ASSAM ELECTRICITY GRID CORPORATION LIMITED

OFFICE OF THE DEPUTY GENERAL MANAGER

T&T CIRCLE, DIBRUGARH.

TENDER DOCUMENT

NOTICE INVITING TENDER NO: AEGCL/DGM/TTC/DBR/O&M/TC-02/2026/4204, Dated: 30/01/2026

Name of work

Procurement of Spare Equipments for Sub-Station Maintenance at 132kV GSS, AEGCL, Dibrugarh

Tender cost amounting to
Deposited in the form of ……..
Vide ……

Issued to ……..
Address ……

Signature of Contractor/Firm

Deputy General Manager
T&T Circle, AEGCL,
Kodomoni, Dibruagrh.

Tender fee: Rs. 2000.00
EMD: Rs. **40,000.00**

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INSTUCTION TO THE BIDDER

A. INTRODUCTION:-

1. The **Deputy General Manager, T&T Circle, AEGCL, Dibrugarh** on behalf of Assam Electricity Grid Corporation Ltd, hereinafter referred toas AEGCL or Purchaser invites-tenders in prescribed form, under T&T Circle, AEGCL, Dibrugarh and having sound technical and financial capabilities for the following work.
2. **Name of Work**:- Procurement of Spare Equipments for Sub-Station Maintenance at 132kV GSS, AEGCL, Dibrugarh.
3. **Estimated Value for Work**:- ***Rs. 29,59,312.00.00 (Rupees Twenty Nine Lakhs Fifty Nine Thousand Three Hundred and Twelve only).***
4. **BIDDING PROCEDURE:-**
   a. The bidders must register themselves at https://assamtenders.gov.in as per the guidelines laid in the website.
   b. The bidders have to submit scanned copies of the relevant documents through the e-Tender Portal.
   c. The bid must be submitted online through e-tendering portal https://assamtenders.gov.in.
   d. Bidders may obtain further information from the office of the Dy. General Manager, T&T Circle, AEGCL, Dibrugarh, Assam [e-mail: dgmttc.dibrugarh@aegcl.co.in; Web site: www.aegcl.co.in].
   e. To participate in the tender the interested bidders may visit https://assamtenders.gov.in for all the relevant documents and information required to participate in the tender.
5. **CRITICAL DATES:**

a.	Tender Start Date	09:00 Hrs of 02/02/2026
b.	Submission Start Date	10:00 Hrs of 02/02/2026
c.	Tender End Date	12:00 Hrs of 23/02/2026
d.	Opening Date of Techno Commercial bid	13:00 Hrs of 23/02/2026

6. **COST OF BIDDING:**

The Bidder shall bear all costs associated with the preparation and submission of its Bid. AEGCL shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

Tender Paper Cost and Mode of Payment:

Bidder has to pay Non-Refundable tender processing fee of Rs.2,000.00 (Rupees Two Thousand) only via e-tender portal www.assamtenders.gov.in.

7. **SCOPE OF WORK**

The major scope of the work are as follows:

i) Design, manufacture and supply of of 33kV & 132KV Lightning Arrester, 33kV & 132kV Current Transformer and 132kV Circuit Breaker complete with all fittings and accessories including Terminal connectors as per bid specifications and price schedule.

ii) Loading of manufacturer's works, transportation and delivery at the substation site, including unloading at destination site shall be in the scope of the contractor.

iii) Freight and Transit Insurance, head loading, storage at site and site insurance of all materials at site shall be in the scope of the contractor.

iv) Arrangements of any permits required for transportation and movement of supplied materials is under the scope of the bidder.

v) All woks and labours as per Bill of Quantity and bid specification is under the scope of the bidder.

8. **BID SECURITY/EARNEST MONEY DEPOSIT**

1) For participation in bidding procedure, participants must compulsorily pay the Bid Security of **Rs. 60,000.00 (Rupees Sixty Thousand)** only via e-tender portal www.assamtenders.gov.in.
2) The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.
3) The bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the performance security.
4) The bid security may be forfeited:-

a) If a Bidder withdraws its bid during the period of bid validity period.

b) If the successful Bidder fails to sign the Contract within the specified period.

c) If the successful Bidder fails to furnish a performance security within 15 (Fifteen) days' time of issue of LOA/NOA.

No interest shall be payable by AEGCL on the above bid security

9. **BID SECURITY/ GUARANTEE**

a) Warranty: The materials and entire work are to be guaranteed against defective design, materials and workmanship and for satisfactory performance for a period of **18 (Eighteen) Months** from the date of final acceptance of the completed work by AEGCL.

b) The successful Bidder shall have to deposit through a Bank Guarantee/Fixed deposit/RTGS/NEFT from a Nationalized or scheduled Bank of RBI in AEGCL's standard proforma on non-judicial stamp of appropriate value for an amount equivalent to **10% (ten percent)** of the total value of the order including GST as performance security

within **15(Fifteen) days** from issue of LOA/NOA duly pledged in favour of the Purchaser concerned (AEGCL) and such security deposit shall be *valid* ***upto 60 days beyond the warranty period***. In case of Abnormally Low Bid the amount to be taken as performance guarantee will be as per bid document.

c) If the contractor/firm fails or neglects to observe and perform any of his obligations under the contract, Purchaser (AEGCL) shall have the right to forfeit, either in full or in part at his absolute discretion, the security deposit furnished by the contractor/firm.

d) If the value of the work increases from original ordered value, the contractor has to provide performance guarantee for additional amount.

e) If any abnormally low bid is accepted under Clause no. B.6.e.b.(iv), after taking the additional performance security as per the assessment of the committee, however, the total performance security should not have to be exceeded 20% of the total contract value.

f) The additional performance security shall be treated as the part of the original performance security and shall be valid for a period coextensive with the applicable defect liability period of the contract.

g) Non submission of the additional performance security shall constitute sufficient ground to rejection of the bid and similar assessment shall be initiated for next ranked bidder if that bidder is identified as ALB.

h) No interest shall be payable on such deposits.

10. BID VALIDITY

i. Bids shall remain valid for a period of **180(One Eighty)** days after the date of opening of Technical Bids.

ii. In exceptional circumstances, prior to expiry of the original bid validity period, AEGCL may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting its bid security. A bidder agreeing to the request will not be required or permitted to modify its bid, but will be required to extend the validity of its bid security for the period of the extension, and incompliance with Clause A.10 in all respects.

11. TIME SCHEDULE:

The successful bidder will be expected to complete the works within **180 (One Hundred and Eighty) days from the date of drawing approval.** Bidders should note that time is the essence of this bid.

12. WARRANTY:-

i) The contractor warrants that all goods are new, unused and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. The term period of warranty shall mean the period of ***18 months*** from the date of the materials are received at site in good and acceptable condition. If during the period of warranty, any defect is found, the Contractor shall rectify all defects in design, materials and workmanship that may develop under normal use of the equipment upon written notice from the Purchaser who shall indicate in what respects the equipment is faulty. The rectification / free replacement must be carried out within a reasonable time period and at free of cost.

ii) In the event of any emergency, where in the judgment of AEGCL, delay would cause serious loss or damages, repairs or adjustment may be made by the engineer or a third party chosen by the engineer without advance notice to the contractor and the cost of such work shall be paid by the contractor. In the event such action is taken by the engineer, the contractor will be notified promptly and he shall assist wherever possible in making necessary corrections. This shall not relieve the contractor of his liabilities under the terms and conditions of the contract.

iii) If it becomes necessary for the contractor to replace or renew any defective portions of the works, the provision of this clause shall apply to portion of the works so replaced or renewed until the expiry of twelve (12) months from the date of such replacement or renewal.

iv) The repaired or new parts will be furnished and erected free of cost by the contractor. If any repair is carried out on his behalf at the site, the contractor shall bear the cost of such repairs.

v) The acceptance of the equipment by the Employer shall in no way relieve the contractor of his obligation under this clause.

vi) In the case of those defective parts, which are not repairable at site but are essential for the commercial operation of the equipment, the contractor and the engineer shall mutually agree to a programme of replacement or renewal, which will minimize interruption to the maximum extent in the operation of the equipment.

vii) The offered products and its components must adhere to the latest relevant IEC, IS standards.

viii) The dispatch clearance of materials will be issued from AEGCL and after ONLINE/OFFLINE inspection.

13. CLARIFICATIONS:

i. A prospective Bidder requiring any clarification of the Bidding Document shall contact the AEGCL in writing at the AEGCL's address indicated in the Bid Document or raise his enquiries prior to 3(three) days of closing of the bid. AEGCL will respond to any request for clarification if deemed necessary.

ii. The Bidder is advised to visit and examine the site where the work is to be Carried out and its surroundings and obtain for itself on its own responsibility, all information that may be necessary for preparing the bid and entering into a contract. The costs of visiting the site shall be at the Bidder's own expense.

iii. The Bidder and any of its personnel or representatives will be granted permission by AEGCL to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder and its personnel will release and indemnify the Employer and its personnel from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

B. <u>ELIGIBILITY QUALIFICATION</u>.

1. ELIGIBLE BIDDERS:

i) A Bidder shall have Indian nationality. A Bidder shall be deemed to have the nationality of a country if the Bidder is a national or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of Republic of India.

ii) Subject to meeting the Qualifying Requirements, a Bidder may be a firm or company or any combination of entity with the intent to enter into an agreement supported by a letter of intent or under an existing agreement in the form of a joint venture, consortium or association. When the bidder is a firm, the names and address of the partners should be indicated and a copy of the certificate of registration with the concerned Registrar of firms should be enclosed with the Bid.

iii) When the bidder is a Company, the company registration document along with Memorandum of Association should be submitted.

iv) When the bidder is an individual carrying on business in a firm's name, the tender should be submitted by the owner of the firm, who may describe himself as carrying on business in the firm's name.

v) **In the case of the Joint Venture (JV): -**

When the bidder is a Joint Venture (JV) of two or more firms as partners, all partners shall be jointly and severally liable. The JV shall legally authorize one of the partners as the lead partner for the purpose of submitting the bid, incur liabilities; receive payments and instructions on behalf of the others. A copy of the **registered** JV agreement, executed on Non judicial e-stamp paper, shall be submitted with the bid. However, in case of successful bid, the agreement shall be signed by all the partners, so as to be legally binding on all the partners.

vi) AEGCL considers a **conflict of interest** to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations, and that such conflict of interest may contribute to or constitute a prohibited practice under Anticorruption Policy of Government of India and Government of Assam. In pursuance Anticorruption Policy's requirement that Employer as well as bidders, suppliers, and contractors observe the highest standard of ethics. AEGCL will take appropriate actions if it determines that a conflict of interest has flawed the integrity of any procurement process.

vii) A firm that is under a declaration of ineligibility by the AEGCL or any Government Entity or PSU at the date of the dead line for bid submission or there after i.e. on or before contract signing date shall be disqualified. Bidders shall provide such evidence of their continued eligibility satisfactory to the AEGCL, as the Employer shall reasonably request.

2. LEGAL ENTITY:-

Verification may be undertaken to verify that an applicant is a bona-fide registered company or business. Bidders are required to provide evidence of the legal entity by providing a copy of an official document as mentioned in the appendix attached along with this bid document.

3. EXPERIENCE: -

i. Experience on similar nature of works under contracts in the role of manufacturers, contractor, subcontractor, or management contractor for at least the last 7 (Seven) years prior to the bid submission deadline.

ii. The Bidder should have successfully completed similar works within last 7 (Seven) Financial years. Documentary evidence such as Work Order, Completion Certificate, etc. should be submitted as per below mentioned criteria:

Sl. No.	Name of work	Amount (Rs)
1.	One (1) work experience as mentioned in clause B.3(i) costing ***not less than 80% of total estimated cost.***	**₹23,67,450.00**

2.	Two (2) work experience as mentioned in clause B.3(i) costing ***not less than 50% of total estimated cost.***	**₹14,79,656.00**
3.	Three (3) work experience as mentioned in clause B.3(i) costing ***not less than 40% of total estimated cost.***	**₹11,83,725.00**

iii. The Bidder must have experience of supplying and erection of electrical equipments at 33kV and above voltage level of similar nature previously in AEGCL/APDCL or any other government organization or PSU.
(***Note: Similar nature of work means supply of electrical equipments such as breaker, CT, PT, Transformer etc..)***

iv. The bidder must submit experience and completion certificate issued from Govt. Department/reputed PSUs only satisfying the above-mentioned work experience criteria for technical qualification for scrutiny by AEGCL.

v. The acceptance of work experience will be as per decision of the tender committee.

vi. Moreover, AEGCL reserves the right to scrutinize any work order/work competition certificate submitted by the bidders with issuing authority and if any abnormalities are observed in the same, their bids will be rejected.

4. DOCUMENTS COMPRISING THE BID:

i. The Technical Bid submitted by bidders shall contain the following:

a. Bid Submission Sheet.

b. Duly signed bid document.

c. Documentary evidence to establish that the Bidder meet the qualifying requirements in accordance with Clauses B.1

d. The Bid Guarantee (Bid Security) in accordance with Clause A.8 & its sub clauses of this Section.

e. All Bidding Schedules properly filled up including Price Bid Schedules.

f. Technical literature/brochure/catalogue for offered product.

ii. To establish its eligibility and qualifications to perform the contract, the bidder shall provide along with the above mentioned documents the following additional documents (mandatory) on qualifying requirements such as:

a. Copies of PAN, GST Registration Certificate as per Goods & Services Tax laws.

b. Up-to-date GST return (Current Financial Year).

c. Bank Solvency of current financial year.

d. IT return(last 3 years).

e. Last 3 years annual turnover certified by CA.

f. Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount.

g. Experience and completion certificate as per clause B.3.

h. Annual Turn Over of last 3years(CA certified).

i. Manufacturer's Authorization.

j. Manufacturer's warranty & Suppliers Warranty.

k. Audited balance sheet of last 3 years (CA certified).

l. ID proof.

5. FINANCIAL QUALIFICATION

a. Minimum average annual turnover must be as mentioned below for respective works:

i) Average Annual turnover should be at least 30% of the estimated cost, calculated as total certified payments received for contracts in progress or completed, within the last 3 (Three) Years, ending 31st March of the previous financial year.

ii) Audited Balance sheet must be furnished as a proof of annual turnover.

iii) Any other form of supporting documents instead of Audited balance sheet will not be accepted.

iv) Current bank solvency certificate must be submitted to show the bidder's financial position.

sufficient to meet the cash flow during the construction period and in no case should be less than 80% of the total work value. (Work Value: **INR 29,59,312.00.00** (Rupees Twenty Nine Lakhs Fifty Nine Thousand Three Hundred and Twelve) only.

b. Wherever necessary the Employer may make enquiries with Bidder's bankers.

c. Bidder must keep GST liabilities up to date and non-payment of GST liabilities and non-filing of relevant GST return more than 3 (three) months shall be reckoned as GST defaulter and this may be considered a cause for disqualification of a bidder and the bid may be rejected.

6. EVALUATION CRITERIA:-

EVALUATION AND COMPARISON OF BID PROPOSALS

AEGCL will carry out a detailed evaluation of the bids in order to determine whether the bidders are qualified and whether the technical aspects are substantially responsive to the requirements set forth in the bidding documents. In order to reach such a determination, AEGCL will examine the information supplied by the Bidders and other requirements in the bidding documents, taking into account the following factors:

a. Qualification

The determination will take into account the Bidder's financial and technical capabilities and past performance; it will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Clause B.3 as well as such other information as AEGCL deems necessary and appropriate; and

an affirmative determination will be a prerequisite for AEGCL to continue with the evaluation of the proposal; a negative determination will result in rejection of the Bidder's bid.

b. Technical

Overall completeness and compliance with AEGCL's Requirements; the technical merits of materials and equipments offered and deviations from AEGCL's Requirements; suitability of the facilities offered in relation to the environmental and climatic conditions prevailing at the site; quality, function and operation of any process control concept included in the bid;

c. Commercial

i. Deviations and omissions from the contractual and commercial conditions as identified in the Bid.

ii. Compliance with the time schedule called for in the Bidding Document and evidenced as needed in a milestone schedule provided in the bid; and

iii. The functional guarantees of the facilities offered against the specified performance criteria of the plant and equipment.

d. Pursuant to Sub-Clause B.6, the following evaluation methods will be followed:

(i) **Time Schedule**: Bidders submitting bids that deviate from the time schedule specified will be rejected.

(ii) **Deviations from the Bidding Document**: Bidders shall base their Bid price on the terms & conditions specified in the Bidding Documents. Bids with material deviations and omissions shall be rejected.

(iii) **Functional Guarantee of the facilities:** Bidders shall state the functional guarantees (e.g. guaranteed performance or ratings or efficiency) of the proposed Goods in response to AEGCL's Requirements (Technical Specifications). Goods, Plant and equipment offered shall have a minimum performance (functional guarantees/ratings) specified in the Technical Specifications to be considered responsive. Bids offering Goods, plant and equipment with functional guarantees less than the minimum specified shall be rejected.

e. The following methodology will be practiced for identification and treatment of the Abnormally Low Bids (ALB) in this tender process of AEGCL:

a) **Identification:** For the identification of the Abnormally Low Bids, two approaches as applicable shall be adopted:

i) ***Absolute Approach*** when there is fewer than five substantially responsive bidders and if the bid price is 20% or more below AEGCL's cost estimate then AEGCL's tender evaluation committee should clarify the Bid price with the bidder to determine whether the Bid is abnormally low.

ii) ***Relative Approach*** is a statical comparison method which will be applied when there are more than five nos. of substantially responsive bids. A potential ALB is identified where the low Bid is more than one standard deviation below the average of substantially responsive bids received.

In this approach first the Average bid price is determined and then by deducting the standard deviation from the average bid price, potential ALB may be determined.

b) In case of ALB, the tender evaluation committee of the respective tenders shall undertake the following three stage review which are as follows:

i) Identify ALB as per the step mentioned in Clause No. (a).(i) and (ii) which ever is applicable.

ii) Clarify and analyze the bidders resource inputs and pricing, including overheads, contingencies and profit margins. In that respect committee may seek the reference of the guidelines of World Bank, AIIB, ADB etc.

iii) Decide whether to accept or reject the tender.

iv) On acceptance of the bid, whether Additional Performance Security is to be imposed on the bidder supplemented by

adequate justification.

c) Additional Performance Security in case of acceptance of ALB:

i) If any abnormally low bid is accepted under point no.(b) (iii), after taking of additional performance security as per the assessment of the committee, however the total performance security should not have to exceed 20% of the total W.O/LOI value.

ii) The additional performance security shall be treated as part of the original performance security and shall be valid for a period coextensive with the applicable defect liability period of the contract.

iii) Non submission of the additional performance security shall constitute sufficient ground to rejection of the bid and similar assessment shall be initiated for the next ranked bidder identified as ALB.

C. GENERAL CONDITIONS OF CONTRACT:

14. INSPECTION OF SITE:-

i) The Bidder is advised to visit and examine the site where the work is to be carried out and its surroundings, nature of work, site conditions, area for storage of materials, establishment of labour camp, site office, means of access to the site etc. and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract.

ii) The costs of visiting the site shall be at the Bidder‘s own expense. However prior permission should be sought from the tender inviting authority for visiting the site.

iii) Non- familiarity with the site conditions will not be considered are as on either for extra claims or for not carrying out the work in strict conformity with the specifications & requirement.

15. PREPARATION OF BID:-

i) Cost of Bidding:

The Bidder shall bear all costs associated with the preparation and submission of its Bid, and AEGCL shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

ii) Documents Establishing Conformity of the Goods and Services: -
The documentary evidence of the conformity of the goods and services to the Bidding Document may be in the form of letter, drawings and data, and shall furnish. A detailed description of the essential technical and performance characteristics of the goods and services, including the functional guarantees of the Goods, in response to the specification.

iii) Bidder should note clearly that department should not take any responsibility for issuing of any materials, equipment and T&P’s that may be required in the work.

iv) All materials, labours, equipment, T&P and heavy vehicle etc. required in the work shall have to be arranged by the bidder/contractor from his own sources in the event of allotment of the said work to him/them.

v) The bidder should clearly understand that all materials to be utilized in the work must confirm to the specifications. No substandard materials will be allowed to utilize in the work. Samples of each and every material to be brought to the site of work shall have to be get approved by the competent authority of the department before use.

vi) The contract must not be sublet under any circumstances. If an contractor found in doing so, his work liable to be terminated.

vii) The specification for the work shall be as per specification laid down in the items of work contained in the enclosed schedule of items of work or as per the APWD schedule of rates for Building (civil works), sanitary and water supply and internal electrification respectively (whichever is applicable) but certain modification in the specification and method of execution of work if required shall have to be carried , out which shall be finalized with the contractor bilaterally through discussion.

16. PRICE BID:-

1. Unless otherwise specified in the Bid Document and/or AEGCL’s Requirements, bidders shall quote for the entire plant and services on a single responsibility basis such that the total bid price covers all the Contractor‘s obligations mentioned in or to be reasonably inferred from the bidding document in respect of the including procurement, delivery, testing of materials, construction, labour cost, insurance, statuary requirements, and any other expenditure deemed necessary for completion of the Work.

2. The rate should also include the cost of testing of materials at the approved laboratory, carriage and transportation of sample, preparation of report, submission of report in all respect as required by AEGCL.

3. This includes all requirements under the Contractor‘s responsibilities for completing the work and where so required by the bidding document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the Bidding Document, all in accordance with the

requirements of the General Conditions. Items against which no price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items.

4. Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document
5. Bidders quoted price should include all cost of testing of materials, transportation of sample, storage, preparation and submission of report during approval period, construction period as well as after completion of the work.
6. Bidders quoted price should include all cost of testing of concrete (destructive or non-destructive) transportation of sample, storage, preparation and submission of report.
7. Taxes like work contract, income tax etc. which need to be deducted at source as per the prevailing law, will be deducted at source.
8. The Bided Price should on Fixed Price basis, prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account

17. DEVIATION/ERROR IN DRAWING AND SPECIFICATIONS.

1. In case of non-suitability of drawing or specifications, the matter to be brought to the notice of Competent Authority without any delay. Any modification or deviation should only be done after approval of Competent Authority.
2. In case of any omission and error in the drawing and specification the same procedure as above should be followed.

18. VARIATION AND DEVIATION OF QUANTITY:-

DELETION OF WORK:

AEGCL and its representative have the right to delete or decrease any item or quantity from schedule of quantity at its discretion if deemed necessary. No claim by the contractor will be admissible for this deletion or deduction of Item/quantity from schedule of quantity.

19. AWARD CRITERIA

The purchaser shall in general award the contract to the lowest substantially responsive bidder However, the purchaser reserves the right to not award contract to the lowest substantially responsive bidder without thereby incurring any liabilities to bidders.

20. SIGNING OF CONTRACT AGREEMENT

At the same time that it notifies the successful bidder that its bid has been accepted, AEGCL will send the bidder the Form of Contract Agreement incorporating all agreements between the parties.

Within **15 (fifteen) days** of receipt of the Form of Agreement, the successful bidder shall sign the Form and return it to AEGCL

21. RIGHT TO REJECT: -

(i) AEGCL reserves the right to reject any or all the bids without assigning any reason thereof and AEGCL further reserves the right to split up the work order in favour of more than one Contractor.

(ii) AEGCL also reserves the right to reject the lowest or any other price without assigning any reason.

(iii) The clauses which are not appearing in this Bid document will be as per The General Condition of Supply and Erection 2009 of AEGCL.

(iv) The General Condition of Supply and Erection 2009 of AEGCL is available in the AEGCL's website www.aegcl.co.in.

22. PAYMENT TERMS:-

1. No advance/Mobilization advance shall be made in this contract.
2. No claim for interest shall be entertained by AEGCL in respect of any money or balance which may be in AEGCL's hands owing to any dispute or difference or misunderstanding between the contractor and the AEGCL or due to the reason beyond the reasonable control of AEGCL.
3. Payment is subject to availability of specific fund.
4. The quantities may vary as per site requirements. Actual work done quantities will be measured after completion of work and will be paid as per certification by Engineer-in charge.
5. TDS at actual will be deducted from the payable amount against each invoice/bill.

6. Following documents need to be submitted along with invoice:
   i. Application of payment
   ii. Contractor's invoice showing LOA reference, Goods description, quantity dispatched, unit reclamation price, total amount(5copies).
   iii. Packing list and challan
   iv. Railway receipt/LR or E-Way bill(if applicable)
   v. Manufacturer's guarantee certificate of Quality.
   vi. Material inspection Clearance Certificate for dispatch issued by Purchaser.
   vii. Insurance certificate.
   viii. Physical verification certificate of material received at site by purchaser/Purchaser's site representative.

23. DISCLAIMER

AEGCL is not committed contractually in any way to those Bidders whose Bid are accepted. The issue of this Bid does not commit or otherwise oblige AEGCL to proceed with any part or steps of the process.

24. AMENDMENT OF BIDDING DOCUMENTS

i. At any time prior to the deadline for submission of bids, the AEGCL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addenda

ii. Any addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause, and shall be communicated in writing or by fax to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by fax to AEGCL

25. LANGUAGE OF BID

i. The bid, and all correspondence and documents related to the bid, exchanged between the bidder and AEGCL shall be written in the English language.

ii. Supporting documents and printed literature furnished by the bidder shall also be in English language

26. BID FORM AND BOQ

The Bidder shall complete the Bid Form and the appropriate BoQ furnished with the bidding documents.

27. PRICE BASIS

Prices quoted by the Bidder shall be inclusive of all scope of work as specified in this bidding document including any related services that is implicit to carry out the worry successfully. Price will be firm and no price variation will be allowed within the completion period given in the work order. Duties and Taxes shall be adjusted, except there is variation due to changes in legislation of the Country.

28. NEGOTIATION WITH BIDDER:

The purchaser reserves the right to hold negotiations with lowest bidder if AEGCL feels the quoted rates of particular item(s) are unreasonably high. The bid must be valid, eligible and technically acceptable and considered for award of contract. Cost quoted by bidder shall be inclusive of all scope of work as specified in the bidding document including any related services that is implicit to carry out the work successfully. Price will be firm and no price variation will be allowed within the completion period given in the work order.

29. VERIFICATION OF DOCUMENTS:-

AEGCL reserves the right to verify the documents submitted by the bidders with issuing authority and if any Abnormalities are observed in the same, their bids will be rejected.

30. FORCE MAJEURE CONDITION

Force Majeure condition shall be considered as any circumstances beyond reasonable control of the party claiming relief, including but not limited to strikes, lockout, civil commotion, riot insurrection, hostilities, mobilization, war, fire, flood, earthquake, malicious damage or accidents could entitle contractor to extension time. Any such delay should intimated within 10 (ten) days from the beginning of such delay to consider/approved, any claim without prior information may not be considered under force Majeure.

31. WORKING PROCEDURE:

i. All materials must be procured only after verification and approved at store by AEGCL or any authorised representative.

ii. Any materials bought to the site of work without approval from AEGCL, those materials will not be accepted and cannot be used in carrying out the work.

iii. All the work must be carried out as per the directions of AEGCL and no deviation from the directions shall be allowed under any circumstances. In case of inevitable discourse, the contractor must get the deviation approved from the AEGCL.

D. PURCHASER'S REQUIREMENTS

1. INTENT OF THE SPECIFICATION

(i) This volume of the specification deals with the general technical information & criteria for design, manufacture, supply & delivery of equipment/material as defined in Volume-1.

(ii) The provisions of this section shall supplement all the detailed Technical Specifications and requirements brought out herein. The Contractor's proposal shall be based on the use of materials complying fully with the requirements specified herein.

2. SCOPE

(i) The work involves design, engineering, manufacture, assembly, inspection, testing at manufacturer's works before dispatch, packing, supply, including insurance during transit, delivery at site **(as per Annexure-I)** of various equipment and materials as specified in subsequent Clauses and Sections.

(ii) It is not the intent to specify completely herein all details of design and construction of the equipment and accessories. However, the equipment and accessories shall conform in all respects to high standards of engineering, design and workmanship and be capable of performing in continuous operation up to the bidder's guarantees in a manner acceptable to the Purchaser. The Purchaser will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgement is not in full accordance therewith.

(iii) The major items of works included in the scope of this specification are listed below: -

a) Design, engineering, manufacture, assembly and testing at manufacturer's works of 33KV & 132kV Lightning Arrester 145kV Circuit Breaker, 33&132kV CT along with all fittings and accessories including Terminal connectors as specified in the BoQ.

b) Loading at manufacturer's works, transportation and delivery to site, including unloading at destination site.

c) The various items of supply are described very briefly in the schedule of Bid Form, Prices & Other Schedules and annexure. The various items as defined in these schedules shall be read in conjunction with the corresponding section in the technical specifications including amendments and, additions if any.

d) The bidder is required to fill up the BOQ/price schedule as given in the e-tendering portal.

3. DESIGN IMPROVEMENTS

(i) The Employer or the Contractor may propose changes in the specification and if the parties agree upon any such changes and the cost implication, the specification shall be modified accordingly.

4. DESIGN CO-ORDINATION

(i) Wherever, the design is in the scope of Contractor, the Contractor shall be responsible for the selection and design of appropriate material/item to provide the best coordinated performance of the entire system. The basic design requirements are detailed out in this Specification. The design of various components, sub- assemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

5. DESIGN REVIEW MEETING

The contractor will be called upon to attend design review meetings with the Employer, and the consultants of the Employer during the period of Contract. The contractor shall attend such meetings at his own cost at Assam or at mutually agreed venue as and when required. Such review meeting will be held generally minimum once a month or the frequency of these meeting shall be mutually agreed between the Employer and the Contractor. Frequency of Design Review Meetings shall depend upon the project requirement to ensure project implementation as per the Master Programme.

6. CONTRACTOR TO INFORM HIMSELF FULLY

The contractor should admit that he has examined the general condition of contract, specifications and schedule and has satisfied as to all the conditions and circumstances affecting the contract prices and fixed his price according to his own views on these matters and acknowledge that no additional allowances except as otherwise provided therein will be levied. The purchaser shall not be responsible for any misunderstanding or incorrect information obtained by the contractor other than information given to the contractor in writing by the purchaser.

7. STANDARDS

(a) The equipment covered under this bidding document shall, unless otherwise stated be designed, constructed and tested in accordance with the latest revisions of relevant Indian Standards and shall conform to the regulations of local statutory authorities.

(b) In case of any conflict between the standards and this specification, this specification shall govern.

(c) Equipment conforming to other international or authoritative Standards which ensure equivalent or better performance than that specified under Clause D.7(a)above shall also be accepted. In that case relevant extracts of the same shall be forwarded with the bid.

8. ENGINEERING DATA

(a) The furnishing of engineering data by the Contractor shall be in. accordance with the Bidding Document. The review of these data by the Employer will cover only general conformance of the data to the specifications and not a thorough

review of all dimensions, quantities and details of the materials, or items indicated or the accuracy of the information submitted. This review by the Employer shall not be considered by the Contractor's as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications.

(b) All engineering data submitted by the Contractor after review by the Employer shall or part of the contract document.

9. DRAWINGS AND DOCUMENTS FOR APPROVAL

(a) All necessary drawings and documents required for completion of the project is to be submitted by the contractor for approval. The drawings provided with bid (if any) are for indicative purposes only and fresh drawings are to be prepared by the contractor as per actual site condition after the survey. The drawings and documents are to be approved by AEGCL before procurement or commencement of work.

(b) All drawings submitted by the Contractor including those submitted at the time of Bid shall be with sufficient detail to indicate the type, size, arrangement, dimensions, material description, Bill of Materials, weight of each component break-up for packing and shipment, fixing arrangement required, the dimensions required for installation and any other information specifically requested in these specifications.

(c) **The drawings submitted for approval to the Employer shall be in quadruplicate**. One print of such drawings shall be returned to the Contractor by the Employer marked "approved/approved with corrections". The contractor shall there upon furnish the Employer additional prints as may be required along with one reproducible in original of the drawings after incorporating all corrections.

(d) The Contractor shall perform the work strictly in accordance with these drawings and no deviation shall be permitted without the written approval of the Employer, if so required.

(e) All manufacturing work under the scope of Contractor prior to the approval of the drawings shall be at the Contractor's risk. The contractor may make any changes in the design which are necessary to conform to the provisions and intent of the contractor and such changes will again be subject to approval by the Employer.

(f) The approval of the documents and drawings by the Employer shall mean that the Employer is satisfied that:

(g) The Contractor has completed the part of the Works covered by the subject document (i.e. confirmation of progress of work).

(h) The Works appear to comply with requirements of Specifications.

(i) In no case the approval by the Employer of any document does imply compliance with neither all technical requirements nor the absence of errors in such documents. If errors are discovered any time during the validity of the contract, then the Contractor shall be responsible of their consequences.

(j) For equipment and items in the scope of supply:

a) General arrangement drawing with full dimensions.

b) Electrical schematic diagram, where applicable.

c) Wiring diagram, where applicable.

All Designs/Drawings/Calculations/Data submitted by the contractor, from time to time shall become the property of the Employer and Employer has the right to use or replicate such designs for future contracts / works without the permission of the Contractor. The Employer has all rights to use/ offer above designs/drawings/data sheets to any other authority without prior Permission of the Contractor.

10. FINAL DRAWINGS AND DOCUMENTS

The successful Contractor shall require to provide following drawings and documents in printed form:

a) All approved drawings (as build) of equipment in three (3) copies.

b) Instruction manuals of the equipment in three (3) copies. These instruction manuals shall generally consist of-

i) Operation Manuals,

ii) Maintenance Manuals and

iii) Spare Parts Bulletins.

c) Copies of routine test reports (in triplicate) of relevant equipment.

d) Final Guaranteed and Other technical particulars of relevant equipment.

e) In addition to the above the Contractor shall provide four (4) sets of all the drawings and documents to Employer in printed form for his reference and record.

11. QUALITY ASSURANCE DOCUMENTS

(a) The Contractor shall be required to submit all the Quality Assurance Documents as stipulated in the Quality Plan at the time of Employers inspection of equipment/material.

(b) The Employer or his duly authorized representatives reserves the right to carry out Quality Audit and quality surveillance of the systems and procedures of the Contractors/his vendors Quality Management and Control Activities.

12. EMPLOYER'S SUPERVISION

(a) To eliminate delays and avoid disputes and litigation it is agreed between the parties to the Contract that all matters and questions shall be resolved in accordance with the provisions of this document.

(b) The manufacturing of the product shall be carried out in accordance with the specifications. The scope of the duties of the Employer, pursuant to the contract, will include but not be limited to the following:-

a) Interpretation of all the terms and conditions of these Documents and Specifications

b) Review and interpretation of all the Contractors drawings, engineering data etc.

c) Witness or authorize his representative to witness tests at the manufacturer's works or at site, or at any place where work is performed under the contract.

d) Inspect, accept or reject any equipment, material and work under the Contract, in accordance withthe Specifications.

e) Issue certificate of acceptance and/or progressive payment and final payment certificate.

f) Review and suggest modification and improvement in completion schedules from time to time, and

g) Supervise the Quality Assurance Programme implementation at all stages of the works.

13. INSPECTION AND INSPECTION CERTIFICATE

(a) The Employer, his duly authorized representative and/or outside inspection agency acting on behalf of the Employer shall have, at all reasonable times, access to the premises and works of the Contractor and their sub-contractor(s)/ sub-vendors and shall have the right, at the reasonable times, to inspect and examine the materials and workmanship of the product during its manufacture.

(b) All routine and acceptance tests whether at the premises or works of, the Contractor or of any Sub Contractor, the Contractor except where otherwise specified shall carry out such tests free of charge. Items such as labour, materials, electricity, fuel, water, stores apparatus and instruments as may be reasonably demanded by the Employer/inspector or his authorized representative to carry out effectively such tests in accordance with the Contract shall be provided by the Contractor free of charge.

(c) If desired by the Employer, the Contractor shall also carry out type tests as per applicable Standards for which the Employer shall bear the expenses except in cases where such tests have to be carried out in pursuance to Clause D14. The Contractor is required to quote unit rates of type test charges in a separate Schedule (if such schedule is provided in the Bidding Document) in pursuance to this Clause. However, these type test charges shall not be taken into account in comparing Price Bid.

(d) The inspection by Employer and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed Quality Assurance Programme forming a part of the Contract.

14. TESTS

1) The type, acceptance and routine tests and tests during manufacture to be carried-out on the material and equipment shall mean as follows:

a) Type Tests shall mean those tests, which are to be carried out to prove the process of manufacture and general conformity of the material to this Specification. These tests shall be carried out on samples prior to commencement of commercial production against the order. The Bidder shall indicate his schedule for carrying out these tests.

b) Acceptance Tests shall mean those tests, which are to be carried out on samples taken from each lot offered for pre-dispatch inspection, for the purposes of acceptance of that lot.

c) Routine Tests shall mean those tests, which are to be carried out on the material to check requirements, which are likely to vary during production.

d) Tests during Manufacture shall mean those tests, which are to be carried out during the process of manufacture and end inspection by the Contractor to ensure the desired quality of the end product to be supplied by him.

e) The norms and procedure of sampling for these tests will be as per the Quality Assurance Programme to be mutually agreed to by the Contractor and the Employer.

2) The standards and norms to which these tests will be carried out are specified in subsequent Sections of this Specification. Where a particular test is a specific requirement of this Specification, the norms and procedure of the test shall be as specified or as mutually agreed to between the Contractor and the Employer in the Quality Assurance Programme.

3) For all type and acceptance tests, the acceptance values shall be the values specified in this Specification or guaranteed by the Bidder or applicable Standards, as applicable.

15. TYPE TEST REPORTS

(a) Materials, which have never been tested for critical performance, shall not be accepted. In such cases, a promise or agreement by a bidder to have the equipment tested after award of a contract is not acceptable.

(b) All Bids must be accompanied by the Type Test Certificates of materials offered. Such type test certificates shall be acceptable only if:-

1. Tests are conducted in an independent testing laboratory with NABL accreditation, or
2. Tests are conducted in manufacturer's own laboratory.

In case of (1) the laboratory must have NABL accreditation; and

In case of (2) tests have been witnessed by technically qualified representatives of earlier clients or purchaser.

(c) Test reports to be acceptable must be related directly to the equipment offered i.e. it is fully identical in design, rating and construction with the equipment for which the type test certificates have been submitted. Test reports for higher class (by capacity/voltage etc.) of equipment are acceptable with commitment to perform the type tests free of any charge on the particular equipment after the award of contract.

(d) Type Test Reports older than ten (10) years on the date of Technical bid opening shall not be accepted.

16. GUARANTEED TECHNICAL PARTICULARS

(a) The Guaranteed Technical Particulars of the various items shall be furnished by the Bidders with the Technical Bid in the prescribed Schedules of the bidding document. The Bidder shall also furnish any other information's as in their opinion is needed to give full description and details to judge the item(s) offered by them.

(b) The data furnished in Guaranteed Technical Particulars should be the minimum or maximum value (as per the requirement of the specification) required. A Bidder may guarantee a value more stringent than the specification requirement. However, for testing purpose or from performance point of view, the material shall be considered performed successfully if it achieves the minimum/maximum value required as per the technical specification. No preference whatsoever shall be given to the bidder offering better/more stringent values than those required as per specification except where stated otherwise.

17. MATERIALS HANDLING AND STORAGE

(i) All the supplies under the Contract as well as Employer supplied items (if any) arriving at site shall be promptly received, unloaded and transported and stored in the stores by the Contractor.

(ii) Contractor shall be responsible for examining all the shipment and notify the Employer immediately of any damage, shortage, discrepancy etc. for the purpose of Employer's information only. The Contractor shall submit to the Employer every week a report detailing all the receipts during the week. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage. Any demurrage, and other such charges claimed by the transporters, railways etc., shall be to the account of the Contractor.

(iii) The Contractor shall maintain an accurate and exhaustive record-detailing out the list of all items received by him for the purpose of erection (later) and keep such record open for the inspection of the Employer.

(iv) All items shall be handled very carefully to prevent any damage or loss. The materials stored shall be properly protected to prevent damage. The materials from the store shall be moved to the actual location at the appropriate time so as to avoid damage of such materials at Site.

(v) All the materials stored in the open or dusty location must be covered with suitable weather-proof and flameproof covering material wherever applicable.

(vi) The Contractor shall be responsible for making suitable indoor storage facilities, to store all items/materials, that require indoor storage.

(vii) The Contractor shall have total responsibility for all equipment and materials in his custody, stored, loose, semi-assembled and/or erected by him at site. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss.

18. CONSIGNEE DETAILS

The Contractor shall supply the equipment/materials at **132KV Dibrugarh GSS, AEGCL.**

19. PACKING

(i) All the materials shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site The CONTRACTOR shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

(ii) The CONTRACTOR shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during transport by air, sea, rail and road.

(iii) All packing shall allow for easy removal and checking at site. Wherever necessary, proper arrangement for attaching slings for lifting shall be provided. All packages shall be clearly marked for with signs showing 'up' and 'down' on the sides of boxes, and handling and unpacking instructions as considered necessary. Special precaution shall be taken to prevent rusting of steel and iron parts during transit by sea.

(iv) The cases containing easily damageable material shall be very carefully packed and marked with appropriate caution symbols, i.e., fragile, handle with care, use no hook etc. wherever applicable.

(v) Each package shall be legibly marked by the-CONTRACTOR at his expenses showing the details such as description and quantity of contents, the name of the consignee and address, the gross and net weights of the package, the name of the CONTRACTOR etc.

E. TECHNICAL SPECIFICATION FOR 132kV & 33KV CURRENT TRANSFORMERS (AIS)

1. SCOPE OF CONTRACT

i. This section of the specification deals with the technical information & criteria for **33kV & 132kV outdoor Current Transformers.** The Contractor's proposal shall be based on the use of materials complying fully with the requirements specified herein.: The work involves design, engineering, manufacture, assembly, inspection, testing at the manufacturer's works before dispatch, packing, supply, including insurance during transit, delivery at site of various equipment and materials including substation steel structures as specified in subsequent Clauses and Sections.

ii. It is not the intent to specify completely herein all details of design and construction of the equipment and accessories. However, the equipment and accessories shall conform in all respects to high standards of engineering, design and workmanship and be capable of performing in continuous operation up to the bidder's guarantees in a manner acceptable to the Purchaser. The Purchaser will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgment is not in full accordance therewith.

2. STANDARDS

The equipment covered by this specification shall, unless otherwise stated be designed, constructed and tested in accordance with the latest revisions of relevant Indian Standards and shall conform to the regulations of local statutory authorities.

In case of any conflict between the Standards and this specification, this specification shall govern.

The current transformer shall comply also with the latest issue of the following Indian standard.

(i)	IS: 2705(Part-I)	Current transformers: General requirement.
(ii)	IS: 2705(Part-II)	Current transformers: Measuring Current transformers
(iii)	IS: 2705(Part-III)	Current transformers: Protective Current transformers
(iv)	IS: 2705(Part-IV)	Current transformers: Protective Current transformers for special purpose application.

3. GENERAL REQUIREMENTS

(i) The cores of the instrument transformers shall be of high grade, non-aging CRC steel of low hysteresis loss and high permeability.

(ii) Current transformers shall be of Live Tank design.

(iii) The instrument transformers shall be truly hermetically sealed to completely prevent the oil inside the tank coming into contact with the outside temperature. To take care of oil volume variation the tenderer are requested to quote the current transformers with stainless steel diaphragm (bellow).

(iv) The instrument transformers shall be completely filled with oil.

(v) A complete leak proof secondary terminal arrangement shall be provided with each instrument transformers, secondary terminal shall be brought into weather, dust and vermin proof terminal box. Secondary terminal boxes shall be provided with facilities for easy earthing, shorting, insulating and testing of secondary circuits. The terminal boxes shall be suitable for connection of control cable gland.IP rating of terminal box shall be IP 55. Spare terminals shall be provided. The exterior of the secondary terminal box shall be hot dipped galvanized.

(vi) All instrument transformers shall be of single-phase unit.

(vii) The instrument transformers shall be so designed to withstand the effects of temperature, wind load, short circuit conditions and other adverse conditions.

(viii) All similar parts, particularly removable ones, shall be interchangeable with one another.

(ix) All cable ferrules, lugs, tags, etc. required for identification and cabling shall be supplied complete and commissioning as per approved schematics.

(x) The instrument transformers shall be designed to ensure that condensation of moisture is controlled by proper selection of organic insulating materials having low moisture absorbing characteristics.

(xi) All steel work shall be degreased, pickled and phosphated and then applied with two coats of Zinc Chromate primer and two coats of finishing synthetic enamel paint.

4. INSULATING OIL

The quantity of insulating oil for instrument transformers and complete specification of oil shall be stated in the tender. The insulating oil shall conform to the requirement of latest edition of IS: 335

5. COMMON MARSHALLING BOXES (shall be supplied by CT manufacturer)

(i) The outdoor type common marshalling boxes shall conform to the latest edition of IS 5039 and other general requirements specified hereunder.

(ii) The common marshalling boxes shall be suitable for mounting on the steel mounting structures of the instrument transformers.

(iii) One common marshalling box shall be supplied with each set of instrument transformers. The marshalling box shall be made of sheet steel and weather-proof. The thickness of sheet steel used shall be not less than 3.0 mm. It is intended to bring all the secondary terminals to the common marshalling. The marshalling box shall be of hot dipped galvanized steel.

(iv) The enclosures of the common marshalling boxes shall provide a degree of protection of not less than IP 55 (As per IS 2147).

(v) The common marshalling boxes shall be provided with double hinged front doors with pad locking arrangement. All doors and removable covers and plates shall be sealed all around with neoprene gaskets or better arrangement.

(vi) Each marshalling box shall be fitted with terminal blocks made out of moulded non-inflammable plastic materials and having adequate number of terminals with binding screws washers etc. Secondary terminals of the instrument transformers shall be connected to the respective common marshalling boxes. All out going terminals of each instrument transformer shall terminate on the terminal blocks of the common marshalling boxes. The terminal blocks shall be arranged to provide maximum accessibility to all conductor terminals.

(vii) Each terminal shall be suitably marked with identification numbers. Not more than two wires shall be connected to any one terminal. At least 20 % spare terminals shall be provided over and above the required number.

(viii) All terminal strips shall be of isolating type terminals and they will be of minimum 10 A continuous current rating. All cable entries shall be from bottom. Suitable removable gland plate shall be provided on the box for this purpose. Necessary number of cable glands shall be supplied fitted on to this gland plate. Cable glands shall be screw on type and made of brass.

(ix) Each common marshalling box shall be provided with two numbers of earthing terminals of galvanised bolt and nut type.

(x) All steel, inside and outside work shall be degreased, pickled and phosphated and then applied with two coats of Zinc Chromate primer and two coats of finishing synthetic enamel paint. The colour of finishing paint shall be as follows:

i) Inside: Glossy White

ii) Outside: Light Grey (Shade No. 697 of IS: 5)

6. BUSHINGS AND INSULATORS

(i) Bushings and Insulators shall be of Porcelain, Solid core type. Porcelain used for the manufacture of bushings and insulators shall be homogeneous, free from defects, cavities and other flaws or imperfections that might affect the mechanical or dielectric quality and shall be thoroughly vitrified, tough and impervious to moisture.

(ii) Glazing of the porcelain shall be of uniform brown colour, free from blisters, burns and other similar defects. Bushings shall be designed to have sufficient mechanical strength and rigidity for the conditions under which they will be used. All bushings of identical ratings shall be interchangeable.

(iii) Puncture strength of bushings shall be greater than the dry flashover value. When operating at normal voltage, there shall be no electric discharge between the conductors and bushing which would cause corrosion or injury to conductors, insulators or supports by the formation of substances produced by chemical action. No radio interference shall be caused by the bushings when operating at the normal rated voltage.

(iv) The design of bushing shall be such that the complete bushing is a self-contained unit and no audible discharge shall be detected at a voltage up to a working voltage (Phase Voltage) plus 10%. The minimum creepage distance for severely polluted atmosphere shall be 31 mm/KV.

(v) Sharp contours in conducting parts should be avoided for breakdown of insulation.

(vi) **The insulators shall be capable to withstand the seismic acceleration of 0.5 g in horizontal direction and 0.6g in vertical direction.**

(vii) Bushings shall satisfactorily withstand the insulation level specified in data sheet.

(viii) Rain shed/drain cover/dome shall be present in CT.

(ix) Bellow level indicator shall be present in CT.

(x) **Nitrite butyl rubber/Neoprene gaskets shall be used.**

7. TESTS

(i) **Routine/Acceptance Tests (all units)**

All routine tests shall be carried out in accordance with relevant Standards. All routine/acceptance tests shall be witnessed by the Employer/his authorised representative.

(ii) **Type Tests:** The bidder shall furnish type test certificates and results for the all tests as per relevant Standards along with the bid for current and potential transformers of identical design.
Type test certificates so furnished shall not be older than 5 (five) years as on date of Bid opening.

QAP: QAP shall be submitted.

(iii) ***At factory/works tests the Ten Delta shall not exceed 0.3% (at Um/√3). The same shall not exceed 0.7% at the end of warranty period. If tan delta value of CTs exceed prescribed limit of 0.7% within warranty period, it will be considered as failure within warranty period (Tan delta & capacitance test of CTs shall be measured at 10KV at site). The bidder has to replenish failed CTs within guarantee period without any cost implication to AEGCL.***

8. NAME PLATES

All equipment shall have non-corrosive name plates fix at a suitable position indelibly mark with full particular there on in accordance with the standard adapted. Thickness(1mm), purchase order, project name, serial no etc. shall be present in the Name plate.

9. MOUNTING STRUCTURES

(i) All the equipment covered under this specification shall be suitable for mounting on steel structures. Supply of mounting structures is also in the scope of this tender.

(ii) Each equipment shall be furnished complete with base plates, clamps, and washers etc. and other hardware ready for mounting on steel structures.

10. **SAFETY EARTHING**

The non-current carrying metallic parts and equipment shall be connected to station earthing grid. For these two terminals suitable for 65mm X 12mm GS strip shall be provided on each equipment.

11. TERMINAL CONNECTORS(Shall be under manufacturer scope)

The equipment shall be supplied with required number of terminal connectors of approved type suitable for ACSR. The type of terminal connector, size of connector, material, and type of installation shall be approved by the Employer, as per installation requirement while approving the equipment drawings.No part of a clamp shall be less than 12mm. thick.

12. PRE-COMMISSIONING TESTS

Contractor shall carry out following tests as pre-commissioning tests. Contractor shall also perform any additional test based on specialties of the items as per the field instructions of the equipment Supplier or Employer without any extra cost to the Employer. The Contractor shall arrange all instruments required for conducting these tests along with calibration certificates and shall furnish the list of instruments to the Employer for approval.

(a) **Current Transformers**

(i) Insulation Resistance Test for primary and secondary.

(ii) Polarity test.

(iii) Ratio identification test - checking of all ratios on all cores by primary injection of current.

(iv) Dielectric test of oil (wherever applicable).

(v) Magnetizing characteristics test.

(vi) Tan delta and capacitance measurement

(vii) Secondary winding resistance measurement

(viii) Contact resistance measurement (wherever possible/accessible).

13. TECHNICAL DATA SHEET FOR CURRENT

For 36 kV CT the instrument security factor at all ratios shall be less than five (5) for metering core. If any auxiliary CTs/reactor are used in the current transformers then all parameters specified shall have to be met treating auxiliary CTs as an integral part of the current transformer. The auxiliary CTs/reactor shall preferably be inbuilt construction of the CTs. In case these are to be mounted separately these shall be mounted in the central marshalling box suitably wired upto the terminal blocks.

14. TYPE AND RATING:

All instrument transformer shall be outdoor type, single phase, oil immersed, self-cooled suitable for mounting on steel structure. The instrument transformer shall have the following ratings and particulars.

Note:

(i) It is intended to use different ratios of the same CT at the same time for various protections and metering cores. The CTS should therefore be suitable for the above purpose by secondary tapings only. The ratio change by secondary taps is acceptable as long as the required CT specifications are achieved at all ratios.

(ii) The knee point voltage specified above shall be at higher ratio/ taps.

SL. No.	A. Item	B. Ratings and Particulars	
I	II	III	IV
A	Nominal system voltage	**132 kV**	**33 kV**
B	Highest system voltage, kV	145	36
C	Rated frequency, HZ	50	50
D	System earthing	Solidly earthed	Solidly earthed
E	Insulation level		
a)	Full Wave Impulse Withstand voltage: kVp (1.2/50)	650	170
b)	One-minute p.f. Withstand voltage, kV (r.m.s.) (dry and wet)	275	70
F	Short time current for 3 seconds, kA	40	31.5
G	Minimum creepage distance, mm	4495	1116
H	Temperature rise	As per ISS	As per ISS
1.	**Current Transformer Specifications**	**132KV CT**	**33KV CT**
	(i) No. of Cores	3	2
	(ii) Transformation ratio	**400-200-100/1-1-1A**	**400-200/1-1A**
	(iii) Rated out put		
	(a) Core-1	30 VA	30 VA
	(b) Core-2	15 VA	15 VA
	(c) Core-3	-	N.A.
	(d) Core-4	-	N.A.
	(iv) Accuracy class		
	(a) Core-1	0.2S	0.2S
	(b) Core-2	5P20	5P20
	(c) Core-3	PS	N.A.
	(d) Core-4	N.A.	N.A.
	(v) Accuracy limit factor		
	(a) Core-1	-	-
	(b) Core-2	20	20
	(c) Core-3	-	-

	(d) Core-4	-	N.A.
	(vi) Instrument security factor		
	(a) -1	<5	<5
	(b) Core-2	-	-
	(c) Core-3	-	-
	(d) Core-4	-	N.A.
	(vii) Minimum Knee point voltage, Volts		
	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3	1200 at higher tap	N.A.
	(d) Core-4	-	N.A.
	(viii) Maximum secondary resistance, ohm		
	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3	3	N.A.
	(d) Core-4	-	N.A.

	(ix) Maximum exciting current, at Vk/4 mA		
	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3	-	N.A.
	(d) Core-4	-	N.A.
2.	**Current Transformer Specifications**	**33KV CT**	**33KV CT**
	(i) No. of Cores	4	4
	(ii) Transformation ratio	**1600-1000/1-1-1-1A**	**1200-600/1-1-1-1A**
	(iii) Rated out put		
	(a) Core-1	30 VA	30 VA
	(b) Core-2	15 VA	15 VA
	(c) Core-3	-	-
	(d) Core-4	-	-
	(iv) Accuracy class		
	(a) Core-1	0.2S	0.2S
	(b) Core-2	5P20	5P20
	(c) Core-3	PS	PS
	(d) Core-4	PS	PS
	(v) Accuracy limit factor		
	(a) Core-1	-	-
	(b) Core-2	20	20
	(c) Core-3	-	-
	(d) Core-4	-	-
	(vi) Instrument security factor		
	(a) Core-1	<5	<5
	(b) Core-2	-	-
	(c) Core-3	-	-
	(d) Core-4	-	-
	(vii) Minimum Knee point voltage, Volts		

	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3	1600 at higher tap	1200 at higher tap
	(d) Core-4	1600 at higher tap	1200 at higher tap
	(viii) Maximum secondary resistance, ohm		
	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3	3	3
	(d) Core-4	3	3
	(ix) Maximum exciting current, at Vk/4 mA		
	(a) Core-1	-	-
	(b) Core-2	-	-
	(c) Core-3 (Vk/4 mA)	N.A.	N.A.
	(d) Core-4 (Vk/2 mA)	N.A.	N.A.

Note:

a) It is intended to use different ratios of the same CT at the same time for various protections and metering cores. The CTS should therefore be suitable for the above purpose by secondary tapings only. The ratio change by secondary taps is acceptable as long as the required CT specifications are achieved at all ratios.

b) The knee point voltage specified above shall be at higher ratio/ taps

F. TECHNICAL SPECIFICATIONS OF 132KV SF6 CIRCUIT BREAKER

1. General Arrangement

(i) The circuit breaker shall be of three phase unit (gang operated) outdoor, single pressure puffer type. The operating mechanism shall be electrically and mechanically trip/free with anti pumping facility suitable for remote electrical closing, tripping as well as local Operation facility as specified. The CBs are meant for installation with Transformers LV side & bus section.

(ii) The circuit breaker shall be so designed to withstand the effects of temperature, wind load, short circuit conditions and other adverse conditions.

(iii) The circuit breaker shall be capable of switching transformer-magnetizing currents and shall be restrict - free.

(iv) All similar parts, particularly removable ones, shall be interchangeable with one another.

(v) All cable ferrules, lugs, tags, etc. required for cabling from equipment control cabinet/operating mechanism to the central control cabinet of the breaker shall be supplied loose as per approved schematics.

(vi) The SF6 breaker shall be designed to ensure that condensation of moisture is controlled by proper selection of organic insulating materials having low moisture absorbing characteristics.

(vii) The support structure of circuit breaker shall be hot dip galvanized. Sufficient galvanizing thickness shall be achieved with 615 gm/m². All other parts shall be painted as per painting specification enclosed separately.

2. OPERATING MECHANISM

(i) A power spring operated mechanism for closing and tripping shall be provided in the breaker control cabinet. This device shall be so interlocked that while it is under maintenance, the breaker cannot be operated from remote. A slow acting, manually operated device shall be provided for inspection and maintenance purposes.

(ii) Circuit breaker operating mechanism shall be capable of storing energy for atleast two complete closing and tripping operations.

(iii) Each mechanism shall have an operation counter.

(iv) The operating mechanism shall be mounted and enclosed in a weather proof, vermin-proof, sheet steel cabinet conforming

to IP: 55 degree of protection. Sheet steel thickness shall be as specified in data sheet. The cabinet shall also house relays, control and auxiliary equipment of each breaker and provision for terminating all control, alarm and auxiliary circuits. It shall be provided with hinged doors with provision for locking and removable gland plates to be drilled at site. Inspection window shall be provided for observation of the instruments without opening the cabinet. It shall be mounted so as to provide convenient access from ground level.

(v) The cabinet shall be fitted with a thermostatically controlled anti-condensation heater, a 15A, 1 phase, 5 pin socket outlet with switch and a cubicle illuminating lamp suitable for operation on 240 V AC 50Hz supply.

(vi) Circuit breakers shall feature high repeatability of absolute closing time over a wide range of parameters (ambient temperature, pneumatic pressure, control voltages, etc).

(vii) Main poles shall operate simultaneously. There shall be no objectionable rebound and the mechanism shall not require any critical adjustment. It shall be strong, rigid, positive and fast in operation.

(viii) Disagreement circuit shall be provided which shall detect pole position discrepancy.

(ix) The design of the circuit breaker shall be such that contacts will not close automatically upon loss of gas/ air pressure.

(x) Closing release shall be capable of operating within the range of the rated voltage as specified in the data sheet. Shunt trip shall operate satisfactorily under all operating conditions of the circuit breaker up to the rated breaking capacity of the circuit breaker within the range of the rated voltages specified in the Data sheet.

(xi) Working parts of the mechanism shall be of corrosion resisting material. Bearings which require grease shall be equipped with pressure type grease fittings. Bearing pin, bolts, nuts and other parts shall be adequately pinned or locked to prevent loosening or changing adjustment with repeated operation of the breaker.

(xii) All controls, gauges, relays, valves, hard drawn copper piping and all other accessories as necessary shall be provided including the following:

a. Low pressure alarm and lock out relay with adjustable pressure setting suitable for operation on DC system.

b. A no-volt relay for remote indication of power failure for compressor motor/ Spring Charge motor.

(xiii) As long as power is available to the motor, continuous sequence of closing and opening operations shall be possible.

(xiv) After failure of power supply to the motor, at least one open-close-open operation of the circuit breaker shall be possible.

(xv) Motor rating shall be such that it requires only about 30 seconds for full charging of the closing spring.

(xvi) Closing action of the circuit breaker shall compress the opening spring ready for tripping.

(xvii) During closing, springs are discharged and after closing of breaker, springs shall automatically be charged for the next operation. Facility for manual charging of closing springs shall be provided. Mechanical interlocks shall be provided in the operating mechanism to prevent discharging of closing springs when the breaker is already in the closed position.

3. OPERATING MECHANISM CONTROL

(i) The breaker shall normally be operated by remote electrical control. Two electrically independent trip circuit including two trip coils per pole shall be provided. However, provision shall be made for local electrical control. For this purpose a local/remote selector switch, close and trip control switch/push button shall be provided in the breaker central control cabinet.

(ii) The two way Local/Remote switch shall have minimum 4 (four) pair of contacts and wiring shall be made available to monitor local/remote status from local SCADA/SAS.

(iii) The trip coils shall be suitable for trip circuit supervision during both open and close position of the breaker. Necessary terminals shall be provided in the central control cabinet of the circuit breaker by the CONTRACTOR.

(iv) The auxiliary switch of the breaker shall be positively driven by the breaker operating rod.

(v) A conveniently located manual tripping lever or button shall also be provided for local tripping of the breaker and simultaneously opening the reclosing circuit. A local manual closing device which can be easily operated by one man standing on the ground shall also be provided for maintenance purpose. Direction of motion of handle shall be clearly marked.

(vi) Necessary platform with Ladder shall be provided for easy access to the Operating Box thereby easing out local operation/maintenance.

(vii) When the spring get fully charged either through motor or hand cranking, the spring charging motor and the hand cranking device should get disengaged mechanically from the charged spring and this should not be depended upon only the limit switch.

4. SF6 GAS SYSTEM

(i) SF_6 gas shall serve as an arc-quenching medium during opening/closing operation and as an insulating medium between open contacts of the circuit breaker.

(ii) The circuit breaker shall be single pressure type. The design and construction of the circuit breaker shall be such that there is a minimum possibility of gas leakage and entry of moisture. There should not be any condensation of SF6 gas on the internal insulating surfaces of the circuit breaker

(iii) All gasketted surfaces shall be smooth, straight and reinforced, if necessary, to minimise distortion and to make a tight seal, the operating rod connecting the operating mechanism to the arc chamber (SF6 media) shall have adequate seals. The SF6 gas leakage should not exceed 1% per year.

(iv) In the interrupter assembly there shall be an absorbing product box to minimise the effect of SF6 decomposition products and moisture. The material used in the construction of the circuit breakers shall be such as fully compatible with Sf6 gas decomposition products.

(v) Each pole shall form an enclosure filled with Sf6 gas independent of two other poles (for 145 kV CBs) and the Sf6

density of each pole shall be monitored.

(vi) The dial type SF6 density monitor shall be adequately temperature compensated to model the pressure changes due to variations in ambient temperature within the body of circuit breaker as a whole. The density monitor shall have graduated scale and shall meet the following requirements: It shall be possible to dismantle the density monitor for checking/replacement without draining the SF6 gas by providing suitable interlocked non return valve coupling.

5. BUSHINGS AND INSULATORS

(i) Bushings and Insulators shall be of Porcelain, Solid core type.

(ii) Bushings shall be manufactured and tested in accordance with IS: 2099 & IEC60137, while Hollow column insulators shall be manufactured and tested in accordance with IEC-62155/IS: 5621. The support insulators shall be manufactured and tested as per IS: 2544/IEC60168 and IEC-60273. The insulators shall also conform to IEC-60815 as applicable

(iii) Porcelain used for the manufacture of bushings and insulators shall be homogeneous, free from defects, cavities and other flaws or imperfections that might affect the mechanical or dielectric quality and shall be thoroughly vitrified, tough and impervious to moisture.

(iv) Glazing of the porcelain shall be of uniform brown colour, free from blisters, burns and other similar defects. Bushings shall be designed to have sufficient mechanical strength and rigidity for the conditions under which they will be used. All bushings of identical ratings shall be interchangeable.

(v) Puncture strength of bushings shall be greater than the dry flashover value. When operating at normal voltage, there shall be no electric discharge between the conductors and bushing which would cause corrosion or injury to conductors, insulators or supports by the formation of substances produced by chemical action. No radio interference shall be caused by the bushings when operating at the normal rated voltage.

(vi) Bushings shall satisfactorily withstand the insulation level specified in data sheet.

6. FIXED AND MOVING CONTACTS

(i) Main contacts shall have ample area and contact pressure for carrying the rated current and the short time rated current of the breaker without excessive temperature rise which may cause pitting or welding. Contacts shall be adjustable to allow for wear, easily replaceable and shall have minimum moving parts and adjustments to accomplish these results. Main contacts shall be the first to open and the last to close so that there will be little contact burning and wear out.

(ii) Arcing contacts, if provided, shall be the first to close and the last to open and shall be easily accessible for inspection and replacement. Tips of arcing and main contacts shall be silver faced.

(iii) If multi-break interrupters are used, they shall be so designed and augmented that a fairly uniform voltage distribution is developed across them.

7. INTERLOCKS

(i) Key release mechanical interlocks shall be incorporated in the operating mechanism for interlocking with the associated isolators, so that operation of the circuit breaker is dependent on a "key-trapped" situation. In addition, electrical interlocks with associated isolators shall be provided.

8. ADDITIONAL DUTY REQUIREMENTS

(i) Circuit breakers shall be capable of clearing short line faults with the same impedance behind the bus corresponding to the rated fault current.

(ii) Circuit breakers shall be capable of breaking 25% of rated fault current at twice rated voltage under out of phase conditions.

(iii) The Bid shall highlight the design features provided to effectively deal with: a) Breaking of inductive currents and capacitive currents. b) Charging of long lines and cables. c) Clearing developing faults within the full rating of the breaker. d) Opening on phase opposition.

9. ACCESSORIES

(i) **Gas Pressure Detector** The circuit breaker shall be provided with gas pressure monitor with temperature compensation for initiating alarm and locking the operating mechanism in the event of abnormality. **Gas pressure monitor shall be provided for each pole individually**.

(ii) **Position Indicator** Each pole of the circuit breaker shall be provided with a position indicator.

(iii) Terminals Each circuit breaker shall be provided with suitable terminal pads of high conductivity aluminium alloy for connecting to the line.

(iv) **Auxiliary Switches** Each circuit breaker shall be equipped with auxiliary switches with sufficient number of contacts for control, indication and interlocking purposes. Ten normally open and ten normally closed contacts shall be provided as spares. All contacts shall be rated for the DC voltage specified in data sheet.

(v) **Terminal Blocks** All accessories and control devices shall be completely wired. All wirings which are connected to external circuit shall be terminated on terminal blocks installed in the control cabinet. The terminal blocks provided shall have twenty (20) percent spare terminals.

(vi) Operating mechanism housing shall be supplied with all required accessories including the following:

a) Padlocks and duplicate keys.

b) Space heaters equipped with automatic thermostatic control.

c) Local/remote changeover switch.

d) Manually operated tripping push button/lever (mechanical) conveniently located to trip all three phases simultaneously.

e) Control switches to cut off control power supplies.

f) Fuses as required.

g) Two earthing terminals.

h) Auxiliary relays required for satisfactory operation.

i) Motor contactor with thermal release

j) Provision for mechanical interlock with isolator.

k) Readable wiring diagram shall be pasted inside the front cover of the operating mechanism box with indelible ink.

10. SUPPORT STRUCTURES

(i) The Circuit Breakers shall be suitable for mounting on steel structures.

(ii) The support structure shall be of steel hot dip galvanized type. The height of support structure shall be designed to keep the bottom most live part and bottom of insulators of circuit breakers at minimum clearance from the plinth as specified in data sheet.

(iii) All necessary galvanized bolts, nuts and washers shall be furnished including the embedded anchor bolts for securing the supporting structure to the concrete foundations.

11. NAME PLATES

All equipment shall have non-corrosive name plates fix at a suitable position indelibly mark with full particular there on in accordance with the standard adapted.

12. EARTHING

Two earthing pads shall be provided on each supporting structure. Each control cabinet or terminal box mounted on the supporting structure shall also be connected to an earthing pad. Separately mounted control cabinets shall be provided with two earthing pads adjacent to the base of the cabinet. The earthing connection shall be bolted type and suitable for receiving 65mm x 12mm MS strip.

13. TERMINAL CONNECTORS

The equipment shall be supplied with required number of terminal connectors of approved type suitable for ACSR conductors. The type of terminal connector, size of connector, material, and type of installation shall be approved by the Purchaser, as per installation requirement while approving the equipment drawings.

14. TESTS

All routine tests shall be carried out in accordance with relevant IS. All routine/acceptance tests shall be witnessed by the Purchaser/his authorized representative. The tests shall include the following:

(a) Routine/Acceptance Tests (all units)

i. Mechanical Operation tests

ii. Power frequency voltage withstand test (dry)

iii. Tests on auxiliary & control circuits

iv. Measurement of resistance of the main circuit.

(b) **Type Tests**: The bidder shall furnish type test certificates and results for the following tests along with the bid for breaker of identical design.

i) Breaking and making capacity test

ii) Short-time current test

iii) Temperature rise tests

iv) Lightning Impulse voltage test

(c) **Special Tests:** The operating mechanism box shall be tested for paint film thickness and the galvanization test for structure shall be conducted in one of the unit of each type.

(d) **Test Certificates** Copies of routine/acceptance test certificates shall be produced with the endorsement of the inspecting authority to the Purchaser before effecting dispatch. The test report shall contain the following information.

i) Complete identification data, including serial No. of the breaker.

ii) Method of application, where applied, duration and interpretation of results in each test.

15. PRE-COMMISSIOING TESTS

(a) Contractor shall carry out following tests as pre-commissioning tests. Contractor shall also perform any additional test based on specialties of the items as per the field instructions of the equipment Supplier or Employer without any extra cost to the Employer. The Contractor shall arrange all instruments required for conducting these tests along with calibration certificates and shall furnish the list of instruments to the Employer for approval:

(a) Insulation resistance of each pole.
(b) Check adjustments, if any suggested by manufacturer.
(c) Breaker closing and opening time.
(d) Slow and Power closing operation and opening.
(e) Trip free and anti-pumping operation.
(f) Minimum pick-up voltage of coils.
(g) Dynamic Contact resistance measurement.
(h) Functional checking of control circuits interlocks, tripping through protective relays and auto reclose operation.
(i) Insulation resistance of control circuits, motor etc.
(j) Resistance of closing and tripping coils.
(k) SF6 gas leakage check.
(l) Dew Point Measurement
(m) Verification of pressure switches and gas density monitor.
(n)Checking of mechanical 'CLOSE' interlock, wherever applicable.
(o)Testing of grading capacitor.
(p)Resistance measurement of main circuit.
(q)Checking of operating mechanism.
(r) Check for annunciations in control room

16. SPECIAL TOOLS AND TACKLES

The Bidder shall furnish a list of any special tools and tackles required for maintenance and operation purposes with recommended quantities.

17. Guaranteed Technical Particulars (GTP):

SL NO.	Particulars	Unit	Data for 132 kV CB
1	Type		SF6
2	Make		CGL
3	No. of Poles		3 (3 Phase Ganged Unit)
4	Service		Outdoor
5	Rated System Voltage	kV	132
6	Highest System Voltage	kV(RMS)	145
7	System earthing		Solidly earthed system
8	Rated Voltage of Breaker	kV	145
9	Rated Continuous Current	Amps	Upto 3150 A
10	Rated Frequency	Hz	50
11	Rated Short Circuit breaking current (I) – 3 sec - symmetrical	kA	40
12	Rated Short Circuit making current	kAp	108
13	Duty cycle		0-0.3 Sec-CO-3Min –CO
14	First pole to clear factor		1.3
15	Operating time		
	i) Opening Time	ms	Not exceeding 50ms
	ii) Closing Time	ms	Not exceeding 120ms

16	Insulation level		
	i) Power Frequency with Stand Voltage	kV(RMS)	275
	ii) Impulse withstand Voltage	kVp	650
17	Minimum clearance between live part (upper phase)	mm	1380 (Min. clearance between phases (centre to centre) – 1700mm
18	Minimum clearance between live part to earth	mm	1260
19	Minimum Ground clearance (from bottommost live part to plinth level)	mm	4600
20	Minimum clearance from bottomOf Support insulator to plinth level	mm	3200
	i) Minimum Creepage Distance (Total)	mm	4495
21	ii) Minimum Creepage Distance (Protected)	mm	
22	Arcing horn		
23	Operating mechanism:		Motorized
	a) Type		Spring Charged mechanism
	b) Rating of Drive Motor	V	Universal Motor/ 1 Phase 50 Hz 230V AC
	c) Rated voltage of Shunt trip coil & operating range	V. DC	110V [50% - 110%]
	(d) Rated voltage of Closing coil & operating range	V. DC	110V [80% - 110%]
	(e) No. of trip coils	No	2 per CB
	(f) No. of closing coils	No	1 per CB
	g) No of spare auxiliary contacts & contact rating	Nos. AMPS	10 N/O+10 N/C (per CB) 10A at 240V AC & 2A at 220V/110V DC
	h) Minimum thickness of sheet steel forcontrol cabinet	mm	3
	i) Enclosure Protection		IP55
24	Reclosing		Three Phase Auto Reclosing
25	Support structure (Painted / Galvanised)		Galvanised
26	All other parts (Painted / Galvanised)		Synthetic enamel shade 631 of IS5(125 micron
27	Minimum size of control wiring (Copper)	Sqmm	2.5

G. TECHNICAL SPECIFICATION FOR SURGE ARRESTERS FOR 132KV & 33KV SYSTEMS

1. **SCOPE**

This Section covers the specifications for design, manufacture, testing and transportation delivery at site of class heavy duty, gapless metal (zinc) oxide Surge Arrestors complete with fittings & accessories for 132 kV and 33 kV systems.

2. **STANDARDS**

The design, manufacture and performance of Surge Arrestors shall comply with IS: 15086 Part-4 / IEC: 60099-4 unless otherwise specifically specified in this Specification

3. **GENERAL REQUIREMENT**

(i) The surge arrestor shall draw negligible current at operating voltage and at the same time offer least resistance during the flow of surge current. **The surge arrester shall be used in solidly earthed system**.

(ii) The surge arrestor shall consist of non-linear resistor elements placed in series and housed in electrical grade porcelain housing of specified creepage distance.

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

(iv) 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.

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

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

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

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

(ix) 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.

4. **ARRESTOR HOUSING**

a. The arrestor housing shall be made up of porcelain 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 brown colour, free from blisters, burrs and other similar defects. Arrestors shall be complete with insulating bases, fasteners for stacking units together, surge counters with leakage current meters and terminal connectors.

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

c. Sealed housings shall exhibit no measurable leakage.

5. **FITTINGS & ACCESSORIES**

a. The surge arrestor shall be complete with insulating bases, fasteners for stacking units together, surge counters with leakage current meters and terminal connectors.

b. 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 takeoff.

c. Grading corona control rings if necessary, shall be provided on each complete arrestor pole for proper stress distribution.

6. **SURGE MONITOR**

(i) A self-contained discharge counter suitably enclosed for outdoor use and requiring no auxiliary or battery supply for operation shall be provided for each single pole unit. Leakage current meter with scale range **of 0 to 5mA peak/root 2 to** measure leakage current of surge arrestor shall also be supplied within the same enclosure. The number of operations performed by the arrestor shall be recorded by a suitable non-resettable cyclometric counter and surge monitor shall be provided with an inspection window. There shall be a provision for putting ammeter to record the current/alarm contacts suitable for communication to SCADA in the control room if the leakage current exceeds the permitted value. Similar provision shall be considered for surge counter also.

(ii) Surge monitor shall be mounted on the support structure at a suitable height so that the reading can be taken from ground level through the inspection window and length of connecting leads of **minimum 5kV rating** up to grounding point and bends shall be minimum.

7. **TESTS**

a. 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: 15086 (Part-4). In addition, the suitability of the Surge Arrestors shall also be established for the following:

- Residual voltage test
- Reference voltage test
- Leakage current at M.C.O.V
- P.D. test
- Sealing test
- Thermal stability test
- Aging and Energy capability test
- Watt loss test

b. Each metal oxide block shall be tested for guaranteed specific energy capability in addition to routine/acceptance test as per IEC/IS.

c. The surge arrestor housing shall also be type tested and shall be subjected to routine and acceptance tests in accordance with IS: 2071.

d. 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.

8. **NAME PLATE**

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
Purchase Order Number along with date.
Energy Absorption Capability

9. **PRE-COMMISSIONING TESTS**

Contractor shall carry out following tests as pre-commissioning tests. Contractor shall also perform any additional test based on specialties of the items as per the field instructions of the equipment Supplier or Employer without any extra cost to the Employer. The Contractor shall arrange all instruments required for conducting these tests along with calibration certificates and shall furnish the list of instruments to the Employer for approval.

(a) Operation check of LA counters.
(b) Insulation resistance measurement.
(c) Third harmonic resistive current measurement (to be conducted after energisation.)

10. **TYPE AND RATINGS may be read as:**

Sl. No.	Particulars	Voltage Level	
		132 kV	33 kV
I	II	III	IV
1	Rated voltage of arrester, kV	120	30
2	Continuous operating voltage, kV	102	25
2	Rated frequency, Hz	50	50
3	Nominal discharge current of arrester, kA	10	10
4	(i) Min. switching surge residual voltage (2kA),kVp	IEC	IEC
	(i) Max. switching surge residual voltage (500 kA),kVp	IEC	IEC
5	Maximum residual voltage at,		
	(i) 5 kA nominal discharge current, kV (peak)	IEC	IEC
	(ii) 10kA nominal discharge current, kV (peak)	IEC	IEC
	(iii) 20kA nominal discharge current, kV (peak)	IEC	IEC
	(iv) Steep fronted wave residual voltage, kV (peak)	IEC	IEC
6	One minute power frequency withstand voltage of arrester housing, kV (rms)	275	70
7	1.2 / 50 ‖ second impulse withstand voltage of arrester housing, kV (peak)	650	170
8	Switching impulse withstand voltage (250/2500 micro second) of arrester housing dry and wet, kV (peak)	-	-

9	Creepage distance of insulator housing (mm)	4495	1116
10	Line discharge class	3	3
11	Short time current rating, kA for 3 sec	40	31.5
12	Pressure Relief Class	A	A
13	Minimum cantilever strength (upright)	6KN	4KN

Appendix-1

Documents to be submitted:

1. PAN card
2. GST Registration certificate
3. Up-to-date GST return.
4. IT return (last 3 years).
5. Audited balance sheet of last 3 years (CA certified).
6. Experience & Completion Certificate during last 7 years as per clause B.3.
7. Annual Turnover of last 3 years (CA certified)..
8. ID proof.
9. Contractor License(if any).
10. Solvency certificate.
11. Bank Guarantee.
12. BID Security/EMD
13. Manufacturer's authorization.
14. Manufacturer's warranty & Supplier's warranty.
15. Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount.

Appendix-2

COVERING LETTER (ON THE BIDDERS LETTER HEAD)

To,
The Dy. General Manager,
T&T Circle, AEGCL,
Kodomoni, Dibrugarh.

Sub: Submission of Tender.

Ref: -

1. NIT No:
2. Name of work:-

Sir,

Having examined the terms & conditions, technical specifications, detailed items of work etc. as well as acquainting myself/ourselves with site of work, surroundings to get the required materials etc. I am/we are to submit herewith my/our tender for the above mentioned work. My/our rates are quoted as per the specification laid down in the schedule of items of work.

I /We clearly understand that all materials, tools and plants, machineries, labours, testing of material, storage, haulage etc. required in the work shall have to be arranged by me/us from my/our own resources in the events of allotment of the work to me/us.

I /We also clearly understand that in the event of acceptance/approved of my/our tender, the work shall have to be executed strictly as per specifications and the same shall have to be completed in all respects within the stipulated time failing which I am/We are liable to be penalized as per rules laid down in Tender document as well as agreement thereof.

Appendix-3

PROFILE OF THE BIDDER

Hard copy of the following documents to be submitted with Techno-Commercial Bid.

Sl. No.	Particulars	To be filled by Bidder
a)	Name of the Bidder	:-
b)	Registration with Memorandum of Association	:-
c)	PAN	:-
d)	GST Registration number along with upto date GST to be submitted	:-
e)	Postal Address	:-
	House No.	:-
	Lane	:-
	Street	:-
	Town/Village	:-
	Post Office	:-
	P.S.	:-
	District	:-
	Pin code	:-
f)	Telephone Number	:-
	Mobile No.	:-
	E-Mail Address	:-
	Website	:-
g)	Name(s) of the Owners / Directors/Partners	:-
h)	Name of the Banker with Address and Telephone Number	:-
i)	Contact Person Details *(Furnish here name of that person with whom AEGCL may get in touch for more information or clarifications)*	Name: - Designation: - Mobile Number: - Email Address:-

Appendix-4

Form-BG

Form of Bid Security(Bank Guarantee)

WHEREAS,_____*[Name of Bidder]* (hereinafter called "the Bidder") has submitted his bid dated_____*[Date]*for the construction of_____*[Name of Contract]*(here in after called "the Bid").

KNOW ALL MEN by these presents that We _____ *[Name of Bank]* of

_____ *[Name of Country]* having our registered office _____ at(hereinafter called "the Bank) are bound unto _____*[Name of Employer]*(herein after called "the Employer")in the sumof

_____for which payment will and truly to be made to the said Employer the Bank binds himself, his successors and assigns by these presents. SEALED with the Common Seal of the said Bank this day of_25.

THE CONDITIONS of this obligation are:

(1) If the bidder withdraws his Bid during the period of bid validity specified in the Form of Bid:

Or

(2) If the Bidder refuses to accept the correction of errors in his Bid;

Or

(3) If the Bidder, having been notified of the acceptance of his Bid by the Employer during the period of Bid validity;

(a) Fails or refuses to execute the Form of Contract Agreement in accordance with the Instructions to Bidders, if required; or

(b) Fails or refuses to furnish the Performance Security ,in accordance with the Instructions to Bidders;

we undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will note that the amount claimed by it is due to it owing to the occurrence of one or all of the three conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date 180 days after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE_____ SIGNATUREOFTHEBANK_____

WITNESS_____ SEAL_____

(Signature, Name, andAddress