705 as shown in the table below :-

Nominal system voltage	Highest system voltage	Power frequency withstand Voltage (for 1 minute)	Lightning Impulse withstand Voltage (for 1 minute)
33 KV (rms)	36 KV(rms)	70 KV(rms)	170 KV (peak)

- b. The exterior of the CTs tank shall be thoroughly cleaned, scraped and giving a primary coat and two coats of durable oil and weather resisting enamel paint or hot dip galvanized. All steel bolts, nuts and fasteners exposed to atmosphere, shall be hot dip galvanized conforming to IS: 2633.
- c. Change in CTs ratio will be obtained by providing tapings in the secondary windings, while the primary will have only one winding.
- d. The CTs are required for outdoor application fitted with outdoor type porcelain bushings. Compound filled bushings are not acceptable. The CTs will be dead tank design. Live tank designs CTs are not acceptable.

1.9 Type of mounting:

The CTs shall be mounted on CT bracket, provided on Circuit Breaker's structure. Suitable sized MS channel/angles welded to the bottom of the tank must be provided for facilitating mounting of the CTs.

1.10 Terminal Connectors:

- a. The terminals of primary and secondary winding shall be clearly marked according to relevant standards and shall conform to latest version of IS: 5561 or equivalent International Standard. In respect of the terminal connector following shall be ensured:-

The primary terminals of 33 KV, CTs for transformer and line protection shall be of non-ferrous corrosion-proof material and shall be provided with suitable **pad type terminals connectors** to receive Dog Conductor.

- b. All above terminal clamps shall be designed adequately to take care of any bimetallic effect. Terminal connectors shall be tested for short circuit current capability, and temperature rise. The terminal connector shall also meet the following requirements :-
 - i. Terminal connectors shall be manufactured by pressure die casting & tested as per IS:5561.
 - ii. All castings shall be free from blow-holes, surface blisters, cracks and cavities. All sharp edges and corners shall be blurred and rounded off.
 - iii. No part of the clamp shall be less than 12 mm thick.
 - iv. The nuts, bolts & washers used in the current path shall be hot dipped galvanized
 - v. The bimetallic strips/ sleeve liner of minimum thickness of 2 mm shall be made by electroplating process.
 - vi. All current carrying parts shall be designed and manufactured to have minimum contact resistance.
 - vii. Size of terminal connector for which the clamp is designed and also rated current under site conditions shall be embossed/ punched on each part of clamps, except hardware.
 - viii. The conductor shall be tightened by at least six bolts of 8/10mm diameter. Conductor hold length must not be less than 100 mm.
 - ix. The surface of clamps to be tightened by the bolts should be flat in shape, so that it may be possible to open the nuts and bolts by normal spanners. Therefore, any type of groove in the clamp body for fixing of nuts should be avoided.
 - x. The portion of clamp to hold the conductor should be flat and straight and not zig-zag in construction, at both the sides, so that heating of clamp by throttling action of current may be avoided.
 - xi. Space of at least 50% of diameter of nuts should be available after each hole at both the sides of conductor holding portion for better mechanical strength.

- c. The Tank of each CT shall be provided with two separate GI earthing terminals, which shall have **non painted** surface for making bolted connection to **50x10 mm**. MS flat to be provided by the purchaser for connection to station earth mat. Suitable drawing should be submitted after award of contract for approval.

1.11 Studs:

The stud provided on the primary should invariably be made of brass which is tough and durable. Stud should have adequate cross section/diameter for carrying the rated primary current, as well as the rated short time current. The minimum required diameter of the brass studs are -

S.No.	Current Rating	Diameter of Primary stud (Min)
1	100-50/5-5A	16 mm.

The length of the primary studs available for clamping the terminals shall not be less than 50 mm. Minimum 2 nuts with a check nut and washer should be provided on upper side of stud.

1.12 Bushing:

The basic insulation level of the bushing shall be as specified and porcelain shall be homogenous and free from cavities and other flaws. This shall be so designed as to have ample insulation and mechanical strength. All insulators of identical ratings shall be inter-changeable. Only type tested insulators shall be provided in the CTs. The bidder is required to furnish type test reports of all bushings after award of contract.

1.13 Routine Tests:

The following Routine Tests shall be witnessed.

- Verification of terminal markings.
- Power-frequency withstand tests on secondary windings.
- Power-frequency withstand tests between sections.
- Inter-turn over voltage test.
- Power-frequency withstand tests on primary winding.
- Partial discharge measurement.
- Determination of errors.

33kV oil Immersed Outdoor Type Potential Transformer, class 1.0:

Make: Laxmi Engineering/Apoorv Electricals/Universal Isolator (Indore)

1.1 General Requirement:

33 KV Single Phase Potential Transformer shall conform to IS-3156:92 with its latest amendments if any.

The oil filled PT complete with core, H.V. Coil & LV Coil housed in a full weather proof outdoor pole mounting type steel tank with one number of 33 KV weather proof porcelain bushing on the primary side for incoming connections.

Secondary terminals of the potential transformers shall be brought-out on the side of the tank to a separate terminal box. Box shall be made suitable for taking out secondary connections through armoured XLPE Insulated PVC Cables. Entry of the cables into the box of the unit shall be through glands and check nuts to be supplied along with epoxy compound.

The transformer tank shall be given three coats of rust preventing paint and finished with light gray no. 631-IS-S on all external surfaces. The tank shall be provided with lifting hooks properly welded on the side or top cover plate of the tank.

The dimensions and electrical characteristics of the 33 KV bushing shall be in accordance with IS: 2099 and its subsequent amendments, if any.

The minimum electrical clearance between phases and phase to earth shall be as per IS.

The top of the tank will have slope to drain the rain water and avoid collecting pockets. For indication of oil level, suitable oil level indicator should be provided.

To prevent moisture entry in the bushing chamber, the nuts on the top of the stem would be sealed with araldite. Further, the angular space between the stem and the bushing will be filled with epoxy cast compound or with araldite to prevent ingress of moisture.

The insulating materials for winding between HV and LV between interlayer of the winding for end turns shall be as per relevant IS. However, end turns have to be provided with enforced insulation and lead connecting to the bushing shall be provided extra insulation of fiber glass sleeves.

Voltage rating, PT ratio, class of accuracy, burden of 33 KV Single Phase PTs shall be engraved/painted on the body of main tank as well as on name plate.

The potential transformer will be connected phase to neutral with neutral point solidly earthed. The neutral of the system is also solidly earthed.

The potential transformers shall be designed to limit the temperature of winding and other parts as specified in the standards, when corrected for the difference between the temp. prevailing at site and temperature specified by the standards. The temperature rise at 1.2 times rated primary voltage when applied continuously at rated frequency and at rated burden shall not exceed the limits specified above and the temperature rise at 1.5 times rated primary voltage when applied for 30 seconds starting from previous stable operating conditions at the rated frequency and rated burden shall not exceed the above temperature limits by more than 10° C.

1.2 Type Tests:

The Single Phase PT shall be type tested, as per IS-3156/1992 with latest amendment, if any from NABL accredited testing laboratory. The type test comprises of following:-

- i. Temperature Rise Test
- ii. Lightning Impulse Test
- iii. Determination of errors or other characteristics according to requirement of the appropriate designation or accuracy class.
- iv. HV Power frequency wet withstand voltage test.

1.3 Routine Test:

Each 33 KV Single Phase PT shall be subject to routine tests in accordance with IS-3156 (with it latest amendment if any) at manufacturer's works and shall be witnessed in the presence of IIM's representatives, if so, desired by the IIM, Indore. The routine test comprises of following:-

- i. Verification of terminal marking and polarity test
- ii. Power Frequency Dry withstand voltage test on Primary winding
- iii. Induced over voltage withstand test
- iv. Power Frequency Dry withstand test on Secondary winding
- v. Partial Discharge Tests in accordance with IS-11322/1985
- vi. Determination of errors or other characteristics according to requirement of the appropriate designation or accuracy class.

Routine tests indicating results of all the required tests should be submitted in duplicate by the manufacturer along with the inspection offer or with inspection report.

1.4 Particulars of 33 KV Outdoor Potential Transformer, cast resin insulated

Sr. No.	Description	Particulars
1	Equipment	33 KV, Out Door, Single Phase, Oil Cooled Potential Transformer
2	Reference Standard	IS : 3156
3	Type	Dead tank
4	Rated voltage	33 KV
5	Highest voltage	36 KV
6	Frequency	50 Hz.
7	Basic Insulation Level	Primary : 36 KV / 70 KV / 170 KV(p) Secondary : 3 KV for 1 minute
8	Class of insulation	Class A
9	Creepage distance	900 mm (minimum)
10	Ratio	$33000/\sqrt{3} : 110/\sqrt{3}$
11	Class of accuracy	1
12	Burden	30 VA
13	Voltage factor	1.2 Continuous, 1.5 times for 30 Sec.
14	Core identification	Instrumentation, Metering & Protection
15	Place of installation	Out Door, Structure mounted
16	Primary terminal connector	Rigid type suitable for PT Stud to Dog ACSR

List of Approved Make

Sl. No.	Material	Manufacturer/ Brand Name
1	33KV Outdoor Vacuum Circuit Breaker	BHEL/ABB/Siemens/Schneider
2	33kV oil Immersed Outdoor Type Current Transformer	Laxmi Engineering/Apoorv Electricals/Universal Isolator (Indore)
3	33kV oil Immersed Outdoor Type Potential Transformer	Laxmi Engineering/Apoorv Electricals/Universal Isolator (Indore)

Chief Engineer

Enclosed: Financial bid & EMD Declaration

To be printed on the letter head of the Company
Bid Securing Declaration for Earnest Money Deposit (EMD)
(Ref Rule 4.11 of Manual for procurement of works 2019)

I/we.....Son/daughter of, residing at (address for communication) in the capacity of.....(Proprietor/Partner/Director) On behalf of (Name of the Company/Firm) declares that I/we will not withdraw or modify the Bids during the period of validity, If the contract is awarded to us, we will sign the contract and submit the Performance Security before the deadline defined in the Letter of Intent (LOI), in case of failure to do so, I/we will be suspended for the two years.

Signature of the authorized signatory:

Name of the signatory:

Date:

Indian Institute of Management, Indore
Financial Bid

Name of Work: “Replacement of 33KV defective HT Breaker at Utility-I at IIM Indore.”						
NIT No.: IIMI/Project/08/2020/100 File No. 442						
Name of Contractor:						
S.No.	Item Description	Unit	Qty	Rate (in Rs.)	Amount (in Rs.)	Amount in Words
1	Supply & Installation (on civil foundation) of Outdoor type 33 kV Porcelain Clad Vacuum Circuit Breaker, Rated 1600 Amps., 26.3 KA BREAKING CAPACITY Type VBF or equivalent, Auxilary voltage for motor :230V AC Closing / tripping coils: 24 / 30V DC along with breaker mounting structure, CT mounting structure & PT mounting structure Supply & Installation of 33KV Control & Relay Panel with Transformer & VCB Protection, Metering & Indications, annunciators, EM6400 RS 485 Series multifunction meter, master trip CT &PT Disconnecting Connectors with all protective relays etc. (for the above VCB)	Set	1			
2	Supply & Installation ((on civil foundation) of outdoor type 33KV oil immersed Current Transformer as detailed in technical specifications enclosed in the tender document. Ratio : 100-50 /5 Core I : 15 VA, Class 1.0 Core II : 10VA, 5P 10 STC : 18.4 kA Insulation Level : 36kV/70kV/170KVp Standard : IS 2705-1992	Nos	3			

S.No.	Item Description	Unit	Qty	Rate (in Rs.)	Amount (in Rs.)	Amount in Words
3	Supply & Installation ((on civil foundation) of Outdoor type 33 kV//3/110V//3 cast resin insulated 30 VA per phase potential transformer (PT) as detailed in technical specifications enclosed in the tender document. OVF : 1.2 Cont. and 1.5 for 30 Sec. Insulation Level : 36KV/ 70KV/ 170KVp Standard : IS 3156 - 1992	Nos.	3			
4	(Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level : 1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size- DSR Item - 5.1.3)	Cum	3.5			
Total Amount in Rs. (Excluding Goods & Service Tax)						

Name of Bidder Firm _____

Email Address _____

Authorized Person _____

Contact Number _____

Signature & Seal _____