

ASSAM ELECTRICITY GRID CORPORATION LIMITED
Regd. Office:1st floor, Bijulee Bhawan,Paltanbazar,Guwahati-781001
CIN: U40101 AS2003SGC007238
Phone: 0361-2739520/Fax:0361-2739513 [web: www.aegcl.co.in](http://www.aegcl.co.in)



Bidding Document

For

**Supply along with erection, testing and commissioning works of
one number 250KVA, 33/0.4 kV Station Service Transformer at
132/33 kV Srikona grid substation**

**DEPUTY GENERAL MANAGER
SILCHAR T&T CIRCLE
AEGCL, SILCHAR-788015**

Tender Cost:	₹1,000.00
EMD:	₹39,300.00

BID NO: AEGCL/STTC/TECH-12/2025-26/10**Date: 24.09.2025**

For & on behalf of the **Managing Director, AEGCL, the Deputy General Manager, Silchar T&T Circle, AEGCL, Silchar**, invites tenders in prescribed form, from reputed Firms/Contractors/Manufacturers with sound technical and financial capabilities for the following work. A single stage two envelope procedure (**Techno-Commercial and Price Bid**) will be adopted for this tender.

Sl. No.	Name of work	Estimated Cost In INR	Time of Completion In Days	Bidding Address
1	Supply along with erection, testing and commissioning works of one number 250KVA, 33/0.4 kV Station Service Transformer at 132/33 kV Srikona grid substation.	19,65,041.00	150 days from the date of issue of Supply order	O/o The DGM, Silchar T&T Circle, AEGCL, Silchar, Meherpur, Silchar-15

1.0 Cost of Bidding Document:

Bidder has to pay Non-Refundable tender document cost of **Rs.1,000.00** (Rupees One Thousand) only in the form of A/C payee Demand draft (Non-refundable) pledged in favour of “Managing Director, AEGCL, Paltan Bazar, Guwahati-01”, payable at Guwahati.

2.0 Bidding Address:

2.1 Tender papers can be purchased on application in plain paper from the **Deputy General Manager, Silchar T&T Circle, AEGCL, Silchar**.

3.0 Key Dates: -

a) Bid Document available in Website	12:00 Hrs of 26-09-2025
b) Bid Submission Start Time & date:	12:00 Hrs of 26-09-2025
c) Bid Submission end time & date:	14:00 Hrs of 16-10-2025
d) Techno-Commercial Bid Opening time:	11:30 Hrs of 17-10-2025

4.0 Bidding Procedure :

- All Tenders shall have to be submitted in prescribed forms attached herewith eventually to be drawn up in the rules of AEGCL.
- Two different envelopes to be used as follows:-

Envelope-1 (Technical Bid): Bid document signed by the bidder on all pages, Tender fee, Earnest Money, Techno-commercial data of the Bidder, GTP and other mandatory documents must be enclosed.

Envelope-2 (Price Bid): As per format of the Price Bid attach.

- All tenders shall have to be submitted under **sealed & signed** covers super-scribing the **Tender Notice No and Name of the Work** completely and clearly on the top of the corner.

- d) All tenders shall have to be submitted/drop in the concerned tender box on or before the last date and time of submission of tenders either by post or in person.
- e) If Bidders desire to submit their Bid by post, at their own expenses, it should be posted well in advance so as to ensure that their tenders reach the office of the tendering address on or before the specified date and time of submission of tender. AEGCL will not take any responsibility for loss, damage, tempering or delay of tenders sent by post.
- f) Bidder submitting Bid in person should submit their Bid in the tender box during the working hours on or before the last date and time of submission of tender.
- g) Tender will be rejected if submitted beyond the aforesaid time and date.
- h) AEGCL has the right to cancel the tender at any moment, without assigning any reason thereof. Bidder will not be entitled to claim any expenses and AEGCL will not be responsible for any costs or expenses incurred on the preparation and submission of the Bids.

5.0 Validity of Bids and Bids Prices:

- a) Bids shall remain valid for a period of **180 days** after the bid submission deadline date prescribed by AEGCL. In exceptional circumstances, prior to the expiration of the bid validity period, AEGCL may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security shall also be extended for a corresponding period.
- b) Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.

6.0 Bid Security:

- a) All bids must be accompanied by a bid security amounting to **Rs. 39,300.00** only in the form of **Demand Draft** from any Nationalized Bank payable at Guwahati in favour “**Managing Director, AEGCL, Paltan Bazar, Guwahati-01**”, payable at Guwahati.
- b) Any bid not complying with the terms and conditions then his bid shall be rejected by the Employer as non-responsive.
- c) The earnest money of the successful Bidder shall be returned when the successful Bidder has signed the Contract and furnished the required performance security.
- d) The earnest money of the unsuccessful Bidders shall be returned as promptly as possible when the successful Bidder has signed the Contract.
- e) The earnest money may be forfeited:
 - If a Bidder withdraws its bid during the period of bid validity specified by the Bidder.
 - If the successful Bidder fails to Sign the Contract within the specified period.

7.0 Format and Signing of Bid:

- a) The Bidder shall prepare one original copy of the Technical Bid and one original copy of the Price Bid comprising the Bid and clearly mark it —ORIGINAL - TECHNICAL BID and —ORIGINAL - PRICE BID.

In addition, the Bidder shall submit three copies of the bid, in the number specified and clearly mark each of them —COPY. In the event of any discrepancy between the original and the copies, the original shall prevail.
- b) The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the Bid Document and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

- c) Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

8.0 Eligible Bidders:

- a) A Bidder may be a private entity or a government-owned entity.
- b) 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. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.
- c) 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.
- d) A firm that is under a declaration of ineligibility by the AEGCL or any Government Entity or PSU at the date of the deadline for bid submission or thereafter 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.
- e) **JV(Joint Venture) for the said work is not allowed.**

9.0 Financial Capability:

- a) Bidder will require to submit along with the bid the **audited balance sheets, IT return and other legal financial statements** acceptable to AEGCL, for the **last 3 (three) years** to demonstrate the current soundness of the Bidders financial position and its prospective long-term profitability. As a minimum, an Applicant's net worth calculated as the difference between total assets and total liabilities should be positive.
- b) **Average Annual Turnover:** Minimum average annual turnover **INR 5,89,512.00** calculated as total certified payments received for contracts in progress or completed, within the last 3 (Three) Years.

10.0 Work Experience:

- a) Experience on similar nature of works under contracts in the role of manufacturers, contractor, subcontractor, or management contractor for at least the last 5 (Five) years prior to the bid submission deadline.
- b) The Bidder should have successfully completed similar works within last 5 (Five) Financial years. Documentary evidence such as Work Order, Completion Certificate, etc. should be submitted as per below mentioned criteria:
 - **Three (3) similar** completed works costing not less than **Rs.7,86,016.00**
 - **Two (2) similar** completed works costing not less than **Rs. 9,82,520.00**
 - **One (1) similar** completed works costing not less than **Rs. 15,72,033.00**
- c) The Bidder must have experience of executing work of similar nature previously in AEGCL/APDCL or any other government organization or PSU. The bidder must submit experience and completion certificate for scrutiny by AEGCL. Each of such project/ works should consist of completion certificate.

11.0 Evaluation Criteria:

- a) Evaluation will be done on the basis of *Bid Clause No. 8.0 : Eligible Bidders*, *Cl. No. 9.0 : Financial Capability*, *Cl. No. 10.0 : Work Experience* and in accordance with the Annexure I to be duly filled in, signed and submitted by the bidder.
- b) Price Bid of only **Responsive and Qualified Techno-Commercial Bidders** will be opened.
- c) **Price Bid Envelope of the Non-responsive Techno Commercial Bidders will be returned** to the respective bidders against submission of a written request by the bidder.

12.0 Correction of Errors in the Price Bid:

- a) **Arithmetical Error**, if observed while in Price Bid evaluation, same will only be corrected.
- b) Arithmetic Errors in the Price Bid will be rectified on the following basis:
 - If there is a discrepancy between the unit rate and the total cost that is obtained by multiplying the unit rate and quantity, the unit rate shall prevail and the total cost will be corrected unless in the opinion of AEGCL there is an obvious misplacement of the decimal point in the unit rate, in which case the total cost as quoted will govern and the unit rate corrected. If there is a discrepancy between the total bid amount and the sum of total costs, the sum of total costs shall prevail and the total bid amount will be corrected.
 - The amount stated in the Price Bid will be adjusted by AEGCL in accordance with the above procedure for the correctness of errors and shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the bid security may be forfeited.
- c) **Any post bid correction request will NOT BE ENTERTAINED.**

13.0 Bid Evaluation Process for Abnormally Low Bids (ALB):

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 are fewer than five substantially responsive bidders and if the bid price is 20% or more below the 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:**-When there are at least 5(five) nos. of substantially responsive bids and the lowest bid price is 20% or more below AEGCL's cost estimate. In this approach, first the Average bid price is determined and then by deducting the standard deviation from the Average bid price, potentially ALB may be determined.

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

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

- i. Identify ALB as per the steps mentioned in Clause No. (a). (i) and (a). (ii), whichever is applicable.
- ii. To seek and analyses the clarifications from the abnormally low Bidder in terms of resource inputs and pricing, including overheads, contingencies and profit margins. In that respect, the committee may refer to guideline of World Bank, AIIB, ADB etc. prescribed for ALB.

- iii. To decide whether to accept or reject the bid.

(c) Additional Performance Security In case of acceptance of ALB:

- i. If any abnormally low bid is accepted with additional performance security, it is to be noted that the total performance security should not exceed 20% of the total contract value.
- ii. The additional performance security shall be treated as part of the original performance security and shall be valid for a period similar to that applicable for defect liability period of the contract.
- iii. Non submission of the additional performance security shall constitute sufficient ground for rejection of the bid and similar assessment shall then be initiated for next ranked bidder if that bidder is also identified as ALB.

14.0 Late Bid:

- a) Any bid submitted *after the due date and time* will be rejected without any prejudice.
- b) AEGCL will not be responsible for any Postal and/or Courier Delay in delivering the bid. The same received after the scheduled closing date and time will be rejected without any prejudice.
- c) Bidding through **EMAIL WILL NOT BE ACCEPTED.**

15.0 Clarification on Bid Documents and Contacting AEGCL:

- a) A prospective Bidder requiring any clarification of the Bidding Document shall contact the AEGCL in writing at the AEGCL's address (**O/o the Deputy General Manager, Silchar T&T Circle, AEGCL, Silchar-788015**) and raise his enquiries prior to 7 (seven) days of closing of the bid. The Employer will respond to any request for clarification, provided that such request is received no later than seven (7) days prior to the deadline for submission of bids. The AEGCL's response shall be in writing with copies to all Bidders who have acquired the Bidding Document including a description of the inquiry but without identifying its source. Should AEGCL deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so.
- b) 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 for the provision of plant and services. The costs of visiting the site shall be at the Bidder's own expense.
- c) The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents 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.

16.0 Amendment of Bidding Document:

- a) At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda.
- b) Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from AEGCL.
- c) To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, AEGCL may, at its discretion, extend the deadline for the submission of bids.

17.0 Preparation of Bids by the Bidders:

- a) **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.
- b) **Language of Bid:** The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and AEGCL, shall be written in the English language.

18.0 Bid Prices and Discounts:

- a) Bidders shall quote price inclusive of GST and all other applicable taxes. No extra calculation for discounts or other taxes will be done during evaluation.
- b) 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 and subcontracting (if any), delivery, construction, installation and completion of the Work. 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.
- c) Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document.
- d) Sales Tax, GST and all other taxes (as applicable) payable on the work should be indicated separately. In case of failure to indicate so AEGCL will consider such taxes are included in the Offered Price.
- e) Since the work being "work contract" which is one and individual and which involves no separate contract for the sale of materials, the contractor shall have not be entitled to get any VAT and or any other taxes, levies reimbursed from the AEGCL for the supply of the materials.
- f) Taxes like work contract, income tax etc. which need to be deducted at source as per the prevailing law of the land, will be deducted at source.
- g) **The Prices shall be FIXED and FIRM:**
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. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

19.0 Mandatory Documents:

- i) Bidders(s) knowledge from actual personal investigation of the resources of the region or District (S) in which he/they offers the work.
- ii) The Bidder shall furnish copy of their **PAN Card**. In case the bidder is a partnership Firm, the **PAN** card must be in the name of firm.
- iii) In case the bidder is a partnership Firm, the **work experience, solvency and turn over** shall be in the name of **partnership Firm** only.
- iv) **GST registration No.**
- v) **Registered Power of attorney, if any.**
- vi) **IT Return for last three Years.**
- vii) **Audited Balance Sheet for last three years.**
- viii) **Bank Solvency Certificate**

- ix) **GTP of the equipments to be supplied.**
- x) **The Bidder must be a transformer manufacturer of voltage level up to 33kV and manufacturing transformers of 5.0 MVA rating. If not, the Bidder shall provide Manufacturer's authorisation.**
- xi) **Manufacturer's authorization for Isolator, LA, XLPE cable.**
- xii) **Valid Electrical License (132 kV & above)**
- xiii) **Labour License (Valid).**

20.0 SCOPE OF WORK:-

20.1 Intent of specification:

This section of the specification deals with the technical information & criteria for **“Supply along with erection, testing and commissioning works of one number 250KVA, 33/0.4 kV Station Service Transformer at 132/33 kV Srikona grid substation”**. The Contractor's proposal shall be based on the use of materials complying fully with the requirements specified herein.

20.2 Scope of Works :-

The various activities under the scope of work shall among other related aspects cover the following:-

- a) **“Supply along with erection, testing and commissioning works of one number 250KVA, 33/0.4 kV Station Service Transformer at 132/33 kV Srikona grid substation.**
- b) Loading at manufacturer's works, transportation and delivery at the substation site, including unloading at destination site.
- c) Freight & Transit Insurance, storage at site and site insurance of all materials at site shall be in the scope of the contractor.
- d) Arrangements of any permits required for transportation and movement of supplied materials. However, AEGCL shall assist as far as practicable in the process.
- e) Construction of 250KVA, 33/0.433 kV Station transformer pad

20.3 Supplier to Inform himself fully:-

- The supplier should ensure that he has examined the specifications and schedules as brought out in this section as well as other sections of the Bidding Document and has satisfied himself as to all the conditions and circumstances affecting the contract price 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 in writing by the Purchaser.

20.4 Service Conditions:-

The plant and materials supplied shall be suitable for operation under the following climatic and other conditions:

Peak ambient day temperature in still air	: 45⁰C
Minimum night temperatures	: 0⁰C
Reference ambient day temperature	: 45⁰C
Maximum Relative Humidity	: 100%
Minimum Relative Humidity	: 10%
Altitude	: Below 1000 M above MSL
Maximum Wind Pressure	: As per IS:802 latest code
Seismic Intensity	: ZONE-V as per IS 1893

20.5 Conformity with Indian Electricity Rules & Other Local Regulations:-

- The Supplier shall note that all substation works shall comply with the latest provisions of Indian Electricity Rules and with any other regulations. Local authorities concerned in the administration of the rules and regulations relating to such works shall be consulted, if necessary, about the rules and regulations that may be applicable.
- All registration and statutory inspection fees, if any, in respect of his work pursuant to this Contract shall be to the account of the contractor.

20.6 Standards:-

- 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.
- In case of any conflict between the standards and this specification, this specification shall govern.
- Equipment conforming to other International or authoritative Standards which ensure equivalent or better performance than that specified above shall be accepted. In that case relevant extracts of the same shall be forwarded with the bid.

20.7 Engineering Data:-

- The furnishing of engineering data by the supplier shall be in accordance with the Bidding Document. The review of these data by the Purchaser 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 Purchaser shall not be considered by the supplier as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications.
- All engineering data submitted by the supplier after review by the Purchaser shall or part of the contract document.

20.8 Drawings and Documents for approval:-

- 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 purpose only and fresh drawings are to be prepared by the contractor as per actual site condition after survey. The drawings and documents are to be approved by AEGCL before procurement or commencement of work.
- 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.
- Each drawing submitted by the Contractor shall be clearly marked with the name of the Employer, the specification title, the specification number and the name of the Project. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be to the scale and in S.I. units.
- **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.
- 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.
- All manufacturing, fabrication and erection 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.
- The approval of the documents and drawings by the Employer shall mean that the Employer is satisfied that:

- a) The Contractor has completed the part of the Works covered by the subject document (i.e. confirmation of progress of work).
 - b) The Works appear to comply with requirements of Specifications.
- 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.
- 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.

20.9 Final Drawings and Documents:-

The successful supplier shall require providing following documents and drawings for each bay constructed in printed form:

- a) ***Instruction manuals of all equipment in 3 (Three) copies.***
This instruction manual shall generally consist of
 - ***Operation Manuals***
 - ***Maintenance Manuals and***
 - ***Spare Parts Bulletins***
- b) ***Copies of routine test reports (in triplicate) of relevant equipment.***
- c) ***Final guaranteed and other technical particulars of relevant equipment.***

In addition to the above, the contractor shall provide **5 (Five) sets** of all drawings and documents to Purchaser in printed form for his reference and record.

20.10 Quality Assurance Documents:-

- The contractor shall be required to submit all the quality assurance documents as stipulated in the quality plan at the time of Purchaser's inspection of equipment/material.
- The Purchaser 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.

20.11 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.
 - Interpretation of all the terms and conditions of these Documents and Specifications.
 - Review and interpretation of all the Contractors drawings, engineering data etc.

- 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.
- Inspect, accept or reject any equipment, material and work under the Contract, in accordance with the Specifications.
- Issue certificate of acceptance and/or progressive payment and final payment certificate.
- Review and suggest modification and improvement in completion schedules from time to time,
- Supervise the Quality Assurance Programme implementation at all stages of the works.

20.12 Inspection and Inspection Certificate:-

- 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.
- 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 labours, 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.
- If desired by the Employer, the Contractor shall also carry out type tests as per applicable Standards for which Employer shall bear the expenses except in cases where such tests have to be carried out. 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). However, these type test charges shall not be taken into account in comparing Price Bid.
- 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.

20.13 Tests:-

- 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**: - 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**: - 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**: - 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**: - 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.
- 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.
- 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.

- 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.

20.14 Type Test Reports:-

- 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.
- All Bids must be accompanied by the Type Test Certificates of materials offered. Such type test certificates shall be acceptable only if:
 - i) Tests are conducted in an independent testing laboratory with NABL accreditation/CPRI,
 - ii) Tests are conducted in manufacturer's own laboratory.

In this case

- (a) The laboratory must have NABL accreditation; and
 - (b) Tests have been witnessed by technically qualified representatives of earlier clients or purchaser.
- 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.
 - **Type Test Reports older than five (5) years on the date of Technical bid opening shall not be accepted.**

20.15 Guaranteed Technical Particulars:-

- The Guaranteed Technical Particulars of the various items shall be furnished by the Bidders with the Technical Bid in the prescribed Schedules attached in this 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.
- 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.

20.16 Materials Handling and Storage:-

- 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.
- 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 and erection at site. Any demurrage, and other such charges claimed by the transporters, railways etc., shall be to the account of the Contractor.
- The Contractor shall maintain an accurate and exhaustive record-detailing out the list of all items received by him for the purpose of erection and keep such record open for the inspection of the Employer.

- 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.
- All the materials stored in the open or dusty location must be covered with suitable weather-proof and flameproof covering material wherever applicable.
- The Contractor shall be responsible for making suitable indoor storage facilities, to store all items/materials, which require indoor storage.
- 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.

21.0 TECHNICAL SPECIFICATIONS OF 250KVA, 33/0.433 KV STATION TRANSFORMER

A brief description of scope of work covered under this Bidding Document is furnished below:

- a) Design, Supply, delivery of 250kVA, 33/0.433 kV Station transformer along with other equipments.
- b) Erection, Testing and commissioning of 250kVA Station transformer at Srikona GSS, AEGCL
- c) Transportation and movement of supplied materials including unloading at the site and arrangements of any permits required for transportation of supplied materials. However, AEGCL shall assist as far as practicable in the process.
- d) Transit insurance and insurance during storage at site till commissioning shall be in the scope of the contractor.

21.1 TYPE TEST REPORTS

- (1) Equipment, which have never been type tested, 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.
- (2) All Bids must be accompanied by the full Type Test Certificates of equipment offered. Such type test certificates shall be acceptable only if,
 - (a) Tests are conducted in an independent and well known testing laboratory, or
 - (b) Tests are conducted in manufacturer's own laboratory. In this case, (i) the laboratory must have ISO 9000 (or its equivalent) series certification; and (ii) tests have been witnessed by technically qualified representatives of earlier clients or purchaser.
- (3) Test reports to be acceptable must be related directly to the equipment offered. The Bidder shall furnish type test reports with the technical bid such as relevant drawings and specification so that test reports can be linked to the offered equipment. Test reports for a similar or higher class of equipment are acceptable with a commitment to perform the type test on the particular equipment after the contract is awarded, free of any charges.
- (4) The above said test reports submitted with the offer shall not be older than five years, prior to the date of opening of bid. ***Type Test Reports older than five (5) years on the date of Technical bid opening shall not be accepted.***

21.2 GUARANTEED TECHNICAL PARTICULARS

STANDARD

21.2.1 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 indicated below or equivalent IEC and shall conform to the regulations of local statutory authorities except to the extent explicitly modified in this specification.

21.2.2 In case of any conflict between the Standards and this specification, this specification shall govern. The transformer shall comply with the latest issue of the following Indian standard.

- (i). IS: 2026 Specification of Power Transformers
- (ii). IS: 1180 (Part-1):2014 Outdoor type Oil Immersed Distribution Transformers upto and including 2500 KVA, 33 kV – Specification.
- (iii). IS: 335 Specification for Transformer Oil.
- (iv). IS: 12444 Specification for Copper Wire Rod
- (v) IS:3347 Specification for Porcelain Transformer Bushing.
- (vi) IS: 2099 Specification for High Voltage Porcelain Bushings.
- (vii) IS: 7421 Specification for Low Voltage Bushings.
- (viii) IS: 9335 Specification for Insulating Kraft Paper.
- (ix) IS: 1576 Specification for Insulating Press Board
- (x) IS: 6600 Guide for Loading of Oil Immersed Transformers.

21.2.3 TECHNICAL REQUIREMENTS

21.2.3.1 General

- i) The Transformers shall be of outdoor, three phase, 50 Hz, oil immersed, self-cooled and suitable for use in the geographic and meteorological conditions as given in Clause 25.1. The Transformers shall be suitable for mounting on RCC Pedestal.
- ii) The transformer shall be suitable for continuous operation with a frequency variation of (+/-) 3% from normal 50 Hz. Combined voltage and frequency variation should not exceed the rated V/f ratio by 10%.

21.2.3.2 Core

- i. The core shall be stacked type of high grade cold rolled grain annealed steel lamination having low loss and good grain properties, coated with hot oil proof insulation, bolted together and to the frames firmly to prevent vibration or noise. The complete design of core must ensure permanency of the core losses with continuous working of the transformers.
- ii. MS channel or plate shall be used on top and bottom. Channel frames on LV side to be reinforced at equidistance, if holes / cutting are done for LT lead in order to avoid bending of channel. MS channels/plate frames shall be painted with hot oil-resistant varnish or paint.
- iii. The maximum flux density in any part of the core and yokes, of each transformer at normal voltage and frequency shall be such that the flux density with (+)12.5% combined voltage and frequency variation from rated voltage and frequency does not exceed 1.9 Tesla (19,000 lines per cm²).
- iv. The transformers core shall be suitable for over fluxing (due to combined effect of voltage and frequency) up to 12.5% without injurious heating at full load conditions and shall not get saturated.
- v. No load current shall not exceed 2% of full load current. Increase in secondary voltage of 433 volts by 12.5% shall not increase the no load current beyond 5%.

21.2.3.3 Winding

- i. The HV winding shall be of electrolytic, super enamel covered/Double paper covered (DPC) Copper round/strip conductor, free from scales and burrs.
- ii. LV winding shall be of strip type copper conductor/copper foil type. The neutral of the winding shall be brought out to a separate insulated terminal.
- iii. HV coil is wound over LV coil as crossover coils or continuous disc coils.
- iv. Inter layer insulation shall be Kraft paper/Epoxy dotted paper. Proper bonding of inner layer insulation with the conductor shall be ensured.

21.2.3.4 Terminal Arrangement

- i. Bushing terminals shall be provided with suitable terminal connectors of approved type and size for overhead conductor termination of HV side and cable termination on LV side.
- ii. The neutral terminals of 433V winding shall be brought out on a bushing along with the 433 volt phase terminals to form a 4 wire system for the 433 volt. Additional neutral bushing shall also be provided for earthing.

21.2.3.5 Cable Boxes

For LV side cable boxes shall be provided and shall be air insulated. They shall be of sufficient size to accommodate Purchaser's cables and shall have suitable removable side/top cover to facilitate cable termination and inspection. Cable boxes shall be dust & vermin proof.

21.2.3.6 Off Circuit Tap Changing Equipment

All transformers shall be provided with a Off Load Tap Changing Equipment. The tap change switch shall be of three phase, hand operated for simultaneous switching of similar taps on the three phases by operating an external hand wheel.

21.2.3.7 Transformer Oil

The insulating oil shall comply with the requirements of relevant standards IS 335. No inhibitors shall be used in oil.

21.2.3.8 Transformer Tank

- i. The transformer tank shall be of robust construction, rectangular plain tank type and shall be built up of tested MS sheet.
- ii. The internal clearance of tank shall be such that it shall facilitate easy lifting of core with coils from the tank without dismantling LV & HV bushings.
- iii. All joints of tank and fittings shall be oil tight and no bulging should occur during service. The tank design shall be such that the core and windings can be lifted freely. The tank plate shall be of such strength that the complete transformers when filled with oil may be lifted bodily by means of lifting lugs. Inside of tank shall be painted with varnish / hot oil resistant paint. The four walls of the tank shall be made of two "L" shaped sheets (without joints) full welded at the corners from inside and outside of the tank for withstanding a pressure of 0.8 kg/cm² for 10 minutes.
- iv. The tank shall be reinforced by welded angle on all the outside walls on the edge of the tank to form two equal compartments. Permanent deflection when the tank without oil is subject to a vacuum of 525 mm of mercury for rectangular tank and 760 mm of mercury for round tank shall not be more than 5 mm upto 750 mm length and 6 mm upto 1250 mm length. The tank shall further be capable of withstanding a pressure of 0.8 kg/sq cm (g) and a vacuum of 0.3 kg/sq cm (g) without any deformation.
- v. Pressed steel radiators shall be used for cooling. The transformer shall be capable of giving continuous rated output without exceeding the specified temperature rise. 4 Nos. welded heavy duty lifting lugs of MS plate 8 mm

thick (min) suitably reinforced by vertical supporting flat welded edgewise below the lug shall be provided on the side wall.

- vi. Top cover fixing shall be with Stainless Steel bolts and 6 mm Neoprene bonded cork gasket conforming to IS 4253 part-II shall be placed between tank and cover. The bolts outside tank shall have 2 flat washers & one spring washer. All bolts/nuts/washers exposed to atmosphere shall be as follows: a) Size 12 mm or below - Stainless Steel b) Above 12 mm Steel with suitable finish like electro galvanized with passivation or hot dip galvanized.

21.2.3.9 Conservator

Oil gauge and the plain or dehydrating breathing device (dehydrating agent Silica Gel) shall be fixed to the conservator, which shall also be provided with a drain plug and a filling hole (M30 normal size thread) with cover. The capacity of a conservator tank shall be designed keeping in view the total quantity of oil and its contraction and expansion due to temperature variations. In addition, the cover of main tank shall be provided with an air release plug to enable air trapped within to be released, unless the conservator is so located as to eliminate the possibility of air being trapped within the main tank. The inside diameter of the pipe, connecting the conservator to the main tank, should be within 20 to 50 mm and it should be projected into the conservator so that its end is approximately 20 mm above the bottom of the conservator so as to create a sump for collection of impurities. The minimum oil level (corresponding to -5 deg.C.) should be above the sump level.

21.2.4 Surface Preparation and Painting

Before painting or filling with oil or compound, all ungalvanised parts shall be completely clean and free from rust, scale and grease, and all external surface cavities on castings shall be filled by metal deposition. All blast cleaned surfaces (except machined faces that have to be protected) must be cleaned in accordance with ISO specification no. ISO 8501 Part 1, to a minimum standard of 'ASa2½' or 'BSa2½' prior to paint application.

External and internal surfaces of all transformer tanks and chambers and other fabricated steel items shall be cleaned of scale, rust and surface dirt by blast cleaning or other suitable approved method. After cleaning, these surfaces should be immediately covered with paint. Hot oil resistant varnish on white synthetic enamel/epoxy paint is to be used for painting the inside of all oil filled chambers, including transformer tanks. Only one thin layer (≈ 25 microns) of this is to be applied. Except for hardware, which may have to be removed at site, all external surfaces shall receive at least four coats of paint.; two coats of epoxy zinc phosphate or zinc chromate primer topped with two coats of aliphatic polyurethane glossy finish paint. The total dry film thickness shall be 100 microns minimum. Any scratch, bruise or paint damage incurred during transportation and unloading at site should be made good by the Supplier as soon as the damage is detected. This is to be done by thoroughly cleaning the damaged area and applying the full number of coats as was applied originally. One coat of additional paint shall be given at site over all external surfaces, including hardware, after erection by the Supplier. The make and grade of the recoat shall be same as the original coat.

21.2.4.1 Fittings and Accessories

Following fittings and accessories shall be provided with each transformer:

- (a) Rating and terminal marking plates shall be as per Fig-1 & Fig-3 of .IS: 1180 (Part-1) -2014.
- (b) Two earthing terminals (studs and bolts should be properly galvanized and conform to IS:1363 and IS:1367.
- (c) Two lifting lugs to lift core assembly.
- (d) Two lifting lugs to lift complete transformer.
- (e) Lifting lugs for tank cover.
- (f) Thermometer pocket in accordance with IS: 3580.
- (g) Air release plug on the transformer tank to release air trapped inside the tank when filling oil through conservator.
- (h) Conservator tank shall have inter-connection pipe projection, 20 mm above bottom of the conservator so as to create a sump for collection of impurities. It shall have 30 mm dia drain valve, oil filling hole with cap on the top of the conservator.

- (i) Oil level gauge with toughened glass with “minimum” and ‘maximum’ marking.
- (j) De-hydrating breather.
- (k) Pressure Relief device or explosion vent.
- (l) One drain cum sampling valve.
- (m) One filter valve on the upper side of the tank.
- (n) Unidirectional flat rollers.
- (o) Inspection hole.
- (p) Terminal connectors for HV & LV.
- (q) Surge counter
- (r) LA holder clamp with provision of earthing in HV side bushings, 3 numbers.
- (s) Grounding material & accessories for earthing of transformer neutral, transformer tank and LA.

21.2.4.2 TESTING AND INSPECTION

i. Inspection

- (a) Physical and dimensional check of transformer tank and accessories
- (b) Tank crack detection of major strength weld seams by dye penetration test.
- (c) Physical inspection and check of quality of varnish, if used in core.
- (d) Check on completed core for measurement of iron loss and check for any hot spot by exciting the core so as to induce the designed value of flux density in the core.
- (e) Sample checks for physical properties of the insulating material.
- (f) Check for dielectric strength of insulating materials.
- (g) Sample check on winding conductor for mechanical properties and electrical conductivity and on installation covering.
- (h) Sample check on insulation paper used for windings for pH value, Bursting strength, Electric strength.
- (i) Check complete transformer against approved outline drawing provision for all fittings, finish etc.

ii. Factory Tests

All standard routine tests in accordance with IS: 1180 (Part-1), 2014 and latest issue of IS: 2026 shall be carried out on each transformer at Manufacturer’s Works.

In addition to above standard Routine tests, following tests shall also be carried out as Routine Tests for one number transformer of each category of each Package:

- (a) Temperature-rise test as per IS 2026.
- (b) No load current at 112.5% of rated voltage.
- (c) Pressure and Oil Leakage test. (on each transformer).
- (d) Routine Tests on Transformer Tank as per CBIP Manual on Transformer (CBIP Publication No. 317).

iii. Pre-Commissioning Tests (Field Tests)

- (a) Winding resistance measurement.
- (b) Verification of vector group and polarity.
- (c) Measurement of voltage ratio test.
- (d) Measurement of magnetizing current.
- (e) Magnetic balance test
- (f) Magnetic circuit (isolation) test.
- (g) Measurement of short circuit impedance at low voltage.
- (h) Insulation resistance measurement.
- (i) Tests on oil filled in transformer as per IS 1866

iv. REJECTION

The Purchaser may reject any transformer if during tests or service any of the following

conditions arise:

- a. The permissible total loss (No load loss + Load Losses at 75 0 C) at 50% of rated load and 100% load loss exceeds the guaranteed value by 7½%.
- b. The difference in impedance values of any two phases during single phase short circuit impedance test exceeds 2% of the average value guaranteed by the vendor.
- c. Oil or winding temperature rise exceeds the specified value.
- d. Transformer fails on power frequency voltage withstand test.
- e. Transformer is proved to have been manufactured not in accordance with the agreed specification.

21.2.4.3 TECHNICAL DATA SHEET FOR TRANSFORMERS

No.	DESCRIPTION	PARAMETER
1	Rated capacity, KVA	250, Continuous
2	Rated Voltage	
	(a) HV, kV	33
	(b) LV, kV	0.433
3	Type of Winding	Two Winding Transformer
4	Service	Outdoor
5	No of Phases	Three
6	Frequency, Hz	50
7	Type of Cooling	ONAN
8	Impedance at 75 degree C, %	4.5
9	Max. Temp. Rise over an ambient of 50 degree C	
	(a) Oil (Temperature rise measurement by thermometer)	40

	, degree celsius	
	(b) Winding (Temperature rise measurement by resistance method)	45
10	Losses	
	(a) Maximum No Load Loss without any positive tolerance, Watts	1050
	b) Maximum Copper Loss without any positive tolerance, Watts	3150
11	System Apparent Short circuit level (kA)	As per IS 2026-Part 1
12	Winding Connection	
	a) HV	Delta
	b) LV	Star
13	Winding Insulation	Uniform
14	Insulation Level	
i.	Power Frequency Test Level	
	(a) HV, kV (rms)	70
	(b) LV, kV (rms)	3
ii.	Basic Impulse Level	
	(a) HV, kV (peak)	170
	(b) LV, kV (peak)	-
15	Method of earthing	Solidly Earthed
16	Tap changer	
	(a) Type	OFF LOAD on HV side
	(b) Range	LV variation: $\pm 5\%$
	(c) No. of steps	4 steps, 5 positions
17	HV Bushing	
	(a) Rated Voltage, kV	36
	(b) Rated Current, Ampere	400
	(c) Basic Impulse Level, kVp	170
	(d) Wet & Dry Power frequency Withstand Voltage, kV (rms)	70
	(e) Min. Total Creepage Distance, mm	900
18	LV Neutral Bushing	
	(a) Rated Voltage, kV	1.1
	(b) Rated Current, Ampere	1000
	(c) Wet & Dry Power frequency Withstand Voltage, kV (rms)	2.0
19	Min. Clearance in Air	
	(a) Ph-Ph (HV/LV), mm	350/25
	(b) Ph-Earth (HV/LV), mm	350/25

21.2.4.4 TECHNICAL SPECIFICATION FOR DROP OUT FUSE

The 33KV D.O Fuses shall be suitable for outdoor operation in horizontal/vertical configuration under the climatic conditions specified. It shall be of the following ratings:

1	Number of Poles	3
2	Nominal system Voltage	33 KV
3	Highest System of Voltage	36 KV
4	Rated frequency	50 Hz

The post insulator used in the D.O Fuse set shall have the following ratings: -

- | | |
|--|--|
| 1. Power frequency withstand voltage (dry) | 95 KV (RMS) |
| 2. Power frequency withstand voltage (wet) | 75 KV (RMS) |
| 3. Impulse withstand voltage (dry) | 170 KV (Peak) |
| 4. Power frequency withstand voltage | 1.3 times the actual dry flashover voltage of the units. |

21.2.4.5 TECHNICAL SPECIFICATION OF LIGHTNING ARRESTERS

STANDARDS

The design, manufacture and performance of Lightning Arresters shall comply with IS: 3070 Part-3, unless otherwise specifically specified in this Specification.

GENERAL REQUIREMENTS

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

The lightning arrester shall consist of non-linear resistor elements placed in series and housed in electrical grade porcelain housing/silicon polymeric of specified creepage distance.

The non-linear blocks shall be of sintered metal oxide material. These shall be provided in such a way as to obtain robust construction, with excellent mechanical and electrical properties even after repeated operations.

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

The lightning arrester shall be provided with line and earth terminals of suitable size. The ground side terminal of lightning arrester shall be connected with 25x6mm galvanized strip, one end connected to the surge arrester and second end to a separate ground electrode.

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

The lightning arrester shall be suitable for circuit breaker performing 0-0.3sec.-CO-3min-CO- duty in the system.

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

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

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

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

21.2.4.6 ARRESTER HOUSING

The arrester housing shall be made up of porcelain/polymer 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.

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

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 arrester. The arresters shall not fail due to contamination. The arrester housings shall be designed for pressure relief class as given in Technical Parameters of the specification. Sealed housings shall exhibit no measurable leakage.

21.2.4.7 FITTINGS& ACCESSORIES

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

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 arrester shall be galvanized. The line terminal shall have a built in clamping device which can be adjusted for both horizontal and vertical take-off.

21.2.4.8 SURGE MONITOR

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 suitable scale range to measure leakage current of lightning arrester shall also be supplied within the same enclosure. The number of operations performed by the arrester shall be recorded by a suitable cyclometric counter and surge monitor shall be provided with an inspection window.

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 upto grounding point and bends are minimum.

21.2.4.9 TESTS

Test on Lightning Arresters

The Lightning Arresters offered shall be type tested and shall be subjected to routine and acceptance tests in accordance with IS: 3070 (Part-3). In addition, the suitability of the lightning Arresters 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

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

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

21.2.4.10 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.

21.2.4.11 Name Plates

The name plate attached to the arrester 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 Manufacture

Name of the manufacturer

Purchase Order Number along with date

21.2.4.12 TYPE AND RATING

SL No	Particulars	Voltage Class 33kV
1	Rated voltage of arrester, kV	30
2	Rated frequency, Hz	50
3	Nominal discharge current of arrester, kA	10
4	Maximum residual voltage at nominal discharge current, kV(peak)	108
5	Maximum steep current impulse residual voltage at kV(kVP)	120
6	One minute power frequency withstand voltage of arrester insulation,kV(rms)	70
7	1.2/50 μ second impulse withstand voltage of arrester insulation,kV(peak)	170
8	Line discharge class	2
9	Insulator Housing	
	a)Power frequency withstand test voltage (wet) (kVrms)	70
	b)Lightning impulse withstand tests voltage(KVp)	170

c)Pressure Relief Class	40
d)Creepage distance not less than(mm)	900

21.2.5.0 TECHNICAL SPECIFICATION FOR ISOLATOR

No.	Technical Particulars	Isolators class
		33 kV
1	Nominal system voltage, kV	33
2	Highest system voltage, kV	36
3	Rated frequency, Hz.	50
4.	Type of Isolator	Double Break, centre pole rotating
5	Rated continuous current, A	1250
6	Rated short time current, kA	25
7	Rated duration of short time current, (second)	1
8	Rated lightning impulse withstand voltage, kV (peak)	
	i) To earth & between poles	170
	ii) Across isolating distance	180
9	Rated 1 minute power frequency withstand voltage, kV (rms)	
	i) To earth & between poles	70
	ii) Across isolating distance	80
10	Minimum Creepage distance of insulators, mm	31mm/kV
11	Temperature rise	As per relevant IS

21.2.6.0 TECHNICAL SPECIFICATIONS OF XLPE INSULATED COPPER CONTROL AND POWER CABLE

This technical specification intends to cover the following:

Technical specifications for design, engineering, manufacturing, inspection, testing at manufacturer's works, packaging and delivery by road (properly packed in non-returnable steel drums), various sizes of copper conductor, XLPE insulated, voltage upto and including 1100 Volts, extruded PVC inner sheathed, extruded FRLS PVC outer sheathed, GI round wire armoured cables, suitable for solidly grounded system. The cables shall confirm to IS 7098-Part 1 with latest amendments. For cable list refer Table-1 (Sl. no. 1.1 to 1.19).

Note:

1. Tenders will only be considered from the cable manufacturers and any one supplier to whom manufacturer can authorize. The bidder shall have adequate experience of at least 5 years in manufacturing of LT/MV & HT cables and field proven experience of min 5 years.

2. Copper samples from the finished cable drums shall be tested at any 3rd party NABL accredited lab to ensure its purity.

Table-1

Sl. No	Power Cable
1	3C X 2.5 Sq.mm, Copper Power Cable Type: 2XWY
2	4C X 2.5 Sq.mm, Copper Power Cable Type: 2XWY
3	3C X 4 Sq.mm, Copper Power Cable Type: 2XWY
4	4C X 4 Sq.mm, Copper Power Cable Type: 2XWY
5	3C X 6 Sq.mm, Copper Power Cable Type: 2XWY
6	4C X 16 Sq.mm, Copper Power Cable Type: 2XWY
7	3C X 10 Sq.mm, Copper Power Cable Type: 2XWY
8	4C X 10 Sq.mm, Copper Power Cable Type: 2XWY
9	3C X 16 Sq.mm, Copper Power Cable Type: 2XWY
10	2C X 16 sqmm
11	2CX50 sqmm
12	3.5 C X 35 sqmm
13	3.5 CX70 sqmm
14	3.5 C X 95 sqmm
15	3.5 C X 150 sqmm
16	3.5 C X 300 sqmm

Sl. No	Power Cable
17	1 C X 1000 sqmm
18	2C X 6 sqmm
Control Cable(Copper)	
1	2 C, 1.5mmsq
2	4C, 2.5 sq mm
3	5C, 2.5 sq mm
4	7C, 1.5 sq mm
5	7C, 2.5 sq mm
6	10 C, 2.5 sq mm
7	12 C, 2.5 sq mm
8	12 C,1.5 sq mm
9	14 C, 2.5 sqmm
10	17 C,1.5 sqmm
11	19 C,1.5 sqmm
12	19C,2.5 sqmm

Technical Specifications for 1.1 kV grade, Copper conductor, Power and Control cable

This section covers the technical specifications for design, engineering, manufacturing, inspection, testing at manufacturer's works, packaging and delivery by road (properly packed in non-returnable steel drums), 1.1KV grade, Multi-stranded Copper conductor, XLPE insulated, extruded PVC inner sheathed, GI round-wire armoured, extruded FRLS PVC ST2 outer sheathed. Power Cables and Control Cables for effectively grounded system, conforming to the latest revisions of IS: 7098 (Part –I), 1988 & as per the technical specifications attached herewith.

21.2.6.1 STANDARDS

The design, manufacture and testing of the cable shall comply with the latest editions/amendments of the following Indian Standards, unless otherwise specified. Equipments complying with equivalent standards shall also be acceptable.

- a. IS-7098, 1998 (Part-I) : Cross linked polyethylene insulated

PVC sheathed cables for working voltages upto 1100V.

- | | | |
|----|---------------|---|
| b. | IS-3961 | : Recommended current ratings for Cables |
| c. | IS 8130-1984 | : Specification for conductors for insulated electric cables and flexible cords. |
| d. | IS-3975, 1999 | : Low Carbon galvanized steel wires, formed wires & tapes for armouring of cables |
| e. | IS-4759 | : Specifications for Hot dipped galvanized coating on round steel Wires |
| f. | IS-5831 | : PVC insulation and sheath of electric cables. |
| g. | IS-10418 | : Drums for electric cables. |
| h. | IS-10810 | : Method of test for cables. |

21.2.6.2 SERVICE CONDITION

Service Condition shall be as per General Technical Requirements (GTR).

DESIGN AND CONSTRUCTION PARTICULARS

21.2.6.3 General

The cables supplied under this specification shall be adequate insulated to operate continuously at the specified voltage with a high degree of safety and reliability throughout the life of the cables. The sheathing material shall be high quality PVC based compound. The construction of cable shall be as per IS: 7098 (Part I) – 1988.

Cable shall be designed and manufactured to prevent damage during transportation, installation & operation under all climatic & operating condition.

21.2.6.4 Technical parameters

- | | | |
|----|----------|-----------------|
| i. | Quantity | : Refer Table-1 |
|----|----------|-----------------|

- #### 21.2.6.5 Conductor

The conductors shall be made from high conductivity copper rods complying with IS: 613-1964. The conductor material used shall be electrolytic grade with high purity. Two sample conductor randomly selected from finished lot of cables, shall be tested for its purity at any 3rd party NABL accredited lab. The conductors shall conform to appropriate dimensions, resistance and number of wire in the conductor (number of strands) as given in IS 8130 (Part I): 1984.

The insulating material for power and control cables shall be extruded cross linked polyethylene (XLPE) compound as per IS-7098(Part-I)-1988. The minimum thickness of insulation shall not be less than the values specified in Table-2 of IS-7098 (Part-I)-1988. No negative tolerance shall be applicable for the thickness. The insulation of the cable shall be designed and manufactured for the specified system voltage. The manufacturing process shall ensure that insulation shall be free from voids. The insulation shall withstand mechanical and thermal stress under steady state and transient operating conditions. The cores shall be identified as per the following colour scheme:

3-Core - Red, Yellow & Blue

3 ½ or 4-Core - Red, Yellow, Blue & Black

21.2.6.7 Inner Sheath

The inner sheath shall be extruded FRLS PVC, Type ST2, compatible with thermal rating of insulation conforming to IS-6380-1984. The sheath shall have adequate thickness, mechanical strength and elasticity, as specified in IS 5831. The material shall be soft thermoplastic type, applied by extrusion method. The thickness of the inner sheath shall be as per IS: 7098 (Part I) and the color of the inner sheath shall be Grey. The inner sheath shall be so formed that it fits closely on the laid up cores and could be easily removed without damaging insulation. One or more layer of proofed plastic tape shall be provided over the laid up core before extrusion.

21.2.6.8 Outer Sheath

Extruded outer sheath shall be provided over the armouring. The material used for sheathing shall be FRLS PVC sheath, Type ST-2 base compound conforming to IS 1554/ IS 5831 for power and control cable. The outer sheath shall be so formed that it fits closely on the laid up armour and could be easily removed without damaging the intermediate sheath and insulation. The colour of the outer sheath shall be black. The thickness of outer sheath shall be in accordance with the IS 1554 (Part-I)-1988. Suitable additives shall be added to prevent attack by rodents and termites. All serving must be given anti-termite treatment.

Cables shall have suitable fillers laid up with the conductor to provide a substantially circular cross section before the sheath is applied. Fillers shall be suitable for the temperature of the cable and compatible with the insulating material. The material shall be of the best quality and workmanship. The fillers and sheath material shall be non-hygroscopic. All materials shall be new, unused and of the finest quality.

21.2.6.9 TESTS

All the tests specified below shall be carried out in accordance with the Indian Standards by the manufacturer in the presence of Purchaser's representative. If the cable fails to pass the test specified, the Purchaser shall have the option to reject it. Shipping release shall be obtained from the Purchaser's representative. The Purchaser, however reserves the right to waive off the inspection.

The tests at works shall include electrical, mechanical and hydraulic tests in accordance with the appropriate clauses of Statutory Regulation, relevant codes and standards, in addition any test called for by the Purchaser or his representative to ensure that the equipment being supplied fulfils the requirement of the specification.

For test not covered by any code or specifically mentioned in this specification, the test procedures are to be agreed with the Purchaser.

21.2.6.10 Pre Dispatch Inspection

The manufacturer shall be given at least 15 days advance notice prior to the commencement of testing, so that Purchaser's representative can plan to witness the tests.

All the tests indicated in the test clause of this specification shall be carried out in the presence of Purchaser's representative by the manufacturer and shall provide all the facilities and equipment for testing.

Six copies of the Test Certificate shall be furnished to the Purchaser for approval prior to dispatch of cables from factory.

Visual check to conform the details given in this specification is to be done. In addition to the above, the general workmanship of the cable drums and cables laid in drums shall be checked.

Manufacturer shall have proper test set up for testing all the routine tests & type tests on finished cables as per IEC.

List of type tests mentioned in the tender specifications shall be conducted on four drum irrespective of type test certificates given or not.

21.2.6.11 Type Test

Type tests on four randomly selected cable drums will have to be conducted in the presence of the department's representative. The test samples will be taken from finished cables. This test shall be in accordance to IS: 7098, Part-1,1988.

a. Test on Conductor

- Annealing test for copper conductors
- Tensile test for aluminium conductor
- Wrapping test for aluminium conductor
- Conductor Resistance Test

b. Test on Insulation

- Physical dimension measurement
- Tensile strength and elongation at break
- Hot set test
- Shrinkage test
- Ageing in air oven
- Water absorption test

c. Test on round Armour

- Physical dimension measurement
- Tensile strength
- Elongation at break
- Torsion test for round wires
- Winding test for firmed wire
- Mass of zinc coating.

- Uniformity of zinc coating
- Resistivity measurement, Resistance test for armour
- d. Test on Sheath
 - Physical dimension measurement
 - Tensile strength & Elongation at break test
 - Ageing in air oven
 - Loss of mass in air oven
 - Shrinkage test
 - Hot deformation test
 - Heat shock test
 - Thermal stability test
- e. Insulation Resistance Test
- f. High Voltage Test at room temperature
- g. Volume resistivity at room temperature & at 90° C. (IS-10810-Part 43)
- h. Flammability test
- i. *Test requirement of FRLS inner and outer sheath*

The inner and outer sheath of cables shall meet the following test requirements related to flame retardant, low smoke emission, low acid and toxic gas emission. The BIDDERS shall have proper test apparatus to conduct all the relevant tests as per the applicable standards:

- Flame retardant test on single cable.
- Oxygen Index Test

The critical oxygen index value shall be minimum 29 when tested at 27+2°C as per ASTM-D-2863
- Temperature index test

Temperature index value shall be minimum 250°C at oxygen index of 21 when tested as per NES 715.
- Flammability test
- Smoke Density Test

The cables shall satisfy the tests conducted to evaluate the percentage obscuration by smoke in an optical system placed in the path of the smoke. The maximum smoke density rating shall not be more than 60% when tested as per ASTM-D-2843.
- Acid Gas Generation test (halogen acid gas evolution)

The hydrochloric acid generation when tested as per IEC 754-1 shall be less than 20% by weight.
- Test for specific optical density of smoke
- Anti termite and rodent property test

The sequence of electric tests shall be as per the relevant Indian/International standards. The Bidder shall submit the sequence of tests for the approval of the purchaser before conducting the tests. A copy of the adopted standard shall also be supplied.

21.2.6.12 Routine Test (On each drum)

The following routine tests shall be carried out by the Manufacturer on each and every length of the cable in the presence of Purchaser's representative at manufacturer's works.

- a. Resistance test for conductors

b. Insulation resistance test

c. High voltage test

21.2.6.13 Conductor purity test

Two samples of aluminium and copper shall be taken from any of the finished set of cables at random and the sample shall be tested for its purity at a NABL accredited lab.

Qualifying Criteria:

The test results should be within limits as per IS 7098. All the routine tests as per IS 7098 / IEC shall be conducted and passed as per the limits given in the standards. All the bought out certificates will be verified and the test results shall be as per respective standards.

21.2.6.14 Identification

The following details shall be marked sequentially for each meter run length of the cable by non-erasable embossing on the outer sheath:

- a. Reference to Indian Standard
- b. Name of the manufacturer/ Trade Name
- c. Name of the project:
- d. Configuration of the cable: viz. Voltage grade, no. of Core, Sq. mm, A2XWY/2XWY/YWY / YY as applicable
- e. Year of manufacturing
- f. Sequential marking of running meter length
The running length of the cable shall be identified at regular intervals of one meter (Increasing order from inner end to outer end of the cable)

21.2.6.15 PACKAGING

Each drum shall consist of single length cable ≥ 500 metres (for sizes less than 1000sqmm.).

The cable shall be wound on *non-returnable steel drums* of suitable size, packed and marked.

· Packing shall be sturdy to protect the cable from any injury during transportation, handling and storage. The cut ends of the cable shall be sealed by means of non-hygroscopic sealing material preferably Heat shrinkable end caps.

· One end of the cable shall be brought out of the drum and suitably clamped to the drum flange with proper mechanical protection. Location of the other end may be marked on the drum.

· The cable shall be placed on drums in such a manner that it will be protected from injury during transit. Each end of the cable shall be firmly and properly secured to the drum. No undue stress shall appear on cables when laid on drums.

· The cable drum shall carry the following information stencilled on a metallic label, securely attached to each end of the drum:

- i. Reference to the Indian standard
- ii. Manufacturer's name, brand or trade mark
- iii. Type of cable and voltage grade
- iv. No. of cores

- v. Nominal cross-sectional area of conductor
- vi. Cable code
- vii. Length of cable on drum
- viii. No. of lengths on reel, drum or coil (if more than one)
- ix. Gross weight
- x. Country of manufacture
- xi. Year of manufacture
- xii. Direction of rotation of drum (an arrow)
- xiii. ISI certification mark

21.2.6.16 PREFERRED MAKE

POLYCAB/KEI/KEC or reputed brand possessing system certification of ISO 9001:2008, ISO14001:2004, OHSAS18001:2007 & EN 16001-2009 and product certifications IS: 7098 (Part-I), CE, UL etc. Quotations without these certification details will not be considered for technical evaluation.

Preferred make of bought out material:

- | | | |
|----|----------------------------|--|
| a. | Aluminium for Conductor | Hindalco/Balco/Nalco or any other approved make at the time of detailed : engineering. |
| b. | Copper for Conductor | Hindustan Copper/Hindalco or any other approved make at the time of detailed : engineering |
| c. | XLPE compound of Insulator | Dow/Borealis at the time of detailed : engineering |

21.2.6.17 GUARANTEE

All the cables shall be guaranteed against faulty material, defective design & poor workmanship for a period of 18 months from the date of commissioning. The materials becoming defective during the guarantee period shall be replaced free of cost and the defects arising out of the works shall be rectified free of charge without delay.

Technical Data Format for 1.1KV, XLPE Insulated, Copper Cable

The tenderer shall furnish all technical details as called for in the following format for all sizes of cables failing which the tender shall be considered as incomplete. *The details shall be furnished separately for all the cables.*

Sl. No.	Particulars	Details
A	Cores	
1	No. of cores	
2	Nom Area of conductor in sq mm.	
3	Voltage Grade	
B	Conductor	
1	Standard Applicable	
2	Material Copper Grade	
3	Purity	
4	Nominal Cross Sectional Area	
5	Form of conductor/circular shaped	
6	No. of strands	
7	Nominal dia of each strand	
8	Temperature co-efficient of resistance at 20 degree celsius	
C	Insulation	
1	Standard Applicable	
2	Material (Mention Type)	
3	XLPE is cured by steam process or Gas process?	
4	Minimum Average Thickness	
5	Tolerance on the smallest of the measured values of thickness of Insulation	
6	Minimum volume resistivity at 27 deg cel	

Sl. No.	Particulars	Details
7	Minimum volume resistivity at 70 deg cel	
8	Colour Scheme for identification of cores	
9	Average Dielectric Strength	
D	Inner Sheath	
1	Standard Applicable	
2	Material for inner sheath	
3	Minimum thickness of inner sheath	
4	Whether extruded	
E	Armour	
1	Standard Applicable	
2	Shape	
3	Size	
4	Material for Armour	
F	Outer Sheath/Overall Covering	
1	Standard Applicable	
2	Material (type)	
3	Whether extruded	
4	Minimum average thickness	
5	Whether anti-termite treatment has been given in the outer sheath	
6	Whether flame retardant low smoke compound added in the outer sheath	
G	Electrical Properties	
1	Maximum DC Resistance of conductor at 20 deg Celsius in ohms/km	
2	Maximum DC Resistance of amour at 20 deg Celsius in ohms/km	
3	Maximum Permissible conductor temperature	

Sl. No.	Particulars	Details
	Under continuous full load	
	Under transient conditions	
4	Loss Tangent at normal frequency	
5	Reactance at maximum operating temperature 50 Hz (ohm/km)	
6	Capacitance at maximum operating temperature 50 Hz (ohm/km)	
7	Total Impedance at maximum operating temperature 50 Hz (ohm/km)	
8	Recommended continuous current rating	
	In Ground at 30 deg C Ground Temperature (A)	
	In Trench/Ducts at 40 deg C (A)	
	In Air at 40 deg C ambient Temperature (A)	
9	Short Ckt Current Rating for 1 sec duration (in KA)	
	Conductor	
	Armour	
10	Minimum volume Resistivity of insulation	
	At 27 °C in Ohm cm	
	At Max operating temperature in Ohm-cm	
11	Approximate AC resistance at max. Operating temperature	
	Phase	
	Neutral	
H	Mechanical Data	
1	Overall Dia of the cable	
2	Dia of the cable under the sheath	
3	Diameter under armour	
4	Diameter over the stranded cores	

Sl. No.	Particulars	Details
5	Wight of cable per km.	
6	Drum length	
7	Tolerance on drum length	
8	Total weight of the drum	
9	Dimension of the drum	
10	Recommended minimum installation radius/ bending radius	
11	Maximum safe pulling force	
12	Whether identification as per clause of the specification is being provided	
13	Whether packing has been done as per clause of the specification	

22.0 ERECTION, TESTING AND COMMISSIONING

- a) Bidders should note that, transformers shall be installed at new location identified by the site engineer, at the existing Srikona substations. Transformers shall be erected on a new RCC pedestal, to be constructed by the Purchaser. The RCC work shall comply with Indian Standard IS 456:2000.
- b) It is also responsibility of the supplier to lay the power cable on LV side to connect the transformer to existing LTAC Panel of the Purchaser.
- c) Bidder shall carry out the required earthing system for the commissioning of the transformer like two numbers neutral earth, two numbers transformer body earth & LA earth. The bidder shall load the price in items of price schedule.
- d) Before commissioning of the transformers, the Supplier shall carry out all the site tests specified and shall take approval of the same from the Purchaser.
- e) The civil works will be as per approved design and drawing along with the advice of the site engineers of AEGCL

23.0 DOCUMENTATION

The successful bidder shall submit drawings for AEGCL approval. The following drawing shall be supplied with the tender: -

- a) Outline drawings of all apparatus showing sufficient details to enable the purchaser to determine whether the design proposed can be installed satisfactorily or not.

24.0 Contract Agreement:

An agreement shall have to be drawn on non-judicial stamp of appropriate value with the Department by the selected Contractor in AEGCL's General Conditions of Supply and Erection 2009 of contract within 15 (fifteen) days from the date of issue of the LOI/Work Order.

Wherever there is any variation in between the conditions of the AEGCL's General Conditions of Supply and Erection 2009 and the above terms & conditions, this bid conditions will supersede the conditions of the AEGCL's General Conditions of Supply and Erection 2009.

25.0 Liquidated Damage:

The date of completion of work shall be deemed to be the essence of the contract and shall not be completed no later than the date specified in the contract. In case of failure to complete the work within the stipulated period AEGCL shall be entitled to:

25.1 Recover an amount at the rate of 1% (One percent) of the Contract Price per week or part thereof of delay, subject to maximum of 10% (Ten percent) of the contract price as liquidated damage to AEGCL. However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the works or from any other obligations and liabilities of the Contractor under the Contract.

25.2 To complete the balance work giving notice to the Contractor/Firm and to recover any extra expenditure incurred thereby for having to complete the work at a higher price at the risk and responsibility of the Contractor/Firm.

25.3 Contractual failure: - Refer clause No.27.1 of AEGCL's General Conditions of supply and erection 2009.

26.0 PERT Chart and/or BAR Chart:

The successful bidder within 10 (ten) days before the contract is awarded will make out a detailed PERT Chart covering all activities along with detailed program chart on accepted scheme indicating various stages of execution, method of execution and completion of work in different stages keeping the period of completion in view and submit the same to the Engineer for the consideration and approval.

27.0 Insurance:

The bidder shall arrange for any pay/cost of personnel accident insurance, medical treatment etc. in respect of their employees assigned to the works for all time and shall govern by Law of land.

28.0 Warranty

28.1 The Supplier/Manufacturer warrants that all the 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.

28.2 The Supplier/Manufacturer further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination. The supplier will provide warranty for the works executed by them.

28.3 If during the Period Warranty any defect is found, the Purchaser shall give Notice to the Supplier/Manufacturer stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier/Manufacturer to inspect such defects.

28.4 If having been notified, the Supplier/Manufacturer fails to remedy the defect within a period of 15 (fifteen) days, the Purchaser may, following notice to the Supplier/Manufacturer, proceed to do such work, and the reasonable costs incurred by the Purchaser in connection therewith shall be paid to the Purchaser by the Supplier or may be deducted by the Purchaser from any amount due the Supplier or claimed under the Performance Security.

28.5 The term period of warranty shall mean the period of **18 months from the date of completion of work**. The successful bidder should warrant the free replacement of any damaged/malfunctioning equipment and its accessories during the warranty period.

29.0 Safety:

29.1 Each and every safety measures for MAN and MACHINE will be the sole responsibility of the Contractor without any prejudice. Compensation claim if any will also be the responsibility of the contractor without any prejudice. As the contract is Turnkey in nature hence AEGCL will not bear any responsibility towards such claim.

30.0 **Pollution:** Each and every measure should be taken to adhere to the standard norms to avert any occasion of Air Pollution, Water Pollution, Soil Pollution and Sound Pollution. In case of any deviation leading to any legal action the Contractor will be solely responsible without any prejudice.

31.0 Payment terms

31.0	Payment terms:
31.1	No advance/Mobilization advance shall be made in this contract.
31.2	First & Final bill for supply & Erection will be entertained only after 100% completion of the works.
31.3	Payment will be made by DGM, Silchar T&T Circle, AEGCL, Silchar. The Bidder / Firm will have to be submitted the following Net Banking details. (a) Banker's Name & Branch (b) Account No (c) Banker's address (d) Banker's IFSC Code (e) Banker's RTGS Code
31.4	Performance security deposit:
31.4.1	The successful bidder shall have to deposit through a Bank Guarantee/Demand Draft 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 as performance security, immediately within 10 (ten) days from the issue of the letter of intent/detailed orders (as the case may be), duly pledged in favour of AEGCL, BijuleeBhawan, Paltanbazar, Guwahati-01 , and such security deposit shall be valid up to 30 days beyond the warranty period of 18 (Eighteen) months. The Bank Guarantee (BG) should be submitted to the O/O the Deputy General Manager, Silchar T&T Circle, AEGCL, Silchar .
31.4.2	Please note that, if the selected Bidder / Firm fail to furnish the requisite performance security as stated above and signs the contract within the stipulated period, 10 percent security money will be deducted from the total Bill value.
31.4.3	If the bidder / 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.
31.4.4	No interest shall be payable on such deposits.

32.0 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.

33.0 Settlement of Dispute and Arbitration:

Any dispute arising out of the contract will be first settled bilaterally between AEGCL and Contractor. In case, dispute cannot be settled bilaterally, it will be referred to arbitration to be by an arbitrator appointed by AEGCL. The contractor shall not stop the work during settlement of any dispute. All disputes shall be subjected to the jurisdiction of District Court of Cachar District.

34.0 Right to Reject:

AEGCL reserves the right to reject any or all the bids without assigning any reason thereof and the AEGCL further reserves the right to split up the work order in favour of more than one Contractor. The AEGCL also reserves the right to reject the lowest or any other price without assigning any reason.

The clauses which are not appearing in this document (bid) will be as per Tte General condition of Supply and Erection 2009 of AEGCL. The General Condition of Supply and Erection 2009 of EGCL is available in the AEGCL's website www.aegcl.co.in under Acts, Rules and Policies Tab.

Appendix-1

BID SUBMISSION SHEET

(On The Applicant's Letter Head)

To,

The Deputy General Manager,
Silchar T&T Circle,
Assam Electricity Grid Corporation Limited
Meherpur, Silchar-15.

Sub:- Supply along with erection, testing and commissioning works of one number 250KVA, 33/0.4 kV Station Service Transformer at 132/33 kV Srikona grid substation.

Bid Identification no. : **AEGCL/STTC/TECH-12/2025-26/10; Dated.24/09/2025**

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, considering cost of design & preparation of structural drawing, materials, labours, haulage, taxes, royalty etc.

I /We clearly understand that all materials, tools and plants, machineries, labours, 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.

My /Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

Price Proposal Submission Sheet

Date: _____

Tender No.: _____

Invitation for Bid No: _____

To: _____

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda No.: _____
- (b) We offer to supply in conformity with the Bidding Document and in accordance with the completion/delivery schedule specified Schedule of Supply & Erection, the following Goods and Related Services:

- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:

- (d) The discounts offered and the methodology for their application are:

- (e) The following commissions, gratuities, or fees have been paid or are to be paid with respect to the bidding process or execution of the Contract:

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate “none.”)

Name _____

In the capacity of _____

Signed _____

Duly authorized to sign the Bid for and on behalf of _____

Date _____

Bidding Forms

Name of work: _____

Bid Identification No: _____

General

- (i) Name of the Firm/Contractor:
- (ii) Full Address:
- (iii) Constitution of the Firm:
- (iv) Whether Partnership or any type:

A) Experience

- (i) No of years the Firm/Contractor has been in operation under its present name.
- (ii) Details of work executed/being executed by the tenderer in the last three years.
- (iii) Testimonials from Clients Company on various works executed for the last three years.

(Details of works executed/under execution in the last three years including another department)

Sl. No.	Name of work & W/O No.	Worked Done Under	Value of Work	Specified date of completion	Present status/completed on

B) Financial Position

- (i) Financial Turnover during the last three years (copies of Audited Annual report, Accounts or a statement duly certified by a chartered accountant and Income Tax return.

Year	Turn over

Any other details that the tenderer may like to furnish to substantiate their financial and technical ability to undertake this work and complete the same within stipulated period of completion.

Name of the Bidder: -

Signature of the Bidder/Firm

Full Name

Postal Address

Phone/Mobile No.

ANNEXURE – I

Following information is to be furnished in the ‘Technical and Commercial bid’ as first page.

(Please tick mark where necessary.)

1)	Earnest money (EMD)	:Submitted/Not submitted
	a) Amount of EMD	:Rs.
	b) Submitted in the form of Bank Guarantee /Demand Draft	: Yes/No.
2)	Validity of the offer	: days from the date of opening of ‘Technical & Commercial Bid’ & ‘Price bid’.
3)	Nature of price offered	
	i) ‘FIRM’ Price	: Yes/No
4)	Terms of payment (Whether agreeable to accept payment as specified in clause- <u>31.0</u>)	: Yes/No
5)	Date of completion of supply (Please specify the date of completion of supply as per specification)	: Yes/No
6)	‘Security and performance guarantee’ (Whether agreeable to accept as specified in Clause no- <u>31.4</u>)	: Yes/No
7)	List of orders executed for similar works furnished	: Yes/No
8)	Performance certificate from the Govt./Govt. undertaking furnished	: Yes/No
9)	Deviation from the specifications	
	a) Technical	: Yes/No
	b) Commercial	: Yes/No
10)	Information in respect of technical capability is furnished	: Yes/No
11)	Information in respect of Financial capability certificate from the Banker is furnished	: Yes/No
13)	PAN card as per Cl. No. <u>19.0 (ii)</u>	: Yes/No
14)	GST registration no. as per Cl. No. <u>19.0 (iv)</u>	: Yes/No
15)	Registered Power of Attorney as per <u>Cl.no. 19.0 (v)</u> enclosed.	: Yes/No

Name of the Bidder: -

Signature of the Bidder/Firm

Full Name

Postal Address

Phone/Mobile No.

GUARANTEED TECHNICAL AND OTHER PARTICULARS FOR THE TRANSFORMER

(To be filled in by Bidder and shall be furnished with the Technical Bid)

S.N	Particulars	Details
1	Name of Manufacturer	
2	Type of Transformer	
3.	Reference Standards	
4	Rating	
5.	Type of Winding	
6.	Rating Voltage :a)HV Winding b)LV Wind	KV
7.	Rating Frequency	Hz
8.	Number of phase	
9.	Rated current :	HV LV
10	Connections : a)HV Winding b)LV Winding	
11.	Connection symbol	
12.	Type of cooling	
13.	Tap changing equipment a)Manufacturer b)Lv –variation(+5% to - 5% allowable) c)Type d)No. of steps(min 4steps)	
14.	Guaranteed positive sequence impedance at 75 Deg. C. with 100 %rating at Principal tap :	
15.	Temperature rise over an ambient of 50deg. C. a) Oil temperature Deg. C. b) Winding (by resistance measurement method) Deg. C.	
16.	Guaranteed losses at rated voltage (excluding cooler loss) on principal tap and at rated frequency.(bidder should offer no load loss & load lossseparately) a) No load loss or iron loss. b) Copper loss at full load at 75 Deg. C. c) Total losses	

17.	Core Material	
18.	Withstand time for three phase short circuit at terminals (secs.) NOTE:- The Xmer is protected by means of DO fuses as such the fault clearance is not rapid . The Xmer must be designed with proper supports for	

GUARANTEED TECHNICAL AND OTHER PARTICULARS FOR THE CLAMP

(To be filled in by Bidder and shall be furnished with the Technical Bid)

Sl no.	Description	T clamp for Moose to Moose
1	Manufacture's Name & Address	
2	Quality of materials and Standard to which confirming	
3	Material (State percentage composition of constituents and impurities present)	
	a)Clamp Body & keeper	
	b)Bolts and Nuts & plain washer	
	c)Spring washers	
	d)Liners if any	
4	Current Rating	
5	Short Circuit Current rating(for 3sec)	
6	Dry lightning impulse withstand voltage	
7	Dry and wet one minute power frequency withstand voltage	
8	Galvanising	
9	Maximum temperature rise over ambient temperature when carrying rated current(°C)	
10	Rated terminal load	
11	Slip strength	
12	Maximum thickness of any part	
13	Weight of Clamp complete with hardware	

14	PACKING	
15	General tolerance	
16	Electrical Resistance	
17	Type Tests Certificate	
18	Mechanical test	
	a)Heat run test	
	b)Materials compositing tests	
	c)Tests for checking blow holes cracks etc	

**GUARANTEED TECHNICAL AND OTHER PARTICULARS OF 30kV,10kA, LIGHTNING
ARRESTOR**

(To be filled in by Bidder and shall be furnished with the Technical Bid)

Sl.no	Description	Unit	Particulars
1.	Name & Address of Supplier & Manufacturer		
	➤ Lightning Arrester		
	➤ Surge Monitor		
	➤ Line Dis-connector		
	➤ Metal Oxide Block		
	➤ Terminal Clamp		
2.	Name& address of collaborator, if any		
3.	Standard to which lightning arresters conforms		
4.	Lightning Arrester		
4.1	Voltage rating(KV rms)		
4.2	Continuous Operating Voltage(KV rms)		
	a) Continuous Operating Voltage(KV rms)		
	b) Leakage current at continuous operation voltage		
	c) Partial discharge at 1.05 COV (PC)		

	d) Permitted leakage current of arrester beyond which arrester is faulty:		
5.	Frequency(Hz)		
6.	Nominal discharge current(waveshape–8/20 microsecond)(KA)		
7.	Pressure relief rated current(KA rms)		
8.	Steep current protection level at 10KA		
	a) Lighting impulse protection level at 5 KA and 10KA(KVP)		
	b) Switching impulse protection level with 40x80 micro-sec. Wave at 500/1000A		
9.	Long duration current impulse with stand capacity and virtual duration		
10.	Line discharge class		
11.	Thermal runaway limit of arrester		
12.	Energy capability(kJ/KV)		
13.	Pressure relief rating		
14.	Dry arcing distance		
15.	Reference current and reference voltage		
16.	Arrester housing		
16.1	Power frequency one minute wet withstand voltage(kVrms)		
16.2	Lighting impulse dry withstand voltage(KVP)		
16.3	Creepage distance		
	a) Protected		
	b) Total		
16.4	Short circuit withstand capacity		
16.5	Bending moment(mm)		
17.	Dis-connector		

	a) Constructional Details		
18.	Surge Monitor		
	a) Constructional Details		
	b) Degree of protection		
19.	Suitable for hotline washing		
20.	Dimension & weight		
21.	G A drawing indicating height of complete unit for bast to line, minimum recommended centre to centre spacing, clearance from ground equipment at various height of arrester, earthing arrester, earthing arrangement on earthed side of arrester etc.		
22.	Details of packing		
23.	License number & date for using ISI certification mark if any		
24.	Ammeter for discharge current		
	a) Type & make		
	b) Accuracy		
	c) Range(mA)		
25.	Residual Voltage		
26.	Follow Current		
27.	Any other information		

PRICE BID

(To be submitted in the Part-II, 'Price bid' in sealed envelope in quadruplicate)

Name of the Bidder:

NIT No. AEGCL/STTC/Tech-12/2025-26/10

Dated: 24-09-2025

Name of the work: Supply along with erection, testing and commissioning works of one number
250KVA, 33/0.4 kV Station Service Transformer at 132/33 kV Srikona grid substation.

Sl. No. (1)	Item description (2)	Unit (3)	Qty (4)	Unit Price In Rs. (5)	Total Price in Rs. (6)=(4*5)	F&I (7)	Total Amount (In RS.) (8)=(6+7)
1	Supply of 250 KVA, 33/0.433 kV, 3 phase Transformer filled with oil & with all fittings and accessories.	No	1				
2	Supply of 36kV, 1250A, 3-Ph gang operated , outdoor type, double break centre post rotating outdoor type motor operated disconnector (isolator) with mounting structure and solid core post insulator without earth switch	Set	1				
3	Supply of 33kV LA complete with surge monitor and all accessories	Nos	3				
4	Supply of 33 kV 8KN Post Insulator along with terminal connectors	No.	1				
5	Supply of equipment mounting structure for 33 kV, 8 kN PI along with construction of foundation	No.	1				
6	Supply of Station transformer LV side to main LVAC board 3.5 core,300 sq mm AL (XLPE) cable from station transformer to LVAC board	Mtr.	350				
7	Supply of mounting structure as required for 33kV DO fuse, LA& PI (RS JOIST POLE, 10 MTR, 175X85 mm)	No	2				

8	Supply of DO Fuse 150A along with assembly	Set	2				
9	Supply of Spacer T clamp (Twin Zebra)	No	5				
10	Supply of Nuts, bolts, washers, cable glands, lugs (Assorted size)	Nos	100				
11	Supply of PI Clamp	No	4				
12	Supply of Isolator Clamp	No	6				
13	Supply of 50x6 GI flat earthing conductor for earthing of indoor LT and Control panels, marshalling box, junction box	Mtr.	40				
14	Supply of 40 mm Dia. 3mtr long M.S. rod earth electrode	No	1				
15	Supply of Changeover switch (315 Amps)	No	1				
16	Erection, Testing and commissioning of 250 KVA, 33/0.433 Kv, copper wound, 3 Ph, Dyn-11, Z=4% outdoor type 'station service transformer' with OFF circuit tap changer, -5% to +5% in steps for 2.5% & including 10% spare oil including construction of foundations and supply of all foundation materials. MV connection shall be through single ACSR panther conductor, LV side shall be connected through XLPE insulated cable	No	1			0.00	
17	Erection, testing & commissioning of 36 kV, 1250A, 3 Ph gang operated outdoor type double break centre post rotating outdoor type motor operated disconnect (Isolator) with solid core post insulator including construction of foundation and supply of all foundation materials and laying & terminating of LT power and control cables as required	Set	1			0.00	

18	Erection, testing & commissioning of 33kV, 8KN, PI	No	1			0.00	
19	Erection, Testing and commissioning of XLPE Cable (300 sqmm, 3.5C)	Mtr.	350			0.00	
20	Construction of covered cable trenches including supply of all foundation materials and labour as per specification and drawing (D-Type)	Mtr.	15			0.00	
21	Installation of 50x6 GI flat earthing conductor for earthing of indoor LT and Control panels, marshalling box, junction box etc.	Mtr.	40			0.00	
22	Installation M.S. rod earth electrode (driven) with test link including making necessary connections and construction of covered earthpits	No	1			0.00	
A=Sub Total							
B=GST@18% on A							
C= Grand Total(A+B)							

Rupees in words _____

Name of the Bidder: -

Signature of the Bidder/Firm

Full Name

Postal Address

Phone/Mobile No.

