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/LAC/TT/TLS-69/2025/799 ; Dated: 04-08-2025

Bidding Document
For

Erection, Testing & Commissioning of Terminal Equipment at 132kV Kamakhya GIS at AEGCL.

DEPUTY GENERAL MANAGER,
LOWER ASSAM T&T CIRCLE, AEGCL
NARENGI, GUWAHATI-26

Bidder's Signature & Seal

SECTION - 1

INSTRUCTION TO BIDDER

1.1.0 INTRODUCTION:-

1.1.1 The Deputy General Manager, Lower Assam, T&T Circle, 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 :- Erection, Testing & Commissioning of Terminal Equipment at 132kV Kamakhya GIS at AEGCL.

b) Estimated Value for Work :- Rs. 7,64,210.00 (Rupees Seven Lakh Sixty Four Thousand Two Hundred and Ten) only including taxes.

c) Fund: Deposit fund of RVNL

d) Key Dates: Refer to NIT.

e) Bidding address :-
O/o The Deputy General Manager
Lower Assam, T&T Circle, AEGCL,
Narengi.Guwahati-26

f) Interested contractors may obtain further information from the office of the Deputy General Manager, Lower Assam T&T Circle, AEGCL, Narengi, Guwahati - 781026, Assam. [e-mail: dgmttc.guwahati@aegcl.co.in]

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.

Tender Paper Cost and Mode of Payment:
The cost of the tender paper is **Rs. 1000/- (Rupees One thousand) only to** be pledged in favour of **"AEGCL, Guwahati"**(in the form of A/C payee DD/Bankers Cheque)

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 major scopes of work are as follows:-

a. Supply of control cables (4C x 2.5 sq mm) and earthing materials such as 75 x 12 mm GI flat for risers, equipment and column earthing, 50 x 6 mm GI flat for junction box earthing along with 40mm dia MS rod 3mtr long with test link for CVT with earth pit for execution of earthing works as specified in the bid and as per BOQ.

b. Earthing works, providing PCC of Switchyard as per bid specifications/ BOQ.

c. Erection, Testing & Commissioning of 132KV CT, 0.2S Class accuracy including marshalling box, laying & termination of control cables as required and as per bid specifications/ BOQ. Erection of mounting structure is also under the scope of work.

d. Erection, Testing & Commissioning of 132KV CVT, 0.2S Class accuracy including marshalling box, laying & termination of control cables as required and as per bid specifications/ BOQ. Erection of mounting structure is also under the scope of work.

Bidder's Signature & Seal

e. Dismantling of 132kV CVT and 132kV LA and erection of dismantled LAs to new structures as per requirement/ BOQ.

f. Construction of foundation including supply of all foundation materials & labour required for 132kV line CT as per requirement/ BOQ.

g. Construction of foundation including supply of all foundation materials & labour required for 132kV line CVT as per requirement/ BOQ.

h. Transportation, head loading, storage at site and site insurance of all material at the site shall be in the scope of the contractor.

i. Freight & Transit Insurance, storage at site and site insurance of all materials at site shall be in the scope of the contractor

j. All works and labour as per Bill of Quantity and bid specification is under the scope of the bidder.

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

l. Arrangements of any permits required for transportation and movement of supplied materials. However, AEGCL shall assist as far as practicable in the process.

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

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

1.4.0 TIME SCHEDULE:

The successful bidder will be expected to complete the works within **2 (two) months from the date of site handover.**

1.5.0 ELIGIBILITY CRITERIA OF THE BIDDER:

1.5.1 A Bidder may be a private entity or a government-owned entity or any combination of such entity with the intent to enter into an agreement supported by a letter of intent or under an existing agreement in the form of a joint venture, consortium or association.

1.5.2 No **Joint Venture (JV)** shall be allowed.

1.5.3 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.

1.5.4 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.

1.5.5 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.

1.6.0 FINANCIAL CAPABILITY

1.6.1 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.

1.6.2 Average Annual Turnover : Minimum average annual turnover INR 3.80,000.00 calculated as total certified payments received for contracts in progress or completed, within the last 3 (Three) Years.

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

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

1.6.4 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.

1.6.5 The Contractor must furnish their Bank Solvency Certificate to show the bidder's financial position indicating the amount by concerned authority in necessary format as per their banks

1.7.0 EXPERIENCE:

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

1.7.2 Participation as manufacturer/ contractor Experience having successfully completed similar works during last 7 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.
(b) Two (2) similar completed works costing not less than 50% of total estimated cost.
(c) One (1) similar completed works costing not less than 80% of total estimated cost.

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

1.8.0 LITIGATION HISTORY

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

1.9.0 DOCUMENTS COMPRISING THE BID

1.9.1 The bid submitted by the bidder 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 1.20.0 & 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, type test reports, drawings, technical leaflets etc, as required in the Technical Specification

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

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

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

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

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 three years.*

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

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 CLARIFICATION ON BIDDING DOCUMENTS :-

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

Deputy General Manager, Lower Assam T&T Circle, AEGCL, Narengi, Guwahati-26

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

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

1.13.0 AMENDMENT OF BIDDING DOCUMENTS

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

1.13.2 Any 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.

1.14.0 LANGUAGE OF BID

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

1.15.0 BID FORM AND PRICE SCHEDULES

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

1.16.0 BID PRICES

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

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

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

1.16.3 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.

1.17.0 INSURANCE

The Bidder shall insure the Works/Materials (in transit and at the site) in accordance with the requirements of General Conditions of Contract. The Bidder shall provide details of the policies that he intends to take out as part of his Bid submission. **The bid price shall include all costs in pursuance of fulfilling insurance liabilities under the contract.**

1.18.0 BID VALIDITY

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

1.18.2 In exceptional circumstances, prior to expiry of the original bid validity period, AEGCL may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting its bid security. A bidder agreeing to the request will not be required or permitted to modify its bid, but will be required to extend the validity of its bid security for the period of the extension, and in compliance with Clause 1.19.0 in all respects.

1.19.0 BID SECURITY (EARNEST MONEY)

1.19.2 For participation in the bidding procedure, participants must compulsorily pay the Bid Security / Earnest Money Deposit of **Rs. 15,200.00** (Rupees Fifteen Thousand Two Hundred) only in the form of DD/Fixed Deposit/bank Guarantee/Banker's Cheque 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 1.24. 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 1.13.0, 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:

Deputy General Manager.
LA T&T Circle, AEGCL, Narengi
Guwahati-26

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 Claus 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 equipment and materials, the comparison shall be of the ex-factory price of equipment 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 equipment 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 plant and equipment covered by this bidding are required to be shipped, installed and the facilities 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 NOTIFICATION OF AWARD

1.33.1 Prior to expiration of the period of bid validity prescribed by AEGCL, AEGCL will notify the successful bidder by fax, confirmed by letter, that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") shall name the sum which AEGCL will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called "the Contract Price").

1.33.2 The notification of award will constitute the formation of the Contract.

1.34.0 SIGNING OF CONTRACT AGREEMENT

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

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

1.35.0 WARRANTY

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

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

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

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

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

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

1.36.0 PERFORMANCE SECURITY (Contract Performance Guarantee)

1.36.1 As a Contract Performance Security, the successful Bidder, to whom the work is awarded, shall be required to furnish a Performance Guarantee from a Nationalized Bank, in the form attached with the Bidding Document (Section –5) in favour of the AEGCL. The guarantee amount shall be equal to ten percent (10%) of the Contract Price and it shall guarantee

the faithful performance of the contract in accordance with the terms and conditions specified in these documents and specifications. The guarantee shall be valid up to 90 (ninety) days after the end of Warranty Period.

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

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

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

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

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

1.37.0 TERMS OF PAYMENT

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

i. No advance payment shall be made in this contract.
ii. No claim for interest shall be entertained by AEGCL
iii. The price is firm and no price variation shall be applicable.
iv. Maximum 2(two) Nos. of progressive Invoice/ Bill would be entertained during work.
v. The 1st Progressive Invoice/Bill would be entertained for 80% of the total work value on completion of the supply work and acceptance of materials in full and good condition.
vi. Remaining 20% of total work value would be made after completion of erection, testing and commissioning works.
vii. Final bill must contain the original site register.
viii. Payment shall be released subject to receipt of specific fund. The Bidder / Firm will have to be submitted the following Net Banking details.
    a) Banker's Name & Branch
    b) Account No
    c) Banker's address
    d) Banker's IFSC Code
    e) Banker's RTGS Code

1.38.0 CORRUPT OR FRAUDULENT PRACTICES

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

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

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

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

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

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

1.39.0 PENALTY FOR DELAYED EXECUTION

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

1.40.0 FORCE MAJEURE

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

1.41.0 SETTLEMENT OF THE DISPUTE & ARBITRATION

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

Bidder's Signature & Seal

SECTION-2

PURCHASER'S REQUIREMENTS

2.1.0 SCOPE

2.1.1 The brief description of scope covered under this Bidding Document is as specified in Bid clause no. 1.3.0 of section-1.

2.1.2 The price quoted shall include cost of all materials and labour to complete the job in all respect as per Bill of Quantity and Specifications laid out in this Section.

2.1.3 The work shall be carried out according to the design/drawings/specifications as provided by AEGCL. Certain minimum requirements are indicated in this Section for guidance purposes only. However, the Contractor shall quote according to the complete requirements.

2.2.0 STANDARDS

2.2.1 The equipment covered under this bidding document shall, unless otherwise stated be designed, constructed and tested in accordance with the latest revisions of relevant Indian Standards and shall conform to the regulations of local statutory authorities. In case of any conflict between the standards and this specification, this specification shall govern.

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

2.3.0 SURFACE PREPARATION AND PCC SPECIFICATIONS

2.3.1 Before taking up PCC base and stone filling, the area shall be thoroughly de-weeded including removal of roots and recovery of existing gravel.

2.3.2 The Contractor shall have to prepare the site by earth cutting or filling as per site condition to arrive at the required level. Contractors are advised to visit relevant site to assess the requirement of earthwork before quoting.

2.3.3 The surface of the switchyard area shall be maintained, rolled/ compacted to the lines and grades as decided by Engineer-in-Charge. De-weeding including removal of roots shall be done before rolling is commenced. Engineer-in- Charge shall decide final formation level so as to ensure that the site appears uniform devoid of undulations.

2.3.4 After due compaction of the surface of the entire switchyard area shall be provided with plain cement concrete of 80 mm thickness after proper compaction, and antiweed treatment having cement concrete ratio 1:4:8. Care shall be taken for proper gradient for easy discharge of storm water.

2.3.5 PCC base shall be done in panels of 4 m x 4 m with expansion gap of 25 mm between panels. The gap shall be filled with bitumen. Each panel shall be provided with four (4) numbers of PVC pipes (per panel) of 100 mm dia of length 450 mm for soaking of water. The pipes will be provided with gratings at the top and the same will be flushed with the PCC top.

2.3.6 The ground leveling activities should be done in such a manner that after construction of PCC and spreading of gravel as per specified requirements, clearance from the top of the gravel layer to the plinth should be a minimum of 300mm.

2.4.0 EARTHING SYSTEM

2.4.1 General

2.4.1.1.1 All conductors buried in earth and concrete shall be GI and conductors above ground level and earthing leads, cable trench earthing shall be of galvanised steel, as required for system and individual equipment earthing. All work such as cutting, bending, supporting, painting coating drilling, brazing/soldering/welding, clamping, bolting and connection on to structures, equipment frames, terminals, rails or other devices shall be in the scope of work. All incidental hardware and consumables such as fixing cleats/clamps. Anchor fasteners, lugs, bolts, nuts, washers, bituminous compound, anticorrosive paints as required for the complete work shall be deemed to be included as part of the installation work.

2.4.1.2 Light poles, junction boxes on the poles, cable and cable boxes/glands, lockout switches etc. shall be connected to the earthing conductor running along with the supply cable which in turn shall be connected to earthing grid

conductor at a minimum two points

2.4.1.3 Placing of electrodes should be such that if the length of earth electrode is "l", the next electrode should be placed at "2l" distance from the 1st.

2.4.1.4 Parts of the switchyard where earthing mat (main mesh) does not exist at present (if any) as identified by the concerned Resident Engineer or as per BoQ and necessary earthing activities to be undertaken.

2.4.1.5 Also, the proper earthing of Kiosks as per direction of the concerned Resident Engineer in the switchyard and depending on availability of earth-mat in that area of the switchyard, necessary earthing activities are to be carried out.

2.4.1.6 One number 40 mm dia, 3 mtr long earth electrode with test link, CI frame and cover shall be provided to connect each down conductor of surge arresters, capacitive voltage transformers, lightning masts and towers with peak.

2.4.1.7 For substation equipments, the connection between existing earthing pads and the earthing grid shall be made by two short earthing leads (one direct and another through the support structure) free from kinks and splices. In case earthing pads are not provided on the item to be earthed, same shall be provided in consultation with Purchaser.

2.4.1.7.1 All lighting panels, junction boxes, receptacles fixtures, conduits etc. shall be grounded in compliance with the provision of I.E. rules

2.4.1.8 Each earthing lead from the neutral of the power transformer/Reactor shall be directly connected to two pipe electrodes in treated earth pit (as per IS) which in turn, shall be buried in Cement Concrete pit with a cast iron cover hinged to a cast iron frame to have an access to the joints. All accessories associated with transformer/reactor like cooling banks, radiators etc. shall be connected to the earthing grid at minimum two points

2.4.1.9 Neutral points of systems of metallic enclosures and frame works associated with all current carrying equipment and extraneous metal works associated with electric system shall be connected to the existing earth mat.

2.4.1.10 Earthing connections with equipment earthing pads shall be bolted type. Contact surfaces shall be free from scale, paint, enamel, grease, rust or dirt. Two bolts shall be provided for making each connection. Equipment bolted connections, after being checked and tested, shall be painted with anti-corrosive paint/compound.

2.4.1.11 The 75x12 mm GI flat (or higher) shall be clamped with the equipment support structures at 1000mm interval.

2.4.1.12 Connection between equipment earthing lead and main earthing conductors and between main earthing conductors shall be welded type. For rust protections, the welds should be treated with red lead and afterwards coated with two layers bitumen compound to prevent corrosion.

2.4.1.13 All ground connections shall be made by electric arc welding. All welded joints shall be allowed to cool down gradually to atmospheric temperature before putting any load on it. Artificial cooling shall not be allowed.

2.4.1.14 All earthing activities shall conform to the Code of practice for Earthing IS: 3043 and as directed by the site-incharge.

2.4.1.15 Installation of Ground wire is to be done as instructed by Engineer-in-Charge.

2.4.2 Details of Earthing System

Sl. No.	Item	Size	Materials
1	Main Earthing Conductor to be buried in ground	75 mm x 12 mm (or higher)	GI Flat
2	Conductor above ground & earthing leads (for equipment, columns & aux. structures, Risers)	75 mm x 12 mm (or higher)	GI Flat
3	Earthing of outdoor marshalling boxes, MOM boxes, Junction boxes and along outdoor cable trenches, etc (whichever applicable)	50 mm x 6 mm	GI Flat
4	Rod Earth Electrode	40mm dia, 3 mtr long	MS

Bidder's Signature & Seal

2.4.3 Earthing connections:

i) All connections in the main earth conductors buried in earth/concrete shall be welded/brazed type. Connection between main earthing conductor and earth leads shall also be of welded/brazed type.
ii) Welding and brazing operations and fluxes/alloys shall be of approved standards.
iii) All connections shall be of low resistance. Contact resistances shall also be minimum.
iv) All bi-metallic connections shall be treated with suitable compound to prevent moisture ingress.

2.4.4 Earth Electrodes:

i) Electrodes shall as far as practicable, be embedded below permanent moisture level.
ii) Pipe electrodes shall be housed in test pits with concrete covers for periodic testing of earthing resistively pipe electrodes in test pits shall be convenient for inspection, testing and watering.
iii) Earth pits shall be treated with salt, charcoal and bentonite where ever required.
iv) Soil, salt and charcoal placed around the electrode shall be finely graded free from stones and other harmful mixtures. Backfill shall be placed in the layers of 250 mm. Thick uniformly spread and compacted. If excavated soils are found unsuitable for backfilling, the contractor shall arrange for a suitable soil from outside.

2.4.5. TESTING OF EARTHING SYSTEM

The Supplier shall ensure the continuity of all conductors and joints. The Purchaser may ask for earth continuity tests, earth resistance measurements and other tests, which in his opinion are necessary to prove that the system is in accordance with the design, specifications and code of practices. The supplier shall have to bear the cost of all such tests.

2.5.0. TECHNICAL SPECIFICATION FOR CONTROL CABLES

2.5.1 GENERAL REQUIREMENT

Aluminium conductor XLPE insulated armoured cables shall be used for main power supply purpose from LT Aux. Transformers to control room only.
Aluminium conductor PVC insulated armoured power cables shall be used for various other applications in switchyard area/control room except for control/protection purposes.
For all control/protection/instrumentation purposes XLPE, FRLS insulated armoured control cables of minimum 2.5 sq. mm Size with stranded Copper conductors shall be used.
Cables shall be laid conforming to IS : 1255.
While preparing cable schedules for control/protection purpose following shall be ensured:

- Separate cables shall be used for AC & DC.
- For different cores of CT & PT/CVT separate cable shall be used
- At least one (1) cores shall be kept as spare in each copper control cable of 4C, 5C or 7C size whereas minimum no. of spare cores shall be two (2) for control cables of 10 core or higher size.

For control cabling, including CT/VT circuits, 2.5 sq.mm. size copper cables shall be used per connection. However, if required from voltage drop/VA burden consideration additional cores shall be used. Further, for potential circuits of energy meters separate connections by 2 cores of 2.5 sq.mm. size shall be provided.
Standard technical data sheets for cable sizes up to and including 1100V . **Cable sizes shall be offered /manufactured in accordance with parameters specified in standard technical data sheets and as per bid requirement.**

2.5.2 GENERAL TECHNICAL REQUIREMENT

The cables shall be suitable for laying in racks, ducts, trenches, conduits and underground buried installation with uncontrolled back fill and chances of flooding by water.
The XLPE insulated cables shall be capable of withstanding a conductor temperature of 250°C during a short circuit without any damage. The PVC insulated cables shall be capable of withstanding a conductor temperature of 160°C during a short circuit.
The Aluminium/Copper wires used for manufacturing the cables shall be true circular in shape before stranding and shall be uniformly good quality, free from defects. All Aluminium used in the cables for conductors shall be of H2 grade. In case of single core cables, armours shall be of H4 grade Aluminium.

The fillers and inner sheath shall be of non-hygroscopic, fire retardant material, shall be softer than insulation and outer sheath shall be suitable for the operating temperature of the cable.

Progressive sequential marking of the length of cable in metres at every one metre shall be provided on the outer sheath of all cables.

Strip wire armouring method shall not be accepted for any of the cables. For control, cables only round wire armouring shall be used.

The cables shall have outer sheath of a material with an oxygen index of not less than 29 and a temperature index of not less than 250°C.

All the cables shall pass fire resistance test as per IS:1554 (Part-I)

The normal current rating of all PVC insulated cables shall be as per IS:3961. Repaired cables shall not be accepted. Allowable tolerance on the overall diameter of the cables shall be plus or minus 2 mm.

XLPE Power Cables
The XLPE (90°C) insulated cables shall be of FR type, C1 category conforming to IS: 7098 (Part-I) and its amendments read along with this specification. The conductor shall be stranded aluminium circular/sector shaped and compacted. In multicore cables, the core shall be identified by red, yellow, blue and black coloured strips or colouring of insulation. A distinct inner sheath shall be provided in all multicore cables. For XLPE cables, the inner sheath shall be of extruded PVC of type ST-2 of IS:5831. When armouring is specified for single core cables, the same shall consist of aluminium wires/strips. The outer sheath shall be extruded PVC of Type ST-2 of IS:5831 for all XLPE cables.

PVC Power Cables
The PVC (70°C) insulated power cables shall be of FR type, C1 category, conforming to IS: 1554 (Part-I) and its amendments read along with this specification and shall be suitable for a steady conductor temperature of 70°C. The conductor shall be stranded aluminium. The Insulation shall be extruded PVC to type-A of IS: 5831. A distinct inner sheath shall be provided in all multicore cables. For multicore armoured cables, the inner sheath shall be of extruded PVC. The outer sheath shall be extruded PVC to Type ST-1 of IS 5831 for all cables.

PVC Control Cables
The PVC (70°C) insulated control cables shall be of FR type C1 category conforming to IS: 1554 (Part-1) and its amendments, read along with this specification. The conductor shall be stranded copper. The insulation shall be extruded PVC to type A of IS: 5831. A distinct inner sheath shall be provided in all cables whether armoured or not. The over sheath shall be extruded PVC to type ST-1 of IS: 5831 and shall be grey in colour except where specifically advised by the Employer to be black.

Cores shall be identified as per IS: 1554 (Part-1) for the cables up to five (5) cores and for cables with more than five (5) cores the identification of cores shall be done by printing legible Hindu Arabic Numerals on all cores as per clause 10.3 of IS 1554 (Part-1)

2.6.3 GENERAL SPECIFICATIONS OF CIVIL FOUNDATION WORK.

2.6.3.1 SETTING OF LAYOUT:-

Layout and levels of structures etc. shall be made by the Contractor, at his own cost, from the general grid of the plot and the bench marks given by the Owner. The Contractor shall make his own arrangements, at his own cost, for locating the co - ordinates and position of wells as per approved drawings and for determining the Reduced Level (R.L.) of the locations with respect to the single bench mark indicated by the Owner. Two established reference lines in mutually perpendicular direction shall be indicated to the Contractor. The Contractor shall provide at site all the required survey instruments, materials and mento Owner for verification of the detailed layout and correctness of the layout and levels to the satisfaction of the Owner so that the work can be carried out accurately according to specifications and drawings. The contractor shall be solely responsible for the correctness of layout and levels.

2.6.3.2 SITE PREPARATION

a) The scope of works under this contract consist of providing of all labours, materials, scaffolding equipment and plants and transportation of all incidental items not shown or specified but reasonably implied or necessary for the proper completion of work. The scope of work covered by this specification is primarily complete civil works and the contractor will have to execute the works as per bid requirement i.e. for construction of foundation of 132kV CT and 132KV CVT
b) All works required for site preparation will have to be carried out contractor at his own expense, whenever directed by the Site In-charge.
c) The Contractor shall clear the site of unnecessary vegetation to prepare for work only as per directions given by the Site In-charge.
d) Any unnecessary structures are to be demolished and serviceable materials be stacked and stored as directed by AEGCL.
e) Any waste or unwanted material has to be disposed by the contractor as ordered by AEGCL. No materials will be allowed to leave the site with permission of the Site In-charge.
f) The Contractor will have to construct roads or any means for transportation as instructed by the Site in-charge if the site is not easily accessible.
g) All water which may accumulate on the site before or during the progress of the works or in trenches and excavations shall be removed and drained from the site to the satisfaction of the Site In-charge by the Contractor.
h) Any other work required for adequate preparation of the site shall be out by the Contractor.

2.6.3.3 REFERENCE POINTS AND BENCH MARKS

a) Permanent reference pillars have been established and under no circumstances shall the Contractor remove or disturb any permanent mark without the approval of the Owner. The Contractor shall carefully maintain and protect all bench marks and reference points and shall layout all his work by accurate reference thereto. The Contractor shall remove all vegetation, excluding trees, from the site areas as directed by the Owner.
b) The area shall be stripped to remove roots of grass, rubbish and slush, shrubs or other organic materials. Spoiled materials shall be burnt or removed to approved disposal areas on or near the job site as directed by the Owner.

2.6.3.4 PROPERTIES OF CONSTRUCTION MATERIALS

a) This clause specifies the properties of common building materials unless otherwise mentioned in the drawings or schedule of items. All materials viz., cement, steel, aggregates, water etc. which are to be used for well construction are detailed below. However, aggregates more than 20mm shall not be used, except for lean concrete.

2.6.3.5 COARSE AGGREGATES/ STONE

a) All coarse aggregates shall be as per IS:383 consisting of hard, strong, compact grained and durable pieces of crushed stone having uniform in texture and colour and free from decay, flaws, veins, cracks and sand holes. Coarse aggregates should be of angular shape & rectangular surface and shall be free from organic or clay coatings and other impurities like disintegrated stones, soft flaky particles, adherent coatings, clinkers, slag, mica and any other materials liable to affect the strength, durability or appearance of concrete. The surface of a freshly broken stone shall be bright, clean, and free from any dull, chalky or earthy appearance. Coarse aggregates with round surface shall not be used. A coarse aggregates shall not absorb more than 5% of its weight of water after 24 hours immersion. Samples shall be submitted by the Contractor and approved samples shall be retained by the Owner for comparison of bulk supply.
b) Sieving and washing of aggregates by approved method shall be carried out wherever required.
c) Grading of coarse aggregate shall generally conform to IS:383 and shall be such as to produce a dense concrete of the specified proportions and strength and of consistency that will work readily into position without segregation.
d) The maximum size of aggregate shall be as follows unless specified otherwise:
    i. Reinforced concrete with very narrow space - 10mm.
    ii. Reinforced concrete & Plain Concrete - 20mm.
    iii. Lean Concrete M15 -40mm.

2.6.3.6 CEMENT

a) Cement used shall generally be ordinary Portland Cement conforming to the latest Indian Standard Code IS:8112 or I S:12269. Alternatively, other varieties of cement other than ordinary Portland Cement such as Portland Pozzolana Cement conforming to IS;1529 or Portland Slag Cement conforming to IS:455 can also be used. The contractor shall submit the manufacturer's certificate, for each consignment of cement procured, to the Owner. However, Owner reserves the right to

direct the Contractor to conduct tests for each batch/lot of cement used by the Contractor and Contractor will conduct those tests free of cost at the laboratory so directed by the Owner. The Contractor shall also have no claim towards suspension of work due to time taken in conducting tests in the laboratory.

b) Changing of brand or type of cement within the same structure shall not be permitted without the prior approval of the Owner. Sulphate Resistant Cement shall be used if Sulphate content is more than the limits specified in IS:456, as per Geotechnical investigation report and as mentioned in the construction drawing. No additional payment shall be made for using Sulphate Resistant Cement.

2.6.3.7 SAND

a) Sand shall be hard, durable, clean and free from any adherent coatings or organic matter and shall not contain clay balls or pellets. The sand shall be free from impurities such as iron pyrites, alkalis, salts, coal, mica, shale or other laminated materials, in such forms or quantities as to affect adversely the hardening, strength, durability or appearance of concrete or to cause corrosions to any metal in contact with such concrete. In no case the cumulative percentage of impurities in sand shall be more than 5% by weight. All sand shall be properly graded. Unless otherwise directed by the Owner all sand shall pass through IS Sieve no. 2.36mm. Sand for concrete shall conform to IS:383 .

b) All coarse aggregates & sand shall be stored on brick soling or an equivalent platform so that they do not come in contact with dirt, clay, grass or any other injurious substance at any stage.

c) Aggregate of different sizes shall be kept in separate and easily measurable stacks. If so desired by the Owner, aggregates from different sources shall be stacked separately with proper care to prevent intermixing.

2.6.3.8 WATER

a) No source of water is available near the tower locations. As such shallow temporary ring well is to be constructed for construction purpose.

b) Water shall be clean, fresh and free from organic matters, acids or soluble salts and other deleterious substances which may cause corrosion, discoloration, efflorescence etc. Potable water is generally considered fit for use. Water to be used shall comply with the requirements of IS:456. Average 28 days compressive strength of at least three 15 cm. cubes of concrete prepared with proposed water shall not be less than 90% of average strength of three similar cubes prepared with distilled water. PH of water shall generally be not less than 6.

2.6.3.9 STORAGE & HANDLING OF CONSTRUCTION MATERIALS

a) All materials shall be stored by the Contractor in a manner aiding convenient access for identification and inspection at all times. The storage arrangements shall be subject to the approval of the Owner. Storage of materials shall be as described in IS:4082 .

b) All materials shall be so stored as to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Owner shall not be used for concrete, and shall be removed from site immediately, failing which, the Owner will get the materials removed and the cost thereof shall be recovered from W.O/LOI value. The Contractor shall maintain up to date accounts of receipt, issue and balance (stock wise) of all materials.

c) Cement

The cement shall be stored in dry enclosed shed, well away from the walls and insulated from the floor to avoid contact with moisture. The cement shall be stacked in easily countable stacks to facilitate removal of first in first out basis. The cement bags shall be gently kept on the floor to avoid leakage of cement from the bags. Sub-standard or partially set cement shall be immediately removed from the site as soon as it is detected. Cement stored for period beyond 90 days shall be tested before use.

d) Reinforcement

Reinforcement steel shall be stored consignment wise and size wise, off the ground and under cover. It shall be protected from rusting, oil grease and distortions. If directed by the Owner, the reinforcement steel may have to be coated with cement wash before stacking, to prevent scale and rust at no extra cost to the Owner. The stacks shall be easily measurable. Only steel needed for immediate use shall be removed from storage. Fabricated reinforcement shall be carefully stored to prevent damage, distortion, corrosion & deterioration.

e) Cement concrete

This section of the specification deals with cement concrete, plain or reinforced, and covers the requirement for concrete mix design, strength and quality, pouring at all levels, forming, protection, curing finishing, admixtures, inserts and other miscellaneous works.

The provisions of IS:456 shall be complied with, unless permitted otherwise. Any other Indian Standard Code shall form the part of the specification to the extent it has been referred to or applicable within this specification.

The Contractor shall furnish all labour, material and equipment to form, place and finish all structural concrete, concrete works and miscellaneous items complete, as described herein.

2.6.3.10 ADMIXTURES

a) The admixtures in concrete for promoting workability, improving strength or for any other purpose, shall be used only after the written permission from the Owner. The Admixtures shall conform to IS:9103.
b) Admixtures should not impair durability of concrete nor combined with the constituent to form harmful compounds nor increase the risk of corrosion of reinforcement.
c) Addition of admixtures should not reduce the specified strength of concrete in any case. The workability, compressive strength and the slump loss of concrete with and without the use of admixtures shall be established during the trial mixes before use of admixtures.
d) The chloride content of admixtures shall be independently tested for each batch before acceptance.
e) If two or more admixtures are used simultaneously in the same concrete mix, data shall be provided to assess their interaction and to ensure their compatibility.
f) In case admixtures are used in the concrete for any structure, fresh mix design be done considering the admixture with the specific approval from Owner. No extra payment shall be made to the Contractor on this account.

2.6.3.11 GRADES OF CONCRETE

a) The minimum grade of concrete to be used for piling shall be M-20 with minimum cement content 400 kg/m3 and maximum water cement ratio of 0.5. Concrete shall conform to the controlled design mix as specified in IS:456 . In addition, nominal mixes of 1:2:4 (with aggregates of nominal size 40mm maximum, by weight converted to equivalent volume shall also be used as per field quality plan. The concrete in aggressive surroundings due to presence of sulphate, etc., shall conform to IS:456. The slump of concrete shall be maintained between 150 to 200 mm.
b) The Contractor shall carry out concrete mix design in accordance with IS:10262 and submit mix design calculations and get them approved from the Owner well in advance of installation of well foundations. The Contractor shall carry out adequate number of tests in accordance withIS:456 to ensure concrete of the minimum specified strength at requisite workability(i.e.slump).

2.6.3.12 WORKMANSHIP

a) All workmanship shall be according to the current Industry standard and best practices.
b) Before starting a pour the Contractor shall obtain the approval of the Owner in a “Pour Card” maintained for this purpose. He shall obtain complete instructions about the material and proportions to be used, Slump / workability, Quantity of water per unit weight of cement, number of test cubes to be taken, type of finishing to be done, any admixture to be added, any limitation on size of pour and stopping of concrete in case of premature stopping of pours.

2.6.3.13 MIXING OF CONCRETE

a) All design mix concrete shall be mixed in mechanically operated mixer of an approved size and type capable of ensuring a uniform distribution on the materials through the mass. However, contractor can also use central batching plant situated within the area allocated for the Contractor’s particular use.
b) The proportions of sand, coarse aggregate, cement and water shall be as determined by the mix design. However, in case of nominal mix concrete (for lean concrete only) the proportions of sand, coarse aggregate, cement and water shall be fixed. The proportions, as determined for design mix concrete and shall always be approved by the Owner. The quantities of the cement, sand and coarse aggregates shall be determined by weight. However, for a faster progress at site, quantities of the cement, sand and coarse aggregates can be converted to equivalent volume. The water shall be measured accurately after giving proper allowance for surface water present in the aggregate for which regular check shall be made by the Contractor.
c) The water shall not be added to the mix until all the cement and aggregates consisting the batch are already in the drum and dry mixed for at least one minute. Mixing of each batch shall be continued until there is a uniformity in colour and consistency but in no case shall mixing be done for less than two (2) minutes and at least forty (40) revolutions after all the materials and water are in the drum. When absorbent aggregates are used or when the mix is very dry, the mixing time shall be extended as may be directed by the Owner. Mixers shall not be loaded above their rated capacity as it prevents thorough mixing. If there is segregation after unloading from the mixer the concrete should be remixed.
d) The entire contents of the drum shall be discharged before the ingredients for the next batch are fed into the drum. No partly set or remixed or excessively wet concrete shall be used and it shall be immediately removed from site. Each time the work stops, the mixer shall be thoroughly cleaned and when the next mixing commences, the first batch shall have 10% additional cement at no extra cost to theOwner to allow for loss in the drum.

2.6.3.14 CONVEYING CONCRETE

a) Concrete shall be handled and conveyed from the place of mixing to the place of final laying as rapidly as practicable, by approved means, before the initial setting of the cement starts. Concrete should be conveyed in such a way as will prevent segregation of Concrete which may occur during transportation of concrete. In case of any such segregation during transport, the concrete shall be re-mixed. During very hot or cold weather, if directed by the Owner, concrete shall be transported in deep containers, having mortar leak proof, which will reduce the rate of water loss by evaporation and loss of heat. Conveying equipment for concrete shall be well maintained and thoroughly cleaned before commencement of concrete mixing. Such equipment shall be kept free from set concrete.

2.6.3.15 PLACING OF CONCRETE

a) Formwork and placement of reinforcement shall be approved in writing by the Owner before concrete is placed. The forms shall be well wetted and oil shavings, dirt and water that may have collected at the bottom shall be removed before concrete is placed. Concrete shall be deposited in its final position without segregation, re-handling or flowing. The interval between adding the

water to the dry materials in the mixer and the completion of the final placing inclusive of compaction of the concrete shall be well within the initial setting time for the particular cement in use or as directed by the Owner. As far as possible, concrete shall be placed in the formwork by means approved by the Owner and shall not be dropped from a height or handled in a manner which may cause segregation. Any drop over 1800 mm shall have to be approved by the Owner. Once the concrete is deposited in its final position, it shall not be disturbed. Care should be taken to avoid displacement of reinforcement or movement of formwork.

b) The placing of concrete shall be a continuous operation with no interruption in excess of 30 minutes between the placing of continuous portions of concrete.

c) After the concrete has been placed it shall be spread and thoroughly compacted by approved mechanical vibration to a maximum subsidence without segregation and thoroughly worked around reinforcement or other embedded fixtures into the correct form and shape. Vibrators shall not be used for pushing and shovelling concrete into adjoining areas. Vibrators must be operated by experienced men and over-vibration shall not be permitted. Head tamping in some case may be allowed subject to the approval of the Owner. Care must be taken to ensure that the inserts, fixtures, reinforcement and form work are not displaced or disturbed during placing of concrete. No concrete shall be placed in open while it rains. If there has been any sign of washing of cement and sand, the concrete shall be entirely removed immediately. Suitable precautions shall be taken in advance to guard against rains before leaving the fresh concrete unattended.

d) No accumulation of water shall be permitted on or around freshly laid concrete. Tie beams, well caps, footings shall be poured in one operation normally, in special circumstances with the approval of the Owner these can be poured in horizontal layers not exceeding 500 mm in depth. When poured in layers, it must be ensured that the under layer, is not already hardened. Blending of under layer if any, shall be effectively removed.

e) Wherever vibration has to be applied externally the design of formwork and the disposition of vibrators shall receive special consideration to ensure efficient compaction and to avoid surface blemishes.

2.6.3.16 INSERTS

a) All anchors, anchor bolts, inserts, etc. and any other items those are required to be embedded in the concrete shall be placed in correct position before pouring. Extra care shall be taken during pouring operation to maintain their position as indicated in the drawings. These inserts shall be welded to the nearest reinforcement to keep them in position and all such welding shall be deemed to be included in the unit rate quotedand no extra payment shall be made on this account.

2.6.3.17 FINISHES OF CONCRETE

a) All concrete surfacs shall have even and clean finish, free from honeycombs, air bubbles, fins or other blemishes. The formwork joints marks for concrete work exposed to view shall be rubbed with carborandum stone and defects patched up with a paste of1 part sand and 1 part cement and cured. The finish shall be made to the satisfaction of the Owner.
The unit rate of concrete work shall be inclusive of the cost of cleaning and finishing exposed surface as mentioned above.

2.6.3.18 GENERAL REQUIREMENTS

a) Reinforcement steel of same type & grade shall be used for structural reinforcement work as detailed in the drawing released by the Owner. No work shall be commenced without proper verification with the bar bending schedule provided in the drawing

b) Contractor shall supply, fabricate and place reinforcement to shapes and dimensions as indicated on the drawings and as per specifications. The reinforcement shall be either plain or deformed steel bars or welded wire fabric conforming to relevant IS specifications.

c) Any adjustment in reinforcement to suit field conditions and construction joints other than shown on drawings shall be subjected to the approval of Owner.

2.6.3.19 PLACING IN POSITION

a) All reinforcement shall be accurately fixed and maintained in position as shown on the drawings by approved means as mild steel chairs, and/or concrete spacer blocks. Bars intended to be in contact, at crossing points, shall be securely bond together at all such points by two numberNo.20G annealed soft-iron wire. Binders shall tightly embrace the bars with which they are intended to be in contact and shall be securely held. The vertical distance between successive layers of bars shall be maintained by provision of mild steel spacer bars. They should be so spaced that the main bars do not sag perceptibly between adjacent spacers.

b) The placing of reinforcements shall be completed well in advance of concrete pouring. Immediately before pouring, the reinforcement shall be checked by the Owner for accuracy of placement and cleanliness and necessary correction as directed by him shall be carried out. The cover for concrete over the reinforcements shall be as shown on the approved drawings unless otherwise directed by the Owner. Care should be taken to ensure that projecting ends of ties and other embedded metal do not encroach into the concrete cover. Where concrete blocks are used for ensuring the cover and positioning reinforcement, they shall be made of mortar 1:2 (one part cement: two parts sand) by volume and cured for at least (7) days. The sizes and locations of the concrete blocks shall be approved by the Owner.

c) Longitudinal reinforcement in well shall be high yield strength cold twisted deformed steel bars conforming to IS:1786. Thermo mechanically Treated (TMT) bars (equivalent grade) in place of Cold twisted deformed steel bars are also accepted. Lateral reinforcement in well shall be of tor steel conforming to IS:432 Part-I.

d) The longitudinal reinforcement shall project 52 times its diameter above cut-off level unless otherwise indicated in the drawing.

e) The minimum diameter of the links or spirals bar shall be 8mm and the spacing of the links or spiral shall not be less than 150mm and in no case more than 250mm. The laterals shall be tied to the longitudinal reinforcement to maintain its shape and spacing.

f) Reinforcement cage shall be sufficiently rigid to withstand handling and installation without any deformation and damage. As far as possible number of joints (laps) in longitudinal reinforcement shall be minimum. In case the reinforcement cage is made up of more than one segment, these shall preferably be assembled before lowering into casing tube/pile bore by providing necessary laps as per IS:456.

g) The minimum clear distance between the two adjacent main reinforcement bars shall normally be 100mm for the full depth of cage, unless otherwise specified.

h) The laps in the reinforcement shall be such that the full strength of the bar is effective across the joint and the reinforcement cage is of sound construction. Laps and anchorage lengths of reinforcing bars shall be in accordance with IS:456, unless otherwise specified. If the bars in a lapare not of the same diameter, the smaller will guide the lap length.

i) Laps shall be staggered as far as practicable and as directed by the Owner. Not more than 33% bars shall be lapped at a particular section. Lap joints shall be staggered by at least 1.3 times the lapped length
   i. (Center to Center).

j) Proper cover and central placement of the reinforcement cage in the pile bore shall be ensured by use of suitable concrete spacers or rollers, as required, without any additional cost to the Owner.

k) Minimum clear cover to the reinforcement shall be 75mmunless otherwise mentioned.

l) Unless otherwise specified by the Owner reinforcement shall be placed within the following tolerance as specified in IS:456:2000.
   i. For effective depth 200mm or less +10mm.
   ii. For effective depth more than 200mm +15mm.

m) The cover shall in no case be reduced by more than one-third of specified cover or 5mm whichever is less. Welding of reinforcement bars shall be avoided. However, welding may be done in specific case subject to prior permission from the Owner.

2.6.3.20 CONTROL OF POSITION AND ALIGNMENT

a) Well shall be installed vertically as accurately as possible as per the Construction drawing.

b) Any extra claim whatsoever from the contractor on this account shall not be entertained.

2.6.3.21 EXCAVATION

a) The Contractor shall control the grading in the vicinity of all excavation so that the surface of the ground will be properly slopped or diked to prevent surface water from running into the excavated areas during construction.

b) Excavation shall include the removal of all materials required to execute the work properly and shall be made with sufficient clearance to permit the placing, inspection and setting of forms and completion of all works for which the excavation was done.

c) Side and bottoms of excavation shall be cut sharp and true, undercutting shall not be permitted. Each side of excavation shall be used in lieu of formwork for placement of concrete unless authorised, in special cases, by the Owner, where limitation of space for larger excavation necessitate such decision.

d) When machines are used for excavation, the last 300mm before reaching the required level shall be excavated by hand or by such equipment that will leave the soil at the required final level, in its natural conditions.

e) Suitability for bearing of the bottoms of excavations shall be determined by the Owner.

f) The bottom of excavation shall be trimmed to the required level and when carried below such levels, by error, shall be brought to level by filling with lean concrete 1:4:8 mix, with aggregate of 40mm maximum nominal size at no additional cost to the Owner.

g) The Contractor shall be responsible for assumptions and conclusions regarding the nature of materials to be excavated and the difficulty of making and maintaining the required excavations and performing the work required as shown on the drawing and in accordance with these specifications. The Contractor shall be responsible for any damage to any part of the work and property caused by collapse of sides of excavations. Materials may be salvaged, if it can be done with safety for the work and structure, as approved by the Owner.

h) However, no extra claim shall be entertained for materials not salvaged or any other damage to Contractor's property as a result of the collapse. He shall not be entitled to any claim for redoing the excavation as a result of the same. Excavations for foundations specified shall be carried out at least 75mm or as specified in relevant drawings below the bottom of structural concrete and then be brought to the required level by placing lean concrete of 1:4:8 mix or as specified in drawings with aggregate of 40mm maximum nominal size.

i) When excavation requires coffer dams, sheet piling, bracing, sheeting, shoring, draining, dewatering etc. the Contractor shall have to provide the same as required and the cost there of shall be included in the unit rate quoted for the item of excavation and contractor shall submit necessary drawings showing arrangement and details of proposed installation and shall not proceed until he has received approval from the Owner.

j) The Contractor shall have to constantly pump out the water collected in pits due to rain water, springs, seepage etc. and maintain dry working conditions at no extra cost to the Owner.

k) For the purpose of excavation in earthwork, all types of soil including kankar, morum, shingle and boulders up to 150mm size are included andno separate payment shall be made for different type of soils encountered.

2.6.3.22 BACK FILLING

a) When the work is to be interrupted, the concrete shall be rebated at the joint to such shape and size as may be required by the Owner or as shown on the drawings. All vertical construction joints shall be made with stone boards, which are rigidly fixed and slotted to allow for the passage of the reinforcing steel. If desired by the Owner, keys and/or dowel bars shall be provided at the construction joints. Construction joints shall be provided in positions as shown or described on the drawing. Where it is not described, the joints shall be in accordance with the following :

   i) In a column, the joint shall be formed about 75mm below the lowest soffit of the beams framing into it.

ii)Concrete in tie beam shall be placed throughout without a joint, but if the provision or a joint is unavoidable, the joint shall be vertical and at the middle of the span.

iii)In forming a joint, concrete shall not be allowed to slope away to thin edge. The locations of construction joints shall be planned by the Contractor well in advance of pouring and have to be approved by the Owner

b) Before the fresh concrete is placed, the cement skin of the partially hardened concrete shall be thoroughly removed and surface made rough by hacking, sand blasting, water jetting, air jetting or any other method as directed by the Owner. The rough surface shall be thoroughly wetted for about two hours and shall be dried and coated with 1:1 freshly mixed cement sand slurry immediately before placing the new concrete. The new concrete shall be worked against the prepared surface before the slurry sets. Special care shall be taken to see that the first layer of concrete placed after a construction joint is thoroughly rammed against the existing layer. Old joints during pour shall be treated with 1:1 freshly made cement sand slurry only after removing all loose materials.

2.6.3.23 CURING AND PROTECTION OF CONCRETE

b) Newly placed concrete shall be protected by approved means from rain, sun & wind. Concrete placed below ground level shall be protected from falling earth during and after placing. Concrete placed in ground containing deleterious substances shall be kept free from contact with such ground or with water leaking from such ground during placing of concrete and for a period of three days or as otherwise instructed by the Owner after placing of concrete. The ground water around newly poured concrete shall be kept to an approved level by pumping or other approved means of drainage. Adequate steps shall be taken to prevent floatation or flooding. Steps, as approved by the Owner, shall also be taken to protect -immature concrete from damage by debris, excessive loading, vibration etc. which may impair the strength or durability of the concrete. All fresh concrete shall be covered with a layer of Hessian or similar absorbent material and kept constantly wet for a period of seven days or more from the date of placing of concrete as per directions of the Owner. Curing can also be made by ponding. Concrete shall be cured by flooding with water of minimum 25mm depth for the period mentioned above.

c) Step shall also be taken to protect immature concrete from damage debris by excessive loading, vibrations, abrasions, deleterious ground water, mixing with earth or foreign materials, floatation etc. that may impair the strength and durability of the concrete. Approved curing compound can be used with the permission of the Owner. Such compound shall be applied to all exposed surfaces of the concrete as soon as possible after the concrete has set.

2.6.3.24 ADJACENT STRUCTURES

When working near existing structures care shall be taken to avoid any damage to such structures.

2.6.3.25 INSTALLATION

During erection, the Contractor shall provide necessary temporary bracing or supports to ensure proper installation of the materials. All materials shall be erected in the true locations as shown in the drawings, plumb and level. Extreme care shall be taken to ensure that the threads of holding down bolts and comparable items are protected from damage. Groups of holding down bolts shall be set in such a manner that the tolerance of whole group is not more than 3mm from its true position in plan at the top of the bolt and not more than 3mm from the required level. The top ends of all bolt shanks shall be in one plane to the tolerance stated above. Holding down bolt assemblies shall be set vertically to a tolerance of not more than 1:500.

2.6.3.11 PROTECTION AGAINST DAMAGE IN TRANSIT

a) All steel work shall be efficiently and sufficiently protected against damage in transit to site from any cause whatsoever. All protecting plates or bars and all ends of members at joints shall be stiffened, all straight bars and plates shall be bundled, all screwed ends and machined surface shall be suitably packed and all bolts, nuts, washers and small loose parts shall be packed separately in cases so as to prevent damage or distortion during transit. Should there be any distortion of fabricated members, the Contractor shall immediately report the matter to the Owner. Distorted reinforcement bars or plates received from stores or distorted during transport from stores to the fabrication yard shall not be used in fabrication unless the distortions are minor which in the opinion of the Owner can be removed by acceptable methods. The cost of all such straightening shall be borne by the Contractor within his unit rates.

b) These distortions shall be rectified by the Contractor by cold bending. If heating is necessary to rectify the defects, the details of the procedure shall be intimated to the Owner whose approval shall be taken before such rectification. The temperature of heat treatment shall not exceed the limits beyond which the original properties of steel are likely to be impaired

3.5.28 FOUNDATIONS BOLTS

a) The foundation bolts / stubs, as required, for the tower structures shall be supplied by the respective tower contractor. These shall be embedded in concrete while the foundation is cast. The Contractor shall ensure the proper alignment of these bolts to match the holes in the base plate and also co-ordinate with the respective tower contractor for its correctness. The final adjustment of these bolts and their grouting are included in the scope of this contract. Grouting of block outs and the gap between the base plate and top of concrete shall be done by the Contractor after finalisation of alignments. The unit rate of concreting shall include the cost of above adjustments, grouting, and skins etc. required for this purpose.

b) The Contractor shall be responsible for the correct alignment and leveling of all steel work on site to ensure that the towers are in plumb.

c) Before erection of towers, by tower contractor, on the foundations the top surface of base concrete shall be thoroughly cleaned with wire brushes and by chipping to remove all laitance and loose materials and shall be chipped with a chisel to ensure proper bond between the grout and the foundation concrete. The piling Contractor shall also be responsible for bringing down the top of concrete to the desired level by chipping. In case the foundation as cast is lower than the desired level, the Contractor shall make up the difference by providing additional pack plates without extra cost for any such work or material. No steel structures shall be erected on their foundations unless such foundations have been certified fit for erection by the Owner. Adequate number of air release holes and inspection holes shall be provided in the baseplate.

3.5.29 STABILITY OF STRUCTURE

a) The Contractor shall be responsible for the stability of the structure at all stages of its erection at site and shall take all necessary measures by the additions of temporary bracings and guying to ensure adequate resistance to wind and also to loads due to erection equipment and their operations. Guying and bracing shall be done for erection equipment and their operations. Guying and bracing shall be done in such a way that it does not interface with the movement or working of other agencies working in the area. For the purpose of guying, the Contractor shall not use other structures in the vicinity which are likely to be damaged by the guy.

b) Such temporary bracings shall neither be included in the measurement nor extra rate shall be payable. Such temporary bracings used shall be the property of the Contractor and may be removed by him at the end of the job from the site of work.

3.5.30 MATERIALS

a) Cement shall conform to the stipulations contained in IS:8112 and shall have a fineness (specific surface of cement) not less than 225 sq.m./kg when tested for fineness by Blaine"s air permeability method as perIS:4031.

b) Sand shall conform to the stipulations contained in IS:383.

c) Water shall be clean and fresh and shall be of potable quality.

d) Aluminium powder or anti-shrinkage admixture like „Groutex" CRS-NS grout (by Cement Research Institute of India) or its equivalent shall be of standard brand from reputed manufacturer and shall be approved bythe Owner prior to its use for work.

3.5.31 CURING

a) The work shall be cured for a period of 7 days commencing 24 hours after the completion of the grouting and under pinning operations. The curing shall be done by covering the surfaces with wet gunny bags.

b) Bar Grips

c) This covers the technical requirement for furnishing and installation of bar grips complete including all labour materials, equipment, staging, etc.

d) Curing should be done as soon as possible after concrete is placed and when initial set has occurred and before it has hardened. It should be continued for a minimum period of 7 to 12 days when normal (Portland) cement is used, 4 to 7 days when rapid hardening cement is used, and should be kept thoroughly wet for 24 hours when high alumina cement is used.

e) Vertical surfaces may be covered with hanging curtains. Columns and small members shall be cured by wrapping round them wet sacks or by sprinkling water continuously. On vertical surfaces it should be checked that the wet fabric is in contact with the surface.

f) All reinforcement shall be cleaned thoroughly by removing loose scales, oil, grease or other deleterious materials. The contractor shall obtain the approval of the Engineer-in-charge or his representative to the reinforcement when fixed in position before any concrete is deposited in the forms.

g) Bars shall be bent cold or straightened in a manner to the satisfaction of the Engineer-in-charge or his representative. Bars bent during transport or handing shall be straightened before using on work. They shall not be heated to facilitate bending. Welding shall be done as per latest IS Code of practice.

h) All reinforcement bars shall be cut and standard hooks for MS rounds made at ends and accurately placed in position as shown on the approved drawings. They shall be securely held in position before and during concreting by annealed binding wires used for binding the reinforcement which shall be of approved quality soft annealed iron wire not less than 1mm (18SWG) size, conforming to IS: 280.

i) As far as possible, bars of full length shall be used. Where bars are required or permitted to be lapped by the Engineer-in-charge, or his representative, the over laps shall be staggered for different bars and located at points, along the span where bending moment is not maximum. The concrete measured over the reinforcing bars shall be in accordance with the approved drawings.

3.5.32 REINFORCED CEMENT CONCRETE

a) Optimum quantity of water shall be mixed to produce the design mix/nominal mix concrete of required workability.
b) Workability shall be such that the concrete surrounds and properly grips all reinforcement.
c) The degree of consistency, which shall depend upon nature of work and method of vibration of concrete, shall be determined by regular slump tests to be carried out by the contractor at his cost.
d) Usually for mass concrete in RCC works where vibrations are used the slumps shall be within 10mm to 25mm.
e) The frequency of such tests and the natures of slumps shall be maintained within the limits specified by the Engineer-in-charge.
f) The Engineer-in-charge also reserves the right to carry out slump tests independently at his own discretion.
g) Cube moulds should be prepared for destructive testing randomly as per instructions giver by Site In-Charge.

h) Cement shall have to be weighed from bulk stocks at site and not by bags. It shall be weighed separately from the aggregates.
i) Water shall either be measured by volume in calibrated buckets or weighed. All necessary equipment shall be maintained in a clean and serviceable condition. Their accuracy shall be periodically checked.
j) Honeycombed RCC structure should be dismantled immediately and reconstructed.
k) If Reinforced Cement Concrete works include Stone masonry works then stone masonry works should be carried out in stages. After completing one stage mortar droppings shall be cleaned and Reinforced Cement Concrete works should be done before starting the second stage of stone masonry work.

3.5.33 DEWATERING

a) Where water is met with during excavation due to stream flow, seepage, shoring, rain or other reasons, the contractor shall take adequate measures such as bailing, pumping, constructing diversion channel, drainage channel, ponds and other necessary works to keep the foundation trenches dry and to protect the green concrete against damage by eruption or sudden rising of water level.

Approval of the Engineer-in-charge shall be required for any method adopted, for the adequacy of dewatering and protection arrangements and for the sound safety of the work shall be required.

Any works which are not mentioned in Bid documents shall be executed as per BOQ and as per the directions of site engineer.

Bidder's Signature & Seal

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,
Lower Assam, T&T Circle, AEGCL,
Narengi.Guwahati-26

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

_____

_____

Bidder's Signature & Seal

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. 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).....

Bidder's Signature & Seal