ASSAM ELECTRICITY GRID CORPORATION LIMITED

Regd. Office: 1st Floor, Bijulee Bhawan, Paltan Bazar, Guwahati – 781001
CIN: U40101AS2003SGC007238
Ph:- 0361-2739520/Fax:-0361-2739513 Web: www.aegcl.co.in

BID NO: AEGCL/DGM/TTC/NLP/T-03/2025-26/82 Dated: 19.02.2026

Bidding Document
For

Supply along with erection, testing & commissioning of 1(One) no. of 250kVA, 33/0.43kV Station Service Transformer at 132kV Gohpur GSS.

DEPUTY GENERAL MANAGER,
T&T CIRCLE, AEGCL
NORTH LAKHIMPUR

SECTION - 1

INSTRUCTION TO BIDDER

1.1.0 SCOPE OF BID: -

1.1.1. The **Deputy General Manager, T&T Circle, AEGCL, North Lakhimpur** on behalf of **Assam Electricity Grid Corporation Ltd,** hereinafter referred to as AEGCL or Purchaser **invites online bid through e-tendering** from eligible bidders for the following works for the GSSs under T&T Circle, AEGL, North Lakhimpur.

a) **NAME OF WORK**: - **Supply along with erection, testing & commissioning of 1 (One) no. of 250kVA, 33/0.433kV Station Service Transformer at 132kV Gohpur GSS.**

b) **ESTIMATED VALUE FOR THE WORK: - Rs. 19, 71,752.00** (Rupees Nineteen Lakh Seventy-One Thousand Seven Hundred Fifty-Two) only including taxes and F&I.

c) **Fund: O&M, HQ, UAR FY 2025-26.**

d) **Tender Address:** O/o the Deputy general Manager, North Lakhimpur T&T Circle, AEGCL, North Lakhimpur.

e) **Key Dates:**

1) **Bid Document available on website time & date: 11:00 Hrs of 20.02.2026**
2) **Bid Document Start time & date: 12:00 Hrs of 20.02.2026**
3) **Bid submission end time & date: 14:00 Hrs of 09.03.2026**
4) **Techno-Commercial Bid opening time & date: 12:00 Hrs of 11.03.2026**

f) **Tender Paper Cost and Mode of Payment:**
Bidders has to pay Non-Refundable tender document cost @Rs.1,000.00 (Rupees One Thousand only) via online mode only in the portal, receipt of which should be uploaded along with techno-commercial bid.

g) **Bid Security/Earnest Money and Mode of Payment:**

i. For participation in bidding procedure, participants must compulsorily pay the Bid Security of Rs. **39,500.00** (Rupees Thirty-Nine Thousand Five Hundred) only **via online mode only** in the portal, receipt of which should be uploaded along with techno-commercial bid.

ii. The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract.

iii. The bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder 's signing of the agreement.

iv. The bid security may be forfeited: if a Bidder withdraws its bid during the period of bid validity period and if the successful Bidder fails to sign the Contract within the specified period.

1.2.0 BIDDING PROCEDURE: -

I. **The ASSAM ELECTRICITY GRID CORPORATION LIMITED, ("the Employer")** invites online bid through e-tendering from eligible bidders for the above-mentioned works.

The following points are to be noted and given special attention:

- Bidder must create user ID in the web portal https://assamtenders.gov.in in order to participate inthe e-tender.
- Bidders shall be required to bid for the complete Package and no part offer shall be accepted.

II. Bidder must download the bidding documents from the above-mentioned portal and both technical & Price bid must be submitted through **online mode only** along with all scanned supporting documents (Suggestedscan at 150 dpi in .pdf format). Bidder can Re-work/Edit their bids before closing date of the tender. Bidders are advised to submit/re-work their bids well advance in time to avoid any last-minute unforeseen hassle. **However, AEGCL may ask bidders to submit hard copies of any major items and any other documents if deemed necessary.**

III. Only Price Bid of responsive Techno-Commercial Bidders will be opened.

IV. Bidder may obtain further information from the office of the **Deputy General Manager, North Lakhimpur. T&T Circle, AEGCL, North Lakhimpur.**

1.3.0 SCOPE OF WORK :-

1.3.1 The brief description of the scope of work covered under this bidding document is furnished below:

a. Design, manufacture, supply and erection, testing & commissioning of reputed make of 1 (One) No. 250 KVA, 33/0.4kV Station Service Transformer at 132kV Gohpur GSS as per bid specification and price schedule.

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.

1.3.2 The Bill of Quantities for indicative purposes is furnished in Price Schedules.

1.3.3 The bidder on its own responsibility may visit and examine the Site of Works and its surroundings and obtain information that may be necessary for preparing the bid. Any permits or licenses that may be required to execute the works should also be obtained by the contractor.

1.3.4 **The items mentioned in these Annexure shall only be used while quoting the bid prices. Any other items not specifically mentioned in the specification but which are required for installation, testing, commissioning and satisfactory operation of the equipment as per Indian Standards/IE Rules/IE Act and concerned authority regulations are deemed to be included in the scope of the specification and no deviation in this regard shall be accepted.**

1.3.5 **No modifications/additions/ deletions shall be made by the bidder to the items and quantities given in these schedules.**

1.3.6 The successful bidder will be expected to complete the works within **6 (six) months from the date of issue of LOA and** subjected to availability of specific shutdown**.** Bidders should note that time is the essence of this bid

1.4.0 ELIGIBILITY CRITERIA OF THE BIDDER:

1.4.1 A Bidder may be a private entity or a government-owned entity.

1.4.2 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.

1.4.3 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.

1.4.4 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.

1.4.5 Joint Venture is allowed. When the bidder is a Joint Venture (JV) of two or more firms as partners, all partners shall be jointly and severally liable. The JV shall legally authorize one of the partners as the lead partner for the purpose of submitting the bid, incur liabilities; receive payments and instructions on behalf of the others. A copy of the notarized JV agreement, executed on non-Judicial stamp paper, shall be submitted with the bid. Registered JV agreement shall be submitted when asked by the Purchaser.

However, in case of successful bid, the agreement shall be signed by all the partners, so as to be legally binding on all the partners.

1.5.0 FINANCIAL CAPABILITY

1.5.1 Bidder will require to submit along with the bid the audited balance sheets 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. Wherever necessary the Employer may make enquiries with Bidder's bankers.

1.5.2 Average Annual Turnover: Minimum average annual turnover INR calculated as total certified payments received for contracts in progress or completed, within the last 3 (Three) Years.

1.5.3 Financial Resources: Bidder needs to demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet:

(1) the cash-flow requirement of at least 70% of the work value and
(2) the overall cash flow requirements for this contract and its current works commitment.

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

1.5.5 The Contractor must furnish their Bank Solvency Certificate to show the bidder's financial position.

1.6.0 EQUIPMENT CAPABILITIES

1.6.1 The bidder should have assured access to supply of equipment as per bid and shall demonstrate that he or his supplier has capable of, manufacture & supply of such material. Bidders are required to demonstrate that based on known commitments the materials will be available for use in the proposed contract.

1.6.2 **Bidder may be manufacturer of the offered products or a firm/company having authorization from a manufacturer. In case the bidder is <u>not</u> a manufacturer of the offered products, bidder must submit manufacturer's authorization using for that purpose Form-MA provided in Section-3 Bidding forms.** Offered product's manufacturer must have least Five years of experience in design, manufacture and supply of **33/0.43kV Station Service Transformer.** The offered product's manufacturer must have supplied such equipment which are in successful operation for at least last five years. Bidder shall submit the copy of orders and performance certificates to establish its eligibility.

1.7.0 EXPERIENCE:

1.7.1 Experience in similar nature of works under contracts in the role of manufacturers, contractor, subcontractor, or management contractor for at least the last 3 (Three) years prior to the bid submission deadline.

1.7.2 Participation as manufacturer/ contractor Experience having successfully completed similar works during last 3 years ending last day of the month previous to the one in which applications are invited should be either of the following:

(a) Three (3) similar completed works costing not less than 40% of total estimated cost of each work.
(b) Two (2) similar completed works costing not less than 50% of total estimated cost of each work.
(c) One (1) similar completed works costing not less than 80% of total estimated cost.

1.7.3 The Bidder must have experience of executing work of similar nature previously in any Govt. organization/ PSU. The bidder must submit experience and completion certificate for scrutiny by AEGCL. Each of such project/ works should consist of completion certificate.

1.8.0 LITIGATION HISTORY

Bidders shall submit details of all litigation, arbitration or other claims, whether pending, threatened or resolved in the last five years, with the exception of immaterial claims with a cumulative impact of not more than 10% of their total assets. The Employer may disqualify bidders in the event that the total amount of pending or threatened litigation or other claims represent more than 50% of their total assets.

1.9.0 DOCUMENTS COMPRISING THE BID

1.9.1 The bid submitted by the bidder only through **online** mode.

1.9.2 **The Technical Bid submitted by bidders shall contain the following:**

a) Bid Submission Sheet

b) Documentary evidence to establish that the Bidder meet the qualifying requirements in accordance with Clause 1.5.0.

c) Documents to be furnished as per Clause 1.9.3

d) The Bid Guarantee (Bid Security) as mentioned above.

e) All other information and documents such as Guaranteed and Technical Particulars, type test reports, drawings, technical leaflets etc, as required in the Technical Specification.

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

a) *Copies of original documents defining the constitution or legal status, place of registration, and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder.*

b) *Copies of valid Trade License issued by competent authority in the State of Assam or in the State where the bidder's business is registered.*

c) *Copies of valid Electrical License for working in 132kV and above Grid Substations issued by competent authority in the State of Assam or in the State where the bidder's business is registered*

d) *Copies of valid Labour License issued by competent authority in the State of Assam or in the State where the bidder's business is registered*

e) *Copies of PAN, GST Registration Certificate as per Goods & Services Tax laws.*

f) *Total monetary value of similar work performed by the bidder in each of the last three years.*

g) *Experience in works of a similar nature and volume for each of the last three years, and details of works under way or contractually committed in AEGCL or any other Govt. entity/PSU who may be contacted for further information on those contracts.*

h) *Qualifications and experience of key site management and technical personnel proposed for the Contract.*

i) *Reports on the financial standing of the Bidder, such as profit and loss statements and audited annual accounts certified by CA of the company for the last three years including IT return duly acknowledged by the tax department for the last three years.*

j) *Evidence of adequacy of working capital for this contract (access to line (s) of credit and availability of other financial resources).*

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

1.9.4 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements.

1.9.5 Notwithstanding anything stated herein above, AEGCL reserves the right to assess the capacity and capability of the bidder to execute the work, should the circumstance warrant such assessment in the overall interest of AEGCL.

1.10.0 DOCUMENTS ESTABLISHING CONFORMITY OF THE GOODS AND SERVICES

1.10.1 The documentary evidence of the conformity of the goods and services to the Bidding Document may be in the form of literature, drawings and data, and shall furnish:

a) A detailed description of the essential technical and performance characteristics of the goods and services, including the functional guarantees of the Goods, in response to the Specification;

b) A commentary on the Purchaser's Specification and adequate evidence demonstrating the substantial

responsiveness of the plant and services to those specifications. Bidders shall note that standards for workmanship, materials and equipment designated by the Purchaser in the Bidding Document are intended to be descriptive (establishing standards of quality and performance) only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalog numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions are substantially equivalent or superior to the standards designated in the Specification.

1.11.0 SITE VISIT

The interested bidders are advised to Gohpur grid substation and examine the site of works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid. The costs of visiting the Site shall be at the bidder's own expense.

1.12.0 CLARIFICATION ON BIDDING DOCUMENTS: -

1.12.1 A prospective bidder requiring any clarification of the bidding documents may notify AEGCL in writing at the following address-

Deputy General Manager, T&T Circle, AEGCL, North Lakhimpur-787001

AEGCL will respond to any request for clarification which it receives earlier than 7 **(seven)** days prior to the deadline for submission of bids.

1.12.2 Verbal clarification and information given by AEGCL or its employee(s) or representative (s) shall not in any way be binding on AEGCL.

1.13.0 AMENDMENT OF BIDDING DOCUMENTS

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

1.13.2 Any corrigendum/Addendum/modifications issued to the bid documents will be published on the website mentioned above will be part of the bid document.

1.14.0 LANGUAGE OF BID

1.14.1 The bid, and all correspondence and documents related to the bid, exchanged between the bidder and AEGCL shall be written in the English language. Supporting documents and printed literature furnished by the bidder shall also be in English language.

1.15.0 BID FORM AND PRICE SCHEDULES

1.15.1 The Bidder shall complete the Bid Form and the appropriate Price Schedules furnished in the bidding documents in the manner and detail indicated therein.

1.16.0 BID PRICES

1.16.1 Bidders shall give a breakdown of the prices in the manner and detail called for in the **Schedules of Prices**.

1.16.2 In the Schedules, Bidders shall give the required details and a breakdown of their prices, including all taxes, duties, levies, and charges payable as of twenty-eight (28) days prior to the deadline for submission of bids, as follows:

(a) Plant and equipment (**Schedules of Prices**) shall be quoted on an EXW (ex-factory, ex-works, ex-warehouse or off-the-shelf, as applicable). The bid price excluding taxes as quoted in the Price Schedules.

1.16.3 Price Adjustment: Prices quoted by the Bidder shall be FIRM during performance of the contract and must be quoted **EXCLUSIVE OF TAXES**. Duties and Taxes shall be adjusted, except there is variation due to changes in legislation of the Country.

1.17.0 INSURANCE

The Bidder shall insure the Works/Materials (in transit and at the site) in accordance with the requirements of General Conditions of Contract. The Bidder shall provide details of the policies that he intends to take

out as part of his Bid submission. **The bid price shall include all costs in pursuance of fulfilling insurance liabilities under the contract.**

1.18.0 BID VALIDITY

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

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

1.19.0 **OPENING OF TECHNO-COMMERCIAL BIDS**

The Purchaser shall conduct the opening of Technical Bids trough online process at the address, date and time specified in the BDS. Bidders at their discretion may attend the techno-commercial bid opening. Price bid of those bidders shall only be opened whose techno-commercial bids are found to be responsive to the requirement of the bidding document.

1.27.0 PRELIMINARY EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

1.27.1 The Purchaser shall examine the Techno-commercial Bid to confirm that all documents and technical documentation requested in this bidding document have been provided, and to determine the completeness of each document submitted. If any of these documents or information is missing, the Bid may be rejected.

1.28.0 RESPONSIVENESS OF TECHNO-COMMERCIAL BID:

1.28.1 The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself. A substantially responsive Techno-commercial Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

a) If accepted, would

i) Affect in any substantial way the scope, quality, or performance of the plant and services specified in the Contract, or

ii) Limit in any substantial way, inconsistent with the Bidding Document, the Purchaser's rights or the Bidder's obligations under the proposed Contract, or

b) If rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids

1.28.2 The Purchaser shall examine the Techno-commercial Proposal, to confirm that the requirement of the bidding document have been met without any material deviation or reservation

1.28.3 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

1.29.0 **EVALUATION OF PRICE BIDS:**

1.28.1 The Purchaser shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be used.

To evaluate a Price Bid, the Purchaser shall consider the following:

I. The bid price excluding taxes as quoted in the Price Schedules,
II. Price adjustment for correction of arithmetical errors.
III. The following methodology will be practiced for identification and treatment of the Abnormally Low Bids (ALB) in this tender process of AEGCL.

a) Identification:

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

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

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

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

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

i. Identify ALB as per the step mentioned in Clause No.1.28.1(a).(i) and 1.28.b).(ii) whichever is applicable.
ii. Clarify and analyse the bidders resource inputs and pricing, including overheads, contingencies and profit margins. In that respect committee may seek the reference of the guidelines of World Bank, AIIB, ADB etc. prescribed for ALB
iii. Decide whether to accept or reject the tender.
iv. On acceptance of the bid, whether Additional Performance Security is to imposed on the bidder supplemented by adequate justification.

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

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

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

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

1.31.0 AWARD

1.31.1 AEGCL will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents provided that such bidder has been determined to be qualified in accordance with the provisions of the Bid.

1.32.0 PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

1.32.1 AEGCL reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for AEGCL's action. AEGCL is not bound to accept the offer of the lowest bidder.

1.33.0 NOTIFICATION OF AWARD

1.33.1 Prior to expiration of the period of bid validity prescribed by AEGCL, the Purchaser shall notify the successful Bidder, in writing, that its bid has been partially or fully accepted quoting acceptance of the bid. The notification letter (hereinafter called the "Notification of Award") shall specify the sum that the Purchaser will pay the Contractor (hereinafter called "Contract Price") in consideration of the execution and completion of the services. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract. The notification of award will constitute the formation of the Contract.

1.34.0 SIGNING OF CONTRACT AGREEMENT

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

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

1.35.0 WARRANTY

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

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

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

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

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

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

1.36.0 PERFORMANCE SECURITY (Contract Performance Guarantee)

1.36.1 As a Contract Performance Security, the successful Bidder, to whom the work is awarded, shall be required to furnish a Performance Guarantee from a Nationalized Bank, in the form attached with the Bidding Document (Section –5) in favour of the AEGCL. The guarantee amount shall be equal to ten percent (10%) of the Contract Price and it shall guarantee the faithful performance of the contract in accordance with the terms and conditions specified in these documents and specifications. The guarantee shall be valid up to 90 (ninety) days after the end of Warranty Period.

1.36.2 In case the bidder fails to submit the Performance Security in the form of Bank Guarantee, an amount equivalent to 10% of the Contract Price shall be retained as Security Deposits which shall be retained up to 90 (ninety) days after the end of Warranty Period

1.36.3 The performance guarantee shall cover additionally the following guarantees to the owner:

a) The successful Bidder guarantees the successful and satisfactory operation of the equipment furnished and erected under the contract, as per the specifications and documents.

b) The successful Bidder further guarantees that the equipment/material provided and installed by him shall be free from all defects in design, material and workmanship and shall upon written notice from the Owner fully remedy must be guaranteed.

1.36.4. The Contract performance Guarantee will be returned to the Contractor without any interest at the end of warranty period and written request from the contractor.

1.37.0 TERMS OF PAYMENT

The terms of payment for the supply and erection work shall be as follows

i. No advance payment shall be made in this contract.
ii. No claim for interest shall be entertained by AEGCL
iii. The price is firm and no price variation shall be applicable.
iv. Maximum 2(two) Nos. of progressive Invoice/ Bill would be entertained during work.
v. The 1st Progressive Invoice/Bill would be entertained for 80% of the total work value on completion of the supply work and acceptance of materials in full and good condition.
vi. Remaining 20% of total work value would be made after completion of erection, testing and commissioning works.

vii. Final bill must contain the original site register.

viii. Payment shall be released subject to receipt of specific fund. 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

1.38.0 CORRUPT OR FRAUDULENT PRACTICES

1.38.1 It is required that bidders/suppliers/contractors observe the highest standard of ethics during the procurement and execution of the contracts. In Pursuance of this Clause AEGCL;

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and

(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract by AEGCL if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

1.39.0 PENALTY FOR DELAYED EXECUTION

In the event of delay in completing the work extending beyond the date of completion or beyond the extended date, if any, permitted by the Board, the contractor shall pay as agreed liquidated damage and not as a penalty a sum equal to 1% of the contract price under this contract for each week of delay or part thereof subject to a maximum of 10% of the contract price.

1.40.0 FORCE MAJEURE

Force Majeure shall be considered as any circumstances beyond the reasonable control of the party claiming relief, including but not limited to strikes lockout, civil commotion, riot, insurrection, hostilities, war, fire, flood, earthquake, delay in delivery of equipments or part thereof by AEGCL, would entitle contractor to extension of time.

1.41.0 SETTLEMENT OF THE DISPUTE & ARBITRATION

Any dispute arising out of the contract will first be discussed and settled bilaterally between the Assam Electricity Grid Corporation Limited and firms/ contractors. In case, the dispute cannot be settled bilaterally, it will be referred to arbitration by an arbitrator to be appointed by the AEGCL. The contractor shall not stop the work during settlement of any arbitration case. All disputes arising out of the agreement so made shall be subjected to the jurisdiction of district court of Lakhimpur District.

SECTION-2

PURCHASER'S REQUIREMENTS

2.1.0 SCOPE OF WORK:

2.1.1 This section of the specification deals with the technical information & criteria for "Supply along with erection, testing & commissioning of 1(One) no. of 250 kVA, 33/0.4 KV Station Service Transformer at 132kV Gohpur GSS". The Contractor's proposal shall be based on the use of materials complying fully with the requirements specified herein. The work involves design, engineering, manufacture, assembly, inspection, testing at the manufacturer's works before dispatch, packing, supply, including insurance during transit, delivery at site of various equipment and materials including substation steel structures as specified in subsequent Clauses and Sections.

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

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

2.2.0 CONTRACTOR TO INFORM HIMSELF FULLY

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

2.3.0 STANDARDS

2.3.1 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.

2.3.2 Equipment conforming to other international or authoritative Standards which ensure equivalent or better performance than that specified under Clause 3.6.0 above shall also be accepted. In that case relevant extracts of the same shall be forwarded with the bid.

2.4.0 ENGINEERING DATA

2.4.1 The furnishing of engineering data by the Contractor shall be in. accordance with the Bidding Document. The review of these data by the Employer will cover only general conformance of the data to the specifications and not a thorough review of all dimensions, quantities and details of the materials, or items indicated or the accuracy of the information submitted. This review by the Employer shall not be considered by the Contractor, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications.

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

2.5.0 DRAWINGS AND DOCUMENTS FOR APPROVAL

2.5.1. 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.

2.5.2 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.

2.5.3 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.

2.5.4 **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.

2.5.5 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.

2.5.6 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.

2.5.7 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.

2.5.8 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.

2.5.9 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.

2.6.0 FINAL DRAWINGS AND DOCUMENTS

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

a) All approved drawings (AS BUILD) of equipment in three (3) copies.
b) Instruction manuals of the equipment in three (3) copies. These instruction manuals shall generally consist of-
   i) Operation Manuals,
   ii) Maintenance Manuals and
   iii) Spare Parts Bulletins.
c) Copies of routine test reports (in triplicate) of relevant equipment.
d) Final Guaranteed and Other technical particulars of relevant equipment.
e) In addition to the above the Contractor shall provide five (5) sets of all the drawings and documents to Employer in printed form for his reference and record.

2.7.0 QUALITY ASSURANCE DOCUMENTS

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

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

2.8.0 EMPLOYER'S SUPERVISION

2.8.1 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.

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

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

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

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

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

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

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

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

2.9.0 INSPECTION AND INSPECTION CERTIFICATE

2.9.1 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.

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

2.9.3 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. The Contractor is required to quote unit rates of type test charges in a separate Schedule (if such schedule is provided in the Bidding Document) in pursuance to this Clause. However, these type test charges shall not be taken into account in comparing Price Bid.

2.9.4 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.

2.10.0 TESTS

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

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

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

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

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

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

2.10.2 The standards and norms to which these tests will be carried out are specified in subsequent Sections of this Specification. Where a particular test is a specific requirement of this Specification, the norms and

procedure of the test shall be as specified or as mutually agreed to between the Contractor and the Employer in the Quality Assurance Programme.

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

2.11.0 TYPE TEST REPORTS

2.11.1 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.

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

a) Tests are conducted in an independent testing laboratory with NABL accreditation, or

b) Tests are conducted in manufacturer's own laboratory.

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

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

2.11.3 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.

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

2.12.0 GUARANTEED TECHNICAL PARTICULARS

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

2.12.2 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 what so ever shall be given to the bidder offering better/more stringent values than those required as per specification except where stated otherwise.

2.13.0 MATERIALS HANDLING AND STORAGE

2.13.1 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.

2.13.2 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.

2.13.3 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.

2.13.4 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.

2.13.5 All the materials stored in the open or dusty location must be covered with suitable weather-proof and flame proof covering material wherever applicable.

2.13.6 The Contractor shall be responsible for making suitable indoor storage facilities, to store all items/materials, which require indoor storage.

213.7 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.

2.14.0 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 132kV Gohpur 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.

2.15.0 CONSIGNEE DETAILS

2.15.1 The Contractor shall supply along with erection, testing & commissioning of 1(One) no. of 250kVA, 33/0.4 KV Station Service Transformer at 132kV Gohpur GSS as per bid.

2.16.0 TYPE TEST

(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.***

2.16.1 GUARANTEED TECHNICAL PARTICULARS

2.16.2 STANDARDS

The equipment covered by this specification shall, unless otherwise stated be designed, constructed and tested in accordance with the latest revisions of relevant Indian Standards indicated below or equivalent IEC and shall conform to the regulations of local statutory authorities except to the extent explicitly modified in this specification.

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.

The list of standards mentioned in this specification and to which the circuit conform is given below:

1	IS:2026	Specification of Power Transformer
2	IS:1180 (Part-1):2014	Outdoor type Oil Immersed Distribution Transformers upto and including 2500 KVA, 33 kV – Specification.
3	IS: 335	Specification for Transformer Oil.
4	IS: 12444	Specification for Copper Wire Rod
5	IS:3347	Specification for Porcelain Transformer Bushing.
6	IS: 2099	Specification for High Voltage Porcelain Bushings.
7	IS: 7421	Specification for Low Voltage Bushings.
8	IS: 9335	Specification for Insulating Kraft Paper.
9	IS: 1576	Specification for Insulating Press Board
10	IS: 6600	Guide for Loading of Oil Immersed Transformers.

2.16.3 TECHNICAL REQUIREMENTS

2.16.4 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%.

2.16.5 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%.

2.16.6 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.

2.16.7 TERMINAL AGREEMENT

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.

2.16.8 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.

2.16.9 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.

2.16.10 TRANSFORMER OIL

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

2.16.10 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.

2.16.11 CONSERVATOR

Oil gauge and the plain or dehydrating breathing devise(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.

2.16.12 SURFACE PREPARATION AND PAINTING

Before painting or filling with oil or compound, all ungalvanized 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 Suppler. The make and grade of the recoat shall be same as the original coat.

2.16.13 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 da 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.

2.16.14 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.

2.16.16 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), degree Celsius	**40**
	(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: ±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
	(a) Ph-Ph (HV/LV), mm	**350/25**
	(b) Ph-Earth (HV/LV), mm	**350/25**

2.16.17 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.

2.16.18 TECHNICAL SPECIFICATION OF LIGHTNING ARRESTERS

STANDARDS

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 lighting 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.

2.16.19 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.

2.16.20 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

2.16.21 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.

2.16.22 TESTS

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 MCOV
- 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 15:2071.

2.16.23 GALVANIZATION TEST

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

2.16.24 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 withstands voltage of arrester insulation,kV(rms)	70
7	1.2/50µ 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

2.16.25 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

2.16.26 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 up-to 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

Sl. No	Power Cable
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
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.

2.16.27 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.

2.16.28 SERVICE CONDITION

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

DESIGN AND CONSTRUCTION PERTICULARS

2.16.29 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.

2.16.30 TECHNICAL PARAMETERS

i.	Quantity	: Refer Table-1
ii.	Packaging	Steel drum packaging, each having single length cable ≥ 500 metres. (for size less than1000sqmm.).
iii.	Cable Type	A2XWY/ 2XWY (refer Table-1 for details)
iv.	No. of Cores	Shall be decided during detailed engineering (Cable sizing calculation)
v.	Voltage Level	1.1Kv
vi.	System Grounding	Solidly Grounded

vii. Nominal System voltage: 415V ±10%

viii. Nominal System Frequency: 50 Hz

ix. Maximum conductor temperature at rated current: 90 deg C

x. Maximum conductor temperature at Short-circuit: 250 deg C

xi. Conductor Conductor Material: H4-Grade Aluminium of purity > 99.6% Electrolytic grade Copper, Purity > 99.97%

xii. Conductor type: Stranded with number of strands as per IS 8130 (Part-I) 1984

xiii. Insulating material: Cross-Linked-Polyethylene (XLPE) Compound.

xiv. Core Identification Strips: Red, Yellow, Blue & Black (for neutral)

xv. Material of Inner Sheath: FRLS, PVC ST-2 Compound

2.16.31 CONDUCTOR

COPPER

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.

2.16.32 Insulator

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

2.16.33 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.

2.16.34 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.

2.16.35 TEST

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.

2.16.36 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.

2.16.37 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+2ºC as per ASTMD-2863
- Temperature index test
  Temperature index value shall be minimum 250ºC 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.

2.16.38 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

2.16.39 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.

2.16.40 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)

2.16.41 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 stenciled 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

2.16.42 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

2.16.43 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	
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	

Sl. No.	Particulars	Details
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	
	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	
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	

2.16.44 ERECTION, TESTING AND COMMISSIONING

a) Bidders should note that, transformers shall be installed as per by the site engineer. 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.

2.16.45 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.

SECTION – 3

BID SUBMISSION SHEET, BID FORMS AND SCHEDULES

1. Bid Submission Sheet

(To be submitted in Bidder's Letterhead)

Name of contract:

To,

The Deputy General Manager,
T&T Circle, AEGCL, North Lakhimpur

Sir:

We have examined the General Conditions of Contract, Technical Specification, Schedules, and Addenda Nos _____(if any). We have understood and checked these documents and have not found any errors in them. We accordingly offer to execute and complete the said Works and remedy any defects fit for purpose in conformity with these documents and the enclosed Proposal (Price Offer)

We accept your suggestions for the appointment of the Dispute Adjudication Board, as set out in the Bidding Document.

We agree to abide by this Bid until _____ and it shall remain binding upon us and may be accepted at any time before that date.

If our bid is accepted, we will provide the specified performance security, commence the Works as soon as reasonably possible after receiving the notice to commence, and complete the Works in accordance with the above-named documents within the time stated in the Bidding Document.

Unless and until a formal Agreement is prepared and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Yours faithfully

Signature _____ in the capacity of _____ duly authorized to sign bids for and on behalf of _____

Address

_____

_____

2. Form-BG

Form of Bid Security (Bank Guarantee)

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

KNOW ALL MEN by these presents that We _____ *[Name of Bank]* of _____ *[Name of Country]* having our registered office at _____ (hereinafter called "the Bank) are bound unto _____ *[Name of Employer]* (hereinafter called "the Employer") in the sum of _____for which payment will and truly to be made to the said Employer the Bank binds himself, his successors and assigns by these presents. SEALED with the Common Seal of the said Bank this ___ day of_____ 20___.

THE CONDITIONS of this obligation are:

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

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

Or

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

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

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

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

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

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

(Signature, Name, and Address)

3. Form-MA

Form of Manufacturer's Authorization

(To be submitted in Manufacturer's Letterhead)

Bid No.:

To,

The Deputy General Manager,
T&T Circle, AEGCL, North Lakhimpur

WE *[insert: **name of Manufacturer]*** who are established and reputable manufacturers of *[insert: **name and/or description of the Goods]*** having production facilities at *[insert: **address of factory]*** do hereby authorize *[insert: **name & address of Bidder]*** (hereinafter, the "Bidder") to submit a bid the purpose of which is to provide the following goods, manufactured by us, and to subsequently negotiate and sign the Contract:

1. ----------
2. ----------

We hereby extend our full guarantee and warranty in accordance with ***Clause 2.9.0***of the Special Conditions of Contract, for the above specified Goods supporting the Supply of specified Goods and fulfilling the Related Services by the Bidder against this Bidding Documents, and duly authorize said Bidder to act on our behalf in fulfilling these guarantee and warranty obligations. We also hereby declare that, we will furnish the Performance Guarantee in accordance with ***SCC Clause 2.6.0.***

Further, we also hereby declare that we and, *[insert: **name of the Bidder]*** have entered into a formal relationship in which, during the duration of the Contract (**including related services and warranty / defects liability**) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer

Common Seal and Signature of the
authorised person: Name:

Designation:

NOTE:

This MA should be signed by a person having either of the following-

1) Valid Power of attorney
2) Authorized by Managing Director
3) Member of Board of Directors

4. Guarantee Declaration

We declare that the ratings, specifications and performance figures of the various plants and equipments /material furnished by us in the Bid are guaranteed. We further declare that in the event of any deficiencies in meeting the guarantees in respect of the characteristics mentioned in Guaranteed Technical Particulars, of Technical Bid as established after conducting the factory test, you may at your discretion, reject or accept the equipment/material after assessing the liquidated damages as specified in relevant clause of Bid Document.

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

Section-4

Price Bid
Rates should be quoted Exclusive of GST
BOQ as uploaded