

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 IDENTIFICATION NO:

AEGCL/DGM//UATTC/JRT/33kV Bus Aug. Lakwa/T-31/2026/2936, Dated: 0 3 . 0 9 .2026

Bidding Document For

Augmentation of 33kV Bus at 132kV Lakwa GSS, AEGCL and strengthening of the conductors of Power transformer's 33kV (LV) bays (132/33kV- 7.5MVA & 16 MVA) by replacing the existing Dog/Wolf conductors with ACSR Panther conductor

**DEPUTY GENERAL MANAGER,
UA T&T CIRCLE, AEGCL,
GARMUR, JORHAT, PIN-785007**

**Bid Doc. Amount : ₹1,000.00
EMD : ₹22,000.00**

SECTION - 1
INSTRUCTION TO BIDDER

1.1.0 SCOPE OF BID:

1.1.1. The Deputy General Manager, UA T&T Circle, Jorhat, AEGCL on behalf of Assam Electricity Grid Corporation Ltd, hereinafter referred to as AEGCL or Purchaser invites sealed tenders in prescribed form, from reputed firms/ contractors/ manufacturers with sound technical and financial capabilities for the following work. A single stage two envelope procedure (**Techno-Commercial and Price Bid**) will be adopted for this tender.

- a) **NAME OF WORK:** Augmentation of 33kV Bus at 132kV Lakwa GSS, AEGCL and strengthening of the conductors of Power transformer's 33kV (LV) bays (132/33kV- 7.5MVA & 16 MVA) by replacing the existing Dog/Wolf conductors with ACSR Panther conductor.
- b) **ESTIMATED VALUE FOR THE WORK:** ₹ 10,76,729.00 (Rupees Ten Lakh Seventy Six Thousand Seven Hundred and Twenty Nine) only including taxes.
- c) **Fund:** O&M HQ (UAR) for the FY 2026-27
- d) **Key Dates:** Refer to NIT.
- e) **Bidding address:**
O/o the Deputy General Manager,
UATTC, AEGCL, Garmur,
Jorhat, PIN-785007

[e-mail: dgmmttc.jorhat@aegcl.co.in]
- f) Bidders may obtain further information from the office of the Deputy General Manager, UA T&T Circle, AEGCL, Jorhat, PIN - 785007, Assam.
- g) **Cost of Bidding:** The bidder shall bear all costs associated with the preparation and submission of its bid and AEGCL will in no case be responsible or liable for those costs. The cost of the tender paper is **Rs. 1000/- (Rupees One Thousand) only** to be pledged in favour of “The MD, AEGCL, Guwahati” (in the form of A/C payee Demand Draft).

1.2.0 BIDDING PROCEDURE:

Two envelope bidding procedure will be adopted. Bidders are to submit two sealed envelopes simultaneously, one containing the technical & Commercial proposal, Part-I (Technical & Commercial Bid) and the other containing the price proposal Part-II (Price Bid), enclosed together in one sealed envelope.

Initially, only the Part -I bids shall be opened. Part-I proposals submitted by bidders, which do not conform to the specified requirement, may be rejected as deficient bids. The Part-II (Price Bid) proposals of technically qualified bidders will be opened at a date and time, which will be informed to all the qualified bidders of Part-I.

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) Supply of all equipment/materials as per BOQ and bid specification.
- b) Dismantling of existing equipments/materials and Erection & fitting of disc insulators, clamps/ connectors etc. as per BOQ and bid specification.
- c) Opening & Lowering of existing bus conductors
- d) Stringing of new conductor including dismantling of existing conductors alongwith the fittings against the strengthening of conductors as per the BOQ.
- e) Installation and commissioning as per BOQ and bid specification.
- f) Storage of dismantled materials and accessories to AEGCL store including transportation to store and material handling.
- g) Freight and Transit Insurance, storage at site and site insurance of all material at site shall be in the scope of the contractor.
- h) Any permits required for supply of materials shall be arranged by the contractor. However, AEGCL shall assist the

- contractor in arranging permits if any to the extent possible.
- 1.3.2 The Bill of Quantities for indicative purposes is furnished in Price Schedules.
- 1.3.3 The items mentioned in this 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 cable 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.
- 1.3.4 No modifications/additions/ deletions shall be made by the bidder to the items and quantities given in these schedules.
- 1.3.5 The successful bidder will be expected to complete the works within **90 days from the date of signing of the contract agreement**. 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. However, no Joint Venture Bid shall be allowed.
- 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.
- 1.5.0 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 3,23,500.00** calculated as total certified payments received for contracts in progress or completed, within the last 3 (Three) Financial Years.
- 1.5.3 Financial Resources: Bidder need 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 atleast 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 Bidder must furnish their **Bank Solvency Certificate** not less than the work value to show the bidder's financial position indicating the amount by the concerned authority in necessary formats as per their banks.
- 1.6.0 EQUIPMENT CAPABILITIES**
- 1.6.1 The bidder should have assured access to supply of Control & relay panels 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.
- 1.7.0 EXPERIENCE:**
- 1.7.1 The bidder must compulsorily meet the following minimum criteria:**
- i. Must have completed supply of materials/equipment, construction and commissioning of Bay or Bus of 33 KV voltage class and above.
 - ii. Relevant experience as a sub-contractor for having executed works will also be considered subject to submission of valid supporting documents up to the satisfaction of the bid evaluation committee.
 - iii. Bidder must have valid electrical license of voltage class 33KV and above.

- 1.7.2 Participation as manufacturer/ contractor Experience having successfully completed similar nature of works during last 5 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, i.e. **Rs. 4,31,000.00.**
(b) Two (2) similar completed works costing not less than 50% of total estimated cost, i.e. **Rs. 5,38,500.00.**
(c) One (1) similar completed works costing not less than 80% of total estimated cost, i.e. **Rs. 8, 61,500.00.**
- 1.7.3 The Bidder must have experience of executing work of similar nature previously in AEGCL/APDCL. 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 shall comprise two envelopes submitted simultaneously, one containing only the technical proposal and the other the price proposal.
- 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) in accordance with Clause 1.19.0 & its sub clauses of this Section.
 - e) All Bidding Schedules properly filled up including Price Bid Schedules.
 - f) All other information and documents such as Guaranteed and Technical Particulars, 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 relevant Electrical License (updated) issued by competent authority in the State of Assam or in the State where the bidder's business is registered.
 - c) Copies of Labour License (updated) issued by competent authority in the State of Assam or in the State where the bidder's business is registered.
 - d) Copies of PAN, GST Registration Certificate as per Goods & Services Tax laws.
 - e) Total monetary value of similar work performed by the bidder in each of the last five years.
 - f) Experience in works of a similar nature and volume for each of the last five 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.
 - g) Qualifications and experience of key site management and technical personnel proposed for the Contract.
 - h) 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.
 - i) Evidence of adequacy of working capital for this contract (access to line (s) of credit and availability of other financial resources).
 - j) Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount.
- 1.9.2 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.
- 1.9.3 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 visit any grid substation of AEGCL 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 CONSIGNEE DETAILS

The Contractor shall execute the work at 132kV Lakwa GSS, AEGCL, Maibella, Charaideo.

1.13.0 CLARIFICATION ON BIDDING DOCUMENTS:

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

Deputy General Manager, UA T&T Circle, AEGCL, Jorhat, PIN-785007

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

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

1.14.0 AMENDMENT OF BIDDING DOCUMENTS

1.14.1 **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.**

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

1.15.0 LANGUAGE OF BID

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.

1.16.0 BID FORM AND PRICE SCHEDULES

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

1.17.0 BID PRICES

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

1.17.2 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:

1.17.3 Plant and equipment (**Schedules of Prices**) shall be quoted on an EXW (ex-factory, ex-works, ex-warehouse or off-the-shelf, as applicable). All taxes and duties taxes as applicable and freight and insurance shall be indicated separately.

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

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, and in compliance with Clause 1.19.0 in all respects.

1.19.0 BID SECURITY (EARNEST MONEY)

- 1.19.1 The Bidder shall furnish, as part of its bid with the Technical Proposal, a bid security in the amount of **₹22,000.00 (Rupees Twenty Two Thousand) only pledged in favor of "The Managing Director, AEGCL, Bijulee Bhawan, Paltanbazar, Guwahati-01" payable at the O/o the DGM, UATTC, Garmur, Jorhat.**
- 1.19.2 For participation in the bidding procedure, participants must compulsorily pay the Bid Security / Earnest Money Deposit in the form of DD/Fixed Deposit/bank Guarantee in favour of AEGCL, Guwahati. The bid security shall remain valid for 30 days beyond the original validity period for the bid, and beyond any period of extension subsequently requested.
- 1.19.3 Any bid not accompanied by an acceptable bid security shall be rejected as non-responsive.
- 1.19.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, against written request from the unsuccessful bidders.
- 1.19.5 The bid security of the successful bidder will be returned when the bidder has signed the Contract Agreement and furnished the required performance security.
- 1.19.6 The bid security may be forfeited
- (a) if the bidder withdraws its bid, except as provided in Sub-Clause 1.24.1;
 - (b) if the bidder does not accept the correction of its bid price, pursuant to Sub-Clause 1.29 or
 - (c) in the case of a successful bidder, if it fails within the specified time limit to
 - (i) Sign the Contract Agreement,
 - (ii) Furnish the required performance security.
- 1.19.7 No interest shall be payable by AEGCL on the above bid guarantee.

1.20.0 ALTERNATIVE PROPOSALS BY BIDDERS

- 1.20.1 Bidders shall submit offers, which comply with the Bidding Documents, including the basic AEGCL's Requirements as indicated in the bidding documents. Alternatives will not be considered. The attention of bidders is drawn to the provisions of Clause 1.29.0 regarding the rejection of bids which are not substantially responsive to the requirements of the bidding documents.

1.21.0 FORMAT AND SIGNING OF BID

- 1.21.1 The bidder shall prepare one original and two copies of the bid proposal, clearly marking each one as: "ORIGINAL - BID PROPOSAL, etc as appropriate. In the event of discrepancy between the original and any copy, the original shall prevail.
- 1.21.2 The original and all copies of the bid shall be typed or written in indelible ink (in the case of copies, Photostats are also acceptable) and shall be signed by a person or persons duly authorized to sign on behalf of the bidder. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid.
- 1.21.3 The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by AEGCL, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.
- 1.21.4 The Bidders must submit the Bid Guarantee in separate sealed envelope, super-scribed as under:
- "BID GUARANTEE (Name of the Package)"*
- 1.21.5 The Bid must contain the name, residence and place of business of the person or persons making the Bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.
- 1.21.6 Bids by Corporation / Company must be signed with the legal name of the Corporation/Company by the President, Managing Director or by the Secretary or other person or persons authorized to Bid on behalf of such Corporation/Company in the matter.
- 1.21.7 A Bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent', or other designation without disclosing his principal will be rejected.
- 1.21.8 Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the Bid.

- 1.21.9 The Bidder's name stated on the proposal shall be exact legal name of the firm
- 1.21.10 Bids not conforming to the above requirements of signing may be disqualified.
- 1.21.11 If the outer envelope is not sealed and not marked as above, AEGCL will assume no responsibility for the misplacement or premature opening of the bid.
- 1.21.12 The Bid must be accompanied with requisite BID SECURITY in a separate sealed cover.
- 1.21.13 The Bidders have the option of sending the Bids by post/courier or in person. Bids submitted by Telex/ Telegram/Fax will not be accepted. No request from any Bidder to AEGCL to collect the proposal from Airlines/Cargo Agents etc shall be entertained by AEGCL.

1.22.0 DEADLINE FOR SUBMISSION OF BIDS

- 1.22.1 Bids must be received by AEGCL at the address specified above no later than refer to NIT.
- 1.22.2 AEGCL may, at its discretion, extend the deadline for submission of bids by issuing an addendum in accordance with Clause 1.14.0, in which case all rights and obligations of AEGCL and the bidders previously subject to the original deadline will thereafter be subject to the deadlines extended.

1.23.0 LATE BIDS

- 1.23.1 Any bid received by AEGCL after the deadline for submission of bids prescribed in Clause 1.22.0 will be rejected and returned unopened to the bidder.

1.24.0 WITHDRAWAL OF BIDS

- 1.24.1 The bidder may withdraw its bid after bid submission, provided that written notice of the withdrawal is received by AEGCL prior to the deadline for submission of bids.
- 1.24.2 The bidder's withdrawal notice shall be prepared, sealed, marked and delivered with the envelopes additionally marked "WITHDRAWAL".
- 1.24.3 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in Sub-Clause 1.18.0 may result in the forfeiture of the bid security pursuant to Sub-Clause 1.19.6.

1.25.0 OPENING OF BIDS

- 1.25.1 AEGCL will open the Technical Bids (Part-I), in the presence of bidders' representatives who choose to attend; at the following location:

O/o the Deputy General Manager.
UAT&T Circle, AEGCL, Jorhat,
PIN-785007

- The bidders' representatives who are present shall sign a register evidencing their attendance.
- 1.25.2 Envelopes marked "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 1.24.0 shall not be opened.
- 1.25.3 The bidders' names, the Bid Prices, the presence or absence of Bid Security, and such other details as AEGCL may consider appropriate, will be announced and recorded by AEGCL at the opening. The bidders' representatives will be required to sign this record.

1.26.0 PROCESS TO BE CONFIDENTIAL

- 1.26.1 Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process. Any effort by a bidder to influence AEGCL's processing of bids or award decisions may result in the rejection of the bidder's bid.

1.27.0 PRELIMINARY EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

- 1.27.1 Prior to the detailed evaluation of bids, AEGCL will examine the bids to determine whether they are complete and all documents as per Clause 1.9.0 are provided or not, whether the documents have been properly signed, whether the required security is included, and whether the bids are generally in order and provides any clarifications and/or substantiation that AEGCL may require pursuant to Clause 1.27.0.
- 1.27.2 A substantially responsive bid is one which conforms to all the terms, conditions and requirements of the bidding documents, without material deviation or reservation and includes the amendments and changes, if any. AEGCL may waive any minor non-conformity or irregularity in a Bid which does not constitute a material deviation or reservation, provided such deviation or reservation does not (i) affect in any substantial way the scope, quality or performance of the Works; (ii) limit in any substantial way, inconsistent with the bidding document, AEGCL's rights or bidder's obligations under the contract; or (iii) whose rectification would affect unfairly the competitive position of other bidder's presenting substantially responsive bids.

- 1.27.3 Any bids found to be non-responsive for any reason or not meeting the minimum levels of the performance or other criteria specified in the bidding documents will be rejected by AEGCL and not included for further consideration.

1.28.0 CLARIFICATION OF BID PROPOSALS AND CONTACTING AEGCL

- 1.28.1 To assist in the examination, evaluation and comparison of Bids, AEGCL may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing or by mail, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by AEGCL in the evaluation of the bids in accordance with Clause 1.28.0.
- 1.28.2 Subject to Sub-Clause 1.28.1, no bidder shall contact AEGCL on any matter relating to its bid from the time of opening Bids to the time the contract is awarded. If the bidder wishes to bring additional information to the notice of AEGCL, it should do so in writing.
- 1.28.3 Any effort by the bidder to influence AEGCL in AEGCL's evaluation of price proposals, bid comparison or contract award decisions may result in the rejection of the bidder's bid.

1.29.0 CORRECTION OF ERRORS

- 1.29.1 Price Proposals determined to be substantially responsive will be checked by AEGCL for any arithmetic errors. Arithmetic errors will be rectified on the following basis. If there is a discrepancy between the unit rate and the total cost that is obtained by multiplying the unit rate and quantity, the unit rate shall prevail and the total cost will be corrected unless in the opinion of AEGCL there is an obvious misplacement of the decimal point in the unit rate, in which case the total cost as quoted will govern and the unit rate corrected. If there is a discrepancy between the total bid amount and the sum of total costs, the sum of the total costs shall prevail and the total bid amount will be corrected.
- 1.29.2 The amount stated in the Form of Bid for Price Proposal will be adjusted by AEGCL in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the bid security may be forfeited in accordance with Sub-Clause 1.19.6 (b).

1.30.0 EVALUATION AND COMPARISON OF BID PROPOSALS

- 1.30.1 AEGCL will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 1.27.0.
- 1.30.2 For equipments and materials, the comparison shall be of the ex-factory price of equipments and materials offered (such price to include all costs as well as duties and taxes paid or payable on components and raw material incorporated); plus the cost of transportation, local taxes and duties, civil works, installation and other services required under the contract with due corrections as per Clause 1.29.0, AEGCL's comparison will also include the costs if any, resulting from application of the evaluation procedures described in Sub-Clause 1.30.4.
- 1.30.3 AEGCL will carry out a detailed evaluation of the bids in order to determine whether the bidders are qualified and whether the technical aspects are substantially responsive to the requirements set forth in the bidding documents. In order to reach such a determination, AEGCL will examine the information supplied by the Bidders and other requirements in the bidding documents, taking into account the following factors:
- (a) **Qualification**
 - (i) the determination will take into account the Bidder's financial and technical capabilities and past performance; it will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Clause 1.5.0 as well as such other information as AEGCL deems necessary and appropriate; and
 - (ii) an affirmative determination will be a prerequisite for AEGCL to continue with the evaluation of the proposal; a negative determination will result in rejection of the Bidder's bid.
 - (b) **Technical**
 - (i) overall completeness and compliance with AEGCL's Requirements; the technical merits of materials and equipments offered and deviations from AEGCL's Requirements; suitability of the facilities offered in relation to the environmental and climatic conditions prevailing at the site; quality, function and operation of any process control concept included in the bid;
 - (c) **Commercial**
 - (i) Deviations and omissions from the contractual and commercial conditions as identified in the Bid.
 - (ii) compliance with the time schedule called for in the Bidding Document and evidenced as needed in a milestone schedule provided in the bid; and
 - (iii) the functional guarantees of the facilities offered against the specified performance criteria of the plant and equipment.

- 1.30.4 Pursuant to Sub-Clause 1.30.4, the following evaluation methods will be followed:

- (a) **Time Schedule:** The scope of work covered by this bidding are required to be completed within the

period specified in Sub-Clause. Bidders submitting bids which deviate from the time schedule specified will be rejected.

(b) **Deviations from the Bidding Document:**

Bidders shall base their Bid price on the terms & conditions specified in the Bidding documents. Bids with material deviations and omissions shall be rejected.

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

1.30.5 Bid Evaluation Process for Abnormally Low Bids:

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

(a) Identification:

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

- i. **Absolute Approach** when there is fewer than five substantially responsive bidders and if the bid price is 20% or more below AEGCL's cost estimate then AEGCL's tender evaluation committee should clarify the Bid price with the bidder to determine whether the Bid is abnormally low.
- ii. **Relative Approach** is a statical comparison method which will be applied when there are more than five nos. of substantially responsive bids. A potential ALB is identified where the low Bid is more than one standard deviation below the average of substantially responsive bids received.

In this approach first the Average bid price is determined and then by deducting the standard deviation from the average bid price, 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 are as follows:

- i. Identify ALB as per the step mentioned in Clause No.(a).(i) and 10.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.
- iii. Decide whether to accept or reject the tender.

(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.

1.30.6 AEGCL reserves the right to accept or reject any variation or deviation. Variations, deviations, and other factors which are in excess of the requirements of the bidding documents or otherwise result in the accrual of unsolicited benefits to AEGCL shall not be taken into account in bid evaluation.

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

1.32.1 Notwithstanding Clause 1.31.0, 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 PENALTY FOR DELAYED EXECUTION

1.33.1 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.

1.34.0 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 INSPECTION AND TESTING

- 1.35.1 The Contractor shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in Section 2, Purchaser's Requirements.
- 1.35.2 The inspections and tests shall generally be conducted on the premises of the Contractor/Manufacturer. Subject to sub-clause 1.35.3. The Contractor shall furnish, all reasonable facilities and assistance, including access to drawings/process chart and production data to the inspectors at no charge to the Purchaser.
- 1.35.3 The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in SCC Sub-Clause 1.35.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.
- 1.35.4 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice (not less than 21 days) of such test and/or inspection and of the place and time thereof to the Purchaser. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
- 1.35.5 The Contractor/manufacturer shall provide the Purchaser with a certified report of the results of any such test and/or inspection.
- 1.35.6 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Contractor shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to SCC Sub-Clause 1.35.4.
- 1.35.7 If it is agreed between the Purchaser and the Contractor that the Purchaser shall not attend the test and/or inspection, then the Contractor may proceed with the test and/or inspection, and should provide the Purchaser with a certified report of the results thereof.
- 1.35.8 The Contractor agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to SCC Sub-Clause 5.13.5 & 5.13.7, shall release the Contractor from any warranties or other obligations under the Contract.

1.36.0 INSURANCE

- 1.36.1 The "Contractor" shall, have, unless, otherwise specified by the Purchaser, insure the materials through their underwrites at their cost and shall keep it insured against any loss/ damaged/ pilferage in transit, destruction or damage by fire/ flood, without exposure to vagaries of weather or through riot, civil commotion, war or rebellion, for the full value of the materials until the materials are received at the purchaser's destination store.
- 1.36.2 The "Contractor" shall be responsible for safe arrival at destination, unloading and receipt of the materials by the consignee. The Purchaser will discharge consignee's responsibilities only and shall not be responsible for any damage/ loss/ pilferage/ non-delivery by the carriers.
- 1.36.3 In case of any loss/ damage/ pilferage/ non-delivery/ short delivery by carriers etc.; the Contractor shall replace free of cost missing / damaged / lost materials within 30(thirty) days from the receipt of report thereof from the consignee(s) without waiting for settlement of their claims with their carriers / under-writers. Normally, such reports from the consignee(s) to the Contractor shall be initiated within a period of 30(thirty) days from the date of receipt of each consignment by him /them.
- 1.36.4 If it is considered necessary that the damaged equipment either in part or in full to be sent back to the manufacturer's works for repair, the manufacturers/ Contractors will furnish the Bank Guarantee for the full value of equipment needing repairs and such Bank Guarantee shall remain valid till such time, the equipment are repaired and returned to the consignee in good condition. The to and fro freight, handling and insurance charges in

such cases will be borne by the Contractor.

- 1.36.5 Unless, otherwise mutually agreed upon, in case of failure by the Contractor to replenish /make good of the loss /damage /short supplied quantities, within the stipulated period, the Purchaser reserves the right to forfeit the security deposit and/ or adjust any outstanding payment to the “Contractor” with the Purchaser or take any other appropriate action.

1.37.0 FORCE MAJEURE

- 1.37.1 “Force Majeure” shall mean any event beyond the reasonable control of the Purchaser or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster
- (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

- 1.37.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

- 1.37.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party’s performance is prevented, hindered or delayed.

1.38.0 LIQUIDATED DAMAGE

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

- 1.38.2 Recover an amount at the rate of 1% (One percent) of the Contract Price per week or part thereof of delay, subject to maximum of 10% (Ten percent) of the contract price as liquidated damage to AEGCL.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the works or from any other obligations and liabilities of the Contractor under the Contract.

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

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

1.39.0 WARRANTY

- 1.39.1 The Contractor/Manufacturer warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

- 1.39.2 The Contractor/Manufacturer further warrants that the Goods shall be free from defects arising from any act or omission of the Contractor or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.

- 1.39.3 The warranty shall remain valid for **18 (Eighteen) months** from the date of successful commissioning after the Goods, or

any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Purchaser's Requirement. Bidder may at its discretion offer extra warranty which shall be evaluated in the mark based evaluation system

- 1.39.4 If during the Period Warranty any defect should be found, the Purchaser shall give Notice to the Contractor/Manufacture stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Contractor/Manufacturer to inspect such defects.
- 1.39.5 If having been notified, the Contractor/Manufacturer fails to remedy the defect within a period of 15 (fifteen) days, the Purchaser may, following notice to the Contractor/Manufacturer, proceed to do such work, and the reasonable costs incurred by the Purchaser in connection therewith shall be paid to the Purchaser by the Contractor or may be deducted by the Purchaser from any amount due the Contractor or claimed under the Performance Security.

1.40.0 CONTRACTUAL FAILURE

- 1.40.1 In the event of contractual failure of any respect on the part of the Contractor, the Purchaser shall be entitled to operate security deposit or any deposit or any payment due to Contractor irrespective of whether his default relates to the particular orders or not towards the Purchaser's claim for damages arising out of the failure. In addition, the Purchaser may black-list or bans the "Contractor" or pending enquiry, suspend him or take any other steps considered suitable.

1.41.0 ARBITRATION

- 1.41.1 If at any time, any question, dispute or difference whatsoever shall arise between the Purchaser and the Contractor in relation to or in connection with this contract, either party may, by written notice, refer the matter to the adjudication of a Sole Arbitrator to be appointed by mutual agreement of both parties in accordance with the Arbitration and Conciliation Act, 1996 and its amendments. The arbitration proceedings shall be held at Guwahati, or at any other place as may be decided by the Purchase.
- 1.41.2 The decision of the Sole Arbitrator shall be final and binding on both parties and the expenses of the arbitration shall be paid as may be determined by the Arbitrator. However, any dispute arising out of this contract will first be discussed and settled bilaterally between Purchaser and the Contractor.

1.42.0 CONTRACTOR TO INFORM HIMSELF FULLY

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

1.43.0 STANDARDS

- 1.43.1 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.
- 1.43.2 Equipment conforming to other international or authoritative Standards which ensure equivalent or better performance than that specified under Clause 2.16.0 above shall also be accepted. In that case relevant extracts of the same shall be forwarded with the bid.

1.44.0 PERFORMANCE SECURITY (Contract Performance Guarantee)

- 1.44.1 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 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 30 (thirty) days after the end of Warranty Period.
- 1.44.2 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 30 (thirty) days after the end of Warranty Period
- 1.44.3 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.

1.44.4 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.

1.45.0 TERMS OF PAYMENT

The terms of payment for the supply 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. Final bill must contain the original site register.
- v. Payment shall be released against receipt of materials in full and good condition at site. 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

1.46.0 CORRUPT OR FRAUDULENT PRACTICES

1.46.1 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.

1.47.0 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 Kamrup District.

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

SECTION-2 PURCHASER'S REQUIREMENTS

2.1.0 SCOPE OF WORK:

This section of the specification deals with the technical information & criteria for “**Augmentation of 33kV Bus at 132kV Lakwa GSS, AEGCL and strengthening of the conductors of Power transformer's 33kV (LV) bays (132/33kV- 7.5MVA & 16 MVA) by replacing the existing Dog/Wolf conductors with ACSR Panther conductor**”. The brief description of scope covered under this Bidding Document is furnished below. Bidders must read the bid document particularly the bid specifications thoroughly to understand the scope of work.

- a) Supply of conductor accessories, clamps & connectors and hardware fittings as per BOQ and bid specification.
- b) Dismantling existing conductors including clamps and fittings
- c) Stringing of new ACSR conductor
- d) Erection & fitting of disc insulators, clamps and connectors as per BoQ.
- e) Opening and lowering of existing bus conductor including insulator string as per BOQ and bid specification.
- f) Storage of dismantled materials and accessories to AEGCL store including transportation to store and material handling.
- g) Freight and Transit Insurance, storage at site and site insurance of all material at site shall be in the scope of the contractor.
- h) Any permits required for supply of materials shall be arranged by the contractor. However, AEGCL shall assist the contractor in arranging permits if any to the extent possible.

2.1.1 SERVICE CONDITIONS:

Bidder should note the following climatic and other conditions prevailing in the location of work:

- | | |
|--|-------------------------------|
| a) Peak ambient day temperature in still air | : 35°C |
| b) Minimum night temperatures | : 20°C |
| c) Ground temperatures | : 30°C |
| c) Reference ambient day temperature | : 35°C |
| d) Relative Humidity a) Maximum | : 100 % |
| b) Minimum | : 10 % |
| e) Altitude | : Below 1000 M above MSL |
| f) Maximum wind pressure | : As per IS: 802 latest code. |
| g) Seismic Intensity | : ZONE-V as per IS 1893. |

2.2.0 SPECIFICATION FOR DESIGN AND FABRICATION OF SUBSTATION STEEL STRUCTURES

2.2.1 SCOPE

This section covers the design parameters and specification for fabrication and galvanising, of steel structures, bolts & nuts, tower accessories etc for Substations covered under this Bid Document.

2.2.2 ITEM-WISE TECHNICAL SPECIFICATION

T-Clamp for Single ACSR Panther Conductor

Current carrying parts should be of high conductivity aluminium or aluminium alloy. Hardware: hot-dip galvanized steel. Bimetallic arrangement where required. Suitable for single ACSR Panther conductor. Continuous current rating $\geq$ rated current of 33 kV bus. Shall withstand specified short-circuit current, conductor tension, thermal expansion, vibration and short-circuit electromagnetic forces without slipping, cracking or permanent deformation.

T-Clamp suitable for Twin Panther to Single Panther Conductor

Current carrying parts should be of Aluminium/aluminium alloy; galvanized steel hardware; suitable bimetallic interface where necessary. Exact conductor spacing and terminal dimensions shall be confirmed at site. Continuous current rating $\geq$ rated current of 33 kV bus and suitable for current sharing between twin conductors. Shall withstand combined conductor tension and short-circuit forces without conductor slippage or deformation.

Spacer for ACSR Panther Conductor

Current carrying parts should be of Aluminium alloy or suitable non-magnetic high-strength material; hardware corrosion protected. Suitable for the full continuous current of the twin-conductor bus arrangement. Shall withstand wind-induced vibration, conductor movement and specified short-circuit forces without opening/ slipping or damaging conductor strands.

UPG Clamp for Single ACSR Panther Conductor

Current carrying parts should be of Aluminium/aluminium alloy body; galvanized steel hardware. Current rating $\geq$ 33 kV bus rated current. Adequate grip without damaging conductor strands; shall withstand specified mechanical and short-circuit forces.

Isolator Clamp for Single ACSR Panther Conductor

Current carrying parts should be made of Aluminium/aluminium alloy; suitable bimetallic connector where equipment terminal is of dissimilar metal; galvanized hardware. **Continuous** Current rating $\geq$ rated current of connected 33 kV bus/isolator. Shall withstand conductor load and short-circuit forces without loosening or permanent deformation.

Isolator Clamp for Twin ACSR Panther Conductor

Current carrying parts should be made of Aluminium/aluminium alloy with suitable bimetallic interface where required; galvanized hardware. Continuous Current rating $\geq$ rated current of twin-conductor bus arrangement. Shall maintain equal and stable current sharing and withstand mechanical/ short-circuit forces.

CT Clamp for Single ACSR Panther Conductor

Current carrying parts should be made of Aluminium/aluminium alloy current-carrying parts; bimetallic construction wherever required; galvanized hardware. Continuous Current rating $\geq$ rated current of the connected 33 kV bus/circuit. Shall withstand specified conductor tension and short-circuit forces without slipping or deformation.

CB Clamp for Single ACSR Panther Conductor

Current carrying parts should be made of Aluminium/aluminium alloy; bimetallic connector where necessary; galvanized hardware. Continuous Current rating $\geq$ rated current of the 33 kV CB/bus arrangement. Shall withstand specified short-circuit forces, thermal effects and conductor mechanical loads without failure.

LV Bushing Clamp for Single ACSR Panther Conductor

Current carrying parts should be made of Aluminium/aluminium alloy; suitable bimetallic arrangement where required; galvanized hardware. Continuous Current rating $\geq$ rated current of the associated transformer/bus connection. Shall withstand mechanical forces, thermal effects and short-circuit forces without loosening or deformation.

2.2.3 MATERIALS

Structural Steel

The structures shall be of structural steel conforming to any of the grade, as appropriate, of IS 2062 (latest edition) Steel conforming IS 8500 may also be used.

Medium and high strength structural steels with known properties conforming to any other national or international standards may also be used.

Bolts

Bolts used shall conform to IS12427 or bolts of property class 4.6 conforming to IS 6639 may also be used.

High strength bolts, if used (only with steel conforming to IS 8500) shall conform to property class 8.8 of IS 3757. Foundation Bolts shall conform to IS 5624.

Step bolts shall conform to IS 10238

Nuts

Nuts shall conform to IS 1363 (Part 3). The mechanical properties shall conform to property class 4 or 5 as the case may be as specified in IS 1367 (Part 6) except that the proof stress for nuts of property class 5 shall be as given in IS 12427.

Nuts to be used with high strength bolts shall conform to IS 6623.

Washers

Washers shall conform to IS 2016. Heavy washers shall conform to IS 6610. Spring washers shall conform to type B of IS 3663

Washers to be used with high strength bolts and nuts shall conform to IS 6649.

Galvanisation

Structural members, plain and heavy washers shall be galvanized in accordance with the provisions of IS 4759. Spring washers shall be hot dip galvanized as per service grade 4 of IS 4759 or IS 1537.

Other Materials

Other materials used in the construction of the supporting structures shall conform to appropriate Indian Standards wherever available.

2.3.0 DESIGN PARAMETERS

2.3.1 Switchyard structures such as columns, beams and equipment mounting structures shall be designed as per actual site requirement. The drawings are to be submitted for approval prior to supply/execution.

Note: Structures with earth peak shall assume to have four earth wires for design purpose in normal condition.

2.4.0 Spans

Following Spans shall be considered in design of all structures as applicable: -

a). Line gantries (structures to terminate lines):

(i) For 33 KV Switchyard: 50 Metër, wind & weight span.

b). All other Structures

(i) For 33 KV Switchyard: 20 Metër, wind & weight span.

2.5.0 Deviation Angle

The design of line gantries shall only be checked for a maximum deviation angle of 300 from normal at center of gantries to Dead End Tower.

2.6.0 Conductors and Shield Wires

a) The Conductor shall conform to IS: 398 (latest edition) except where otherwise specified herein. The details of ACSR Panther conductors are tabulated below:

S/n	DESCRIPTION	Details of ACSR PANTHER
1	Code name	PANTHER
2	Number of strands & size	Al: 30/ 3.00 mm
		St: 7/ 3.00 mm
3	Overall diameter	21.00 mm
4	Breaking load	130.32 kN
5	Weight of conductor	974 kg / km
6	Co-efficient Of Linear Expansion	19.35x10 ⁻⁶ /0C
7	Number of strand	
	Steel centre	1
	1st Steel Layer	6
	1st Aluminium Layer	12
	2nd Aluminium Layer	18
	3rd Aluminium Layer	-
8	Sectional area of Aluminium	212.10 mm ²
9	Total sectional area	261.50 mm ²
10	Calculated d.c. resistance at 20 °C	0.1400 ohm/km
11	Ultimate tensile strength	89.67

b) For protection against direct lightning G.I. wires of size 7/3.66 mm conforming to IS 2241 shall be considered for all switch

yards.

2.7.0 DESIGN DRAWINGS

2.7.1 The relevant drawings for all the towers, beams and equipment mounting structures shall be furnished by the Supplier to the Purchaser which shall include structural/fabrication drawings, Bill of Materials including nuts and bolts.

2.7.2 The structural drawings, Bill of materials and shop fabrication drawings for all the structures shall be submitted in four copies and will be finally approved by the Purchaser.

The fabrication shall be taken up from the approved shop drawings.

The overall responsibility of fabricating structure members correctly lies with the Supplier only and the Supplier shall ensure that all the members can be fitted while erecting without any undue strain on them.

2.8.0 ACCESSORIES

2.8.1 Step Bolts

Each column/tower shall be provided with step bolts conforming to IS: 10238 of not less than 16mm diameter and 175mm long spaced not more than 450mm apart and extending from 2.5 meters above the ground level to the top. Each step bolt shall be provided with two nuts on one end to fasten the bolt securely to the tower and button head at the other end to prevent the feet from slipping away. The step bolts shall be capable of withstanding a vertical load not less than 1.5 KN.

2.8.2 Insulator Strings and Conductor Clamps Attachments

a) Single suspension and tension insulator string assemblies shall be used for stringing busbars For the attachment of Suspension Insulator string, a suitable strain plate of sufficient thickness for transferring the load to the tower body shall be provided. To achieve requisite clearances, if the design calls for providing extra D-shackles, link plate etc. before connecting the insulator string the insulator string the same shall be supplied by the Supplier.

b) At tension points strain plates of suitable dimensions placed on the beams, shall be provided for taking the hooks or D-shackles of the tension insulator strings. To achieve requisite clearances, if the design calls for providing extra D-shackles, link plate etc. before connecting the insulator string the same shall be supplied by the Supplier.

2.8.3 Earth wire Clamps Attachment

i. Suspension Clamp

The detailed drawing shall be submitted by the Supplier for Purchaser's approval. The Supplier shall also supply U- bolts, D-shackles wherever required.

ii. Tension Clamps

Earth-wire peaks of tension towers shall be provided with suitable plates to accommodate the shackle of tension clamps. The Supplier shall also supply the U-bolts wherever required and take Purchaser's approval for details of the attachments before the mass fabrication.

2.9.0 FABRICATION

2.9.1 The fabrication of substation steel structures shall be in conformity with the following:

- a. Except where hereinafter modified, details of fabrication shall conform to IS: 802 (Part-II) or the relevant international standards.
- b. The tower structures shall be accurately fabricated to connect together easily at site without any undue strain on the bolts.
- c. No angle member shall have the two leg flanges brought together by closing the angle.
- d. The diameter of the hole shall be equal to the diameter of bolt plus 1.5mm.
- e. The structure shall be designed so that all parts shall be accessible for inspection and cleaning. Drain holes shall be provided at all points where pockets of depression are likely to hold water.
- f. All identical parts shall be made strictly inter-changeable. All steel sections before any work are done on them shall be carefully levelled, straightened and made true to detailed drawings by methods which will not injure the materials so that when assembled, the adjacent matching surfaces are in close contact throughout. No rough edges shall be permitted in the entire structure.
- g. Minimum Thickness of Tower Members shall be as follows: -

ITEM	Minimum thickness (in mm)
Leg members & main chords of beams in compression	5
Other members	4

2.9.2 Drilling and Punching

2.9.2.1 Before any cutting work is started, all steel sections shall be carefully strengthened and trued by pressure and not by

hammering. They shall again be trued after being punched and drilled.

2.9.2.2 Holes for bolts shall be drilled or punched with a jig but drilled holes shall be preferred. The punching may be adopted for thickness up to 16mm. Tolerances regarding punch holes are as follows:

- a) Holes must be perfectly circular and no tolerances in this respect are permissible.
- b) The maximum allowable difference in diameter of the holes on the two sides of plates or angle is 0.8mm. I.e. the allowable taper in a punched holes should not exceed 0.8 mm on diameter.
- c) Holes must be square with the plates or angles and have their walls parallel.

2.9.2.3 All burrs left by drills or punch shall be removed completely. When the tower members are in position the holes shall be truly opposite to each other. Drilling or reaming to enlarge holes shall not be permitted.

2.9.3 Erection mark

Each individual member shall have erection mark conforming to the component number given to it in the fabrication drawings. The mark shall be marked with marking dies of 16mm size before galvanizing and shall be legible after galvanizing.

2.9.4.0 GALVANIZING AND PAINTING

2.9.4.1 Galvanising of the various members of the structures shall be done only after all works of sawing, shearing, drilling, filling, bending and matching are completed. Galvanising shall be done by the hot dip process as recommended in IIS: 2629 or other such authoritative international standards and shall produce a smooth, clean and uniform coating of not less than 610 gm per square meter. The preparation for galvanising and the galvanising process itself must not affect adversely the mechanical properties of the treated materials. No manual Galvanization process will be accepted.

2.9.4.2 All assembly bolts shall be thoroughly hot dip galvanised after threading. Threads shall be of a depth sufficient to allow for the galvanized coating, which must not be excessive at the root of the threads, so that the nut shall turn easily on the completed bolts without excessive looseness. The nut threads shall not be galvanised, but oiled only.

2.9.4.3 The outside surface shall be galvanised. Sample of galvanised materials shall be supplied to the galvanised test set out in IIS 729 or other such authoritative international standards.

2.10.0 EARTHING

To keep provision in the structures for earthing, holes shall be drilled on two diagonal opposite legs of the towers/columns/mounting structures. The holes shall be suitable for bolting 65 mm X 12 mm GI strips and shall be such that the lower hole is about 350 mm above the ground level, clear of the concrete muffing, for connecting the earthing strip.

2.11.0 TEST AND TEST CERTIFICATE

2.11.1 Each consignment ready for transportation shall be offered to ASEB for inspection before dispatch giving a minimum time of not less than 30 days. Samples of fabricated structure materials shall be subjected to following tests: -

- a) Steel: The structural steel shall conform to IS 226 and IS 8500, BS 4360-1068 or ISO / R 630 other such authoritative international standards. Manufacturer's test certificate shall be submitted for all used steel.
- b) Galvanising: The galvanising shall be as per IS 2633 or BS 729 other such authoritative international standards. Zinc coating over the galvanised surfaces shall not be less than 610 gm per square meter.
- c) Bolts and nuts: Manufacturer's test certificate as per standard practice shall be submitted.

2.12.0 TEST AT SUPPLIER'S PREMISES

2.12.1 The Supplier shall fabricate one specimen structure of each type as soon as possible after placement of order and before starting the bulk fabrication of the structures ordered. It shall be assembled on a foundation as nearly similar as practicable to site and tested with suitable test loads as per specified broken wire condition, multiplied by the corresponding factor of safety to ensure that the design and fabrication complies with the requirements.

Each structure shall be capable of withstanding the above-mentioned tests without any injury or any permanent deflection at any part. If any member is found to be weak or damaged the design should be suitably modified and the tower re-tested.

2.12.2 After the first lot of the structures manufactured, the members forming one structure of each type shall be selected at random from the lots of similar member and assembled in exactly the same manner as to be done at site. The structure then shall be set on foundation as nearly similar as practicable to site and tested with equivalent test load for which the structure has been designed.

2.12.3 No structure or any member thereof, which failed the test shall be supplied.

2.13.0 TECHNICAL SPECIFICATION OF DISC INSULATORS FOR SUBSTATION AND TRANSMISSION LINE WORKS

2.13.1 SCOPE

This specification provides for design, manufacture, engineering, inspection and testing before dispatch, packing and delivery at site, testing and commissioning for manufacturers of disc Insulators as per technical requirements furnished in this specification.

These insulators are to be used in suspension and tension insulator strings for the suspension and anchoring of the conductors on EHV transmission line towers.

2.13.2 Following are the list of documents constituting this package.

- (i) Technical specification.
- (ii) Technical data sheet.
- (iii) Drawings of insulator

2.13.3 All the above volumes along with amendments there of shall be read and interpreted together. However, in case of a contradiction between the “Technical Specification” and any other volume, the provisions of this volume will prevail.

2.13.4 The insulators shall conform in all respects to high standards of engineering, design, workmanship and latest revisions of relevant standards at the time of offer and purchaser shall have the power to reject any work or material which in his judgment, is not in full accordance therewith.

2.14.0 STANDARDS:

2.14.1 Except as modified in this specification, the disc/porcelain long rod insulators shall conform to the following Indian Standards, which also includes latest revisions and amendments if any. Equivalent International and Internally recognized standards to which some of these standards generally correspond are also listed below.

s/n.	Indian Standard	Title.	International Standard.
1.	IS: 206	Method for Chemical Analysis of Slab Zinc.	
2.	IS: 209	Specification for Zinc.	BS: 3436
3.	IS: 731	Porcelain insulators for overhead power lines with a normal voltage greater than 1000V	BS: 137(I&II); IEC 60274 IEC 60383
4.	IS: 2071 Part-(I)-Part-(II) Part-(III)	Method of High Voltage Testing.	
5.	IS: 2121 (Part-I)	Specification of Conductors and Earth wire Accessories for Overhead Power lines. Armour Rods, Binding wires and tapes for conductor.	
6.	IS: 2486	Specification for Insulator fittings for overhead power lines with a nominal voltage greater than 1000V.	
	Part – I	General Requirement and Tests.	BS: 3288
	Part – II	Dimensional Requirements.	IEC: 60120
	Part – III	Locking devices.	IEC: 60372
7.	IS: 2629	Recommended practice for Hot Dip Galvanisation for iron and steel.	
8.	IS: 2633	Testing for Uniformity of Coating of Zinc coated articles.	
9.	IS: 3138	Hexagonal Bolts & Nuts.	ISO/R 947 & ISO/R 272
10.	IS: 3188	Dimensions for Disc Insulators.	IEC: 60305
11.	IS: 4218	Metric Screw Threads	ISO/R 68-1969, R 26-1963, R965-1969
12.	IS: 6745	Determination of weight of zinc coating on zinc coated iron and steel articles.	

13.	IS: 8263	Methods of RIV Test of HV insulators.	IEC 60437 NEMA Publication No.107/1964 CISPR
14.	IS: 8269	Methods for switching impulse Test on HV insulators.	IEC: 60506
15.		Thermal mechanical performance test and mechanical performance test on string insulator units.	IEC: 60575
16	IEC	Ceramic Long Rod Insulators	IEC: 60433

2.14.2 The standards mentioned above are available from-

Reference.	Name & Address:
BS	British Standards, British Standards Institution, 101, Pentonville Road, N- 19 ND,U.K
IEC / CISPR	International Electro technical commission Electro Technique International. 1, Rue de verembeGeneva SWITZERLAND.
IS	Bureau of Indian Standards, Manak Bhavan, 9 Bahadurshah Zafar Marg, New Delhi-110001,
ISO	International Organisation for Standardization. Danish Board of Standardization Dansk Standardizing Sraat Aurehoegvej- 12 DK-2900 Hellestrup DENMARK.

2.15.0 PRINCIPAL PARAMETERS.

2.15.1.1DETAILS OF DISC INSULATORS:

- A) The Insulator strings shall consist of standard discs for use in three phases. 50 Hz effectively earthed 33/132/220 KV transmission system of AEGCL in a moderately polluted atmosphere. The discs shall be cap and pin, ball and socket type. Radio interference data and have characteristics as shown in Table-I and all ferrous parts shall be hot dip galvanized as per the latest edition of IS 2629. The zinc to be used for making sleeves shall be 99.95 % pure.
- B) The size of disc insulator, minimum creepage distance the number to be used in different type of strings, their electromechanical strength and mechanical strength of insulator string along with hardware shall be as follows:

PRINCIPAL PARAMETERS OF THE DISC INSULATORS: -

Sl. No.	Type of String.	Size of disc. Insulator (mm)	Minimum creepage distance of each disc (mm),	No. of Standard discs 132 KV/220 KV/400kV	Electro-mechanical strength of insulator string fittings (KN)
1.	Single suspension	255 x 145	320	1x9/1x14 /-	70 KN/90 KN Normal Disc Insulator
2.	Double suspension.	-do-	-do-	2x9/2x14 /-	70 KN/90 KN Normal Disc Insulator
3	Single suspension	255 x 145	430	1x9/1x14 /-	70 KN/90 KN Antifog Insulator
4	Double suspension.	-do-	-do-	2x9/2x14 /-	70 KN/90 KN Antifog Disc Insulator
5.	Single Suspension	280 x 145	430	1x10/1x15 /-	120 KN Anti fog Disc insulator
6.	Double suspension	280 x 145	430	2x10/2x15 /-	120 KN Anti fog Disc insulator
7.	Single Tension	305 X 170	475	1x10/1x15/1x25	160 KN Anti fog Disc insulator
8.	Double Tension	305 X 170	475	2x10/2x15/2x25	160 KN Anti fog Disc insulator

9.	Single Suspension	280 x 145	430	1x10/1x15/1x25	120 KN Anti fog Disc insulator
10.	Double suspension	280 x 145	430	2x10/2x15/2x25	120 KN Anti fog Disc insulator

2.16.0 SPECIFICATION DRAWINGS:

2.16.1 The Specification in respect of the disc insulators are described, the specification is for information and guidance of the bidder only. The drawings to be furnished by the supplier shall be as per his own design and manufacture and in line with the specification.

2.16.2 Porcelain glaze:

The finished porcelain shall be glazed in brown colour. The glaze shall cover all exposed parts of the insulator and shall have a good lusture, smooth surface and good performance under the extreme weather conditions of a tropical climate. It shall not crack or chip by ageing under the normal service conditions. The glaze shall have the same coefficient of expansion as of the porcelain body throughout the working temperature range.

2.17.0 METAL PARTS:

2.17.1 Cap and Ball Pins:

Ball pins shall be made with drop forged steel caps with malleable cast iron. They shall be in one single piece and duly hot dip galvanized. They shall not contain parts or pieces joined together welded, shrink fitted or by any other process from more than one piece of materials. The pins shall be of high tensile steel, drop forged and heat-treated. The caps shall be cast with good quality black heart malleable cast iron and annealed. Galvanizing shall be by the hot dip process with a heavy coating of zinc of very high purity. The bidder shall specify the grade composition and mechanical properties of steel used for caps and pins. The cap and pin shall be of such design that it will not yield or distort under the specified mechanical load in such a manner as to change the relative spacing of the insulators or add other stresses to the shells. The insulator caps shall be of the socket type provided with nonferrous metal or stainless-steel cotter pins and shall provide positive locking of the coupling.

2.17.2 Security Clips:

The security clips shall be made of phosphor bronze or of stainless steel.

2.18.0 FILLER MATERIAL:

Cement to be used, as a filler material be quick setting, fast curing Portland cement. It shall not cause fracture by expansion or loosening by contraction. Cement shall not react chemically with metal parts in contact with it and its thickness shall be as small and as uniform as possible.

2.19.0 MATERIALS DESIGN AND WORKMANSHIP:

2.19.1.1 GENERAL:

(I) All raw materials to be used in the manufacture of these insulators shall be subject to strict raw material quality control and to stage testing/ quality control during manufacturing stage to ensure the quality of the final end product. Manufacturing shall conform to the best engineering practices adopted in the field of extra high voltage transmission. Bidders shall therefore offer insulators as are guaranteed by them for satisfactory performance on Transmission lines.

(II) The design, manufacturing process and material control at various stages be such as to give maximum working load, highest mobility, best resistance to corrosion, good finish elimination of sharp edges and corners to limit corona and radio interference voltages.

2.19.1.2 INSULATOR SHELL:

The design of the insulator shells shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. Shells with cracks shall be eliminated by temperature cycle test followed by mallet test. Shells shall be dried under controlled conditions of humidity and temperature.

2.19.1.3 METAL PARTS:

i) The pin and cap shall be designed to transmit the mechanical stress to the shell by compression and develop uniform mechanical strength in the insulator. The cap shall be circular with the inner and outer surfaces concentric and of such design that it will not yield or distort under loaded conditions. The head portion of the pinball shall be suitably designed so that when the insulator is under tension the stresses are uniformly distributed over the pinhole portion of the shell. The pinball shall move freely in the cap socket either during assembly of a

string or during erection of a string or when a string is placed in position.

ii) Metal caps shall be free from cracks, seams, shrinks, air holes, blowholes and rough edges. All metal surfaces shall be perfectly smooth with no projecting part or irregularities, which may cause corona. All load bearing surfaces shall be smooth and uniform so as to distribute the loading stress uniformly. Pins shall not show any microscopically visible cracks, inclusions and voids.

2.19.1.4 GALVANIZING:

All ferrous parts, shall be hot dip galvanized in accordance with IS: 2629. The zinc to be used for galvanizing shall conform to grade Zn 99.95 as per IS: 209. The zinc coating shall be uniform, smoothly adherent, reasonably light, continuous and free from impurities such as flux, ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the designed dimensional requirements.

2.19.1.5 CEMENTING:

The insulator design shall be such that the insulating medium shall not directly engaged with hard metal. The surface of porcelain and coated with resilient paint to offset the effect of difference in thermal expansions of these materials. High quality Portland cement shall be used for cementing the porcelain to the cap & pin.

2.19.1.6 SECURITY CLIPS (LOCKING DEVICES)

The security clips to be used as locking device for ball and socket coupling shall be „R“ shaped hump type to provide for positive locking of the coupling as per IS: 2486 (Part-IV). The legs of the security clips shall allow for spreading after installation to prevent complete withdrawal from the socket. The locking device shall resilient corrosion resistant and of sufficient mechanical strength. There shall be no possibility of the locking device to be displaced or be capable of rotation, which placed in position, and under no circumstances shall it allow separation of insulator units and fittings.

„W“ type security clips are also acceptable. The hole for the security clip shall be counter sunk and the clip shall be of such design that the eye of the clip may be engaged by a hot line clip puller to provide for disengagement under energized conditions. The force required for pulling the clip into its unlocked positions shall not be less than 50 N (5 kg.) or more than 500 N (50 kgs.).

2.19.1.7 MARKING:

Each insulator shall have the rated combined mechanical and electrical strength marked clearly on the porcelain surface. Each insulator shall also bear symbols identifying the manufacturer, month, and year of manufacture. Marking on porcelain shall be printed, not impressed, and shall be applied before firing.

2.19.2 BALL AND SOCKET DESIGNATION:

The dimensions of the ball and sockets for 70 and 90 KN insulator strings shall be of 16 mm and for 120 KN and 160 KN insulator strings shall be of 20 mm designation in accordance with the standard dimensions stated in IS: 2486 (Part-II).

DIMENSIONAL TOLERANCE OF INSULATOR DISCS:

It shall be ensured that the dimensions of the disc insulators are within the limits specified below:

S/N	Diameter of Disc (mm)	Standard in Mm	Maximum	Minimum
1.	70 KN/90 KN & 120 KN	255/255 & 280	As per IS	As per IS
2.	160 KN	305	As per IS	As per IS
S/N	Ball to Ball spacing Between Discs (mm)	Standard in Mm	Maximum	Minimum
1.	70 KN/90 KN/120 KN	145	As per IS	As per IS
2.	160 KN	170	As per IS	As per IS

NOTE: Tolerance as per relevant IS (Latest edition)

2.19.3 INTERCHANGE ABILITY:

The insulators inclusive of the ball and socket fittings shall be of standard design suitable for use with hardware fittings of any make conforming to relevant Indian Standards.

2.19.4 CORONA AND RIV PERFORMANCE:

All surfaces shall be even, smooth, without cuts, abrasions or projections. No part shall be subject to excessive localized pressure. The metal parts and porcelain shall not produce any noise-generating corona under all operating conditions.

2.19.5 SUITABILITY FOR LIVE LINE MAINTENANCE:

The insulator shall be compatible for use with hot line or live line maintenance techniques so that usual hot line operation can be carried out with easy speed and safety.

2.19.6 FREEDOM FROM DEFECTS:

Insulators shall have none of the following defects:

- 1) Ball pin shake.
- 2) Cementing defects near the pin like small blow holes, small hair cracks lumps etc.
- 3) Sand fall defects on the surface of the insulator.

2.20.0 INSULATOR STRINGS:**2.20.1 TYPE AND RATING:**

The insulator strings shall be formed with standard discs described in this specification for use on 3 phases 132/220 KV 50 Hz effectively earthed systems in an atmosphere with pollution level as indicated in project synopsis. Suspension insulator strings for use with suspension/tangent towers are to be fitted with discs 70/90 KN EMS rating while tension insulator strings for use with Anchor/Tension towers are to be fitted with discs of 120 KN / 160 KN EMS level rating.

2.20.2 STRING SIZE:

The sizes of the disc insulator, the number to be used in different types of strings, their electro-mechanical strength and minimum nominal creep age distance shall be as given in clause 2.8.6.1.

2.21.0 STRING CHARACTERISTICS

2.21.1 The characteristics of the complete string shall be as follows:

Sl. No.	Description.	Suspension.		Tension.	
		132KV	220k V	132KV	220KV
I	Switching surge withstand voltage (dry& wet) KV Peak	-	-	-	-
II	Lighting impulse withstand voltage (dry) KV Peak.	650	1050	650	1050
III	Power frequency without voltage (wet) KV r.m.s.	275	460	275	460
IV	Corona extinction voltage level KV rms	-	176	-	176
V	Max. RIV for comp. Etc. strong including corona rings at 156 KV (rms). ... hours clamps etc. at 1.1. times maximum knee to ground voltage (micro volts).	-	500	-	500
VI	Mechanical failing load for each string (kgf)	6500	11500	11500	15500
VII	No deformation load for each string (kgf)	-	7705	-	10385
VIII	Max. voltage across any disc.	13%	13%	13%	13%

2.21.2 Insulator units after assembly shall be concentric and coaxial within limits as permitted by Indian Standards.

2.21.3 The strings design shall be such that when units are coupled together there shall be contact between the shell of one unit and metal of the adjacent unit.

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,
UA T&T Circle, AEGCL,
Garmur, Jorhat-785007

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,
UA T&T Circle, AEGCL,
Garmur, Jorhat-785007

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 authorized person: Name:

Designation:

NOTE:

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

- 1) Valid Power of attorney
- 2) Authorised 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).....

a. Profile of the Bidder

Sl. No.	Particulars	To be filled by Bidder
a)	Name of the Bidder	
b)	Registration with Memorandum of Association	
c)	PAN	
d)	GST Registration number	
e)	Labour License registration	
f)	Electrical License registration	
g)	Employees Provident Fund	
h)	Employees State Insurance Certificate (If Available)	
i)	Income Tax Clearance Certificate	
j)	Bank Solvency Certificate	
k)	Date of Establishment/ Incorporation	
l)	Postal Address	
	House No.	
	Lane	
	Street	
	Town/Village	
	Post Office	
	P.S.	
	District	
	Pin code	
m)	Telephone Number	
	Mobile No.	
	E-Mail Address	
	Website	
n)	Name(s) of the Owners/Directors/Partners	
o)	Name of the Banker with Address and Telephone Number	
p)	Contact Person Details (Furnish here name of that person with whom AEGCL may get in touch for more information or clarifications)	Name: Designation: Mobile No.: Email ID:
q)	Manufacturer's Authorization, if any	
s)	GTP	

SCHEDULE - A

GUARANTEED TECHNICAL AND OTHER PARTICULARS

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

(A) ANTIFOG TYPE INSULATORS

Sl. No.	DESCRIPTION	70 KN	90 KN	120KN	160 KN
1.	Manufacture's name & address				
2	Type of Insulator	Ball & Socket	Ball & socket	Ball & socket	Ball & socket
3	Size of ball & socket	16B	16B	20	20
4	Dimensions				
(a)	Disc diameter	255	255	280	305
(b)	Unit spacing	145	145	145	170
(c)	Creepage distance of the single insulator-mm	430	430	430	475
5	Electro-mechanical strength of single insulator-kN	70	90	120	160
6	Materials of shell	Porcelain	Porcelain	Porcelain	Porcelain
7	Electrical value				
7.1	Power frequency Withstand Voltage Disc				
	(a) Dry-kV (rms)	80	80	85	90
	(b) Wet-kV (rms)	45	45	50	50
7.2	Power frequency Flashover Voltage Disc				
	(a) Dry-kV (rms)	85	85	90	95
	(b) Wet-kV (rms)	50	50	55	55
7.3	Impulse Withstand Voltage Disc				
	1.2/50 micro second				
	(a) Positive – kV(Peak)	125	125	130	135
	(b) Negative – kV(Peak)	125	125	130	135
7.4	Impulse Flashover Voltage Disc				
	1.2/50 micro second				
	(a) Positive – kV(Peak)	135	135	140	145
	(b) Negative – kV(Peak)	130	130	135	140

(B) ACSR PANTHER CONDUCTOR FITTINGS

s/n	Item description	Guaranteed value
1	Manufacturer	
2	Make/Brand	
3	Country of origin	
4	Applicable standard	
5	Material of current carrying part	
6	Material of hardware	
7	Continuous Current Rating	
8	Mechanical Strength	
9	Slip Load / Slip Strength	
10	Contact Resistance	
11	Maximum temperature rise	
12	Bolt/nut/washer Size & material	
13	Twin conductor spacing, wherever applicable	
14	Galvanizing/Corrosion protection details	
15	Type Test Certificate Ref	
16	Remarks	