

BIDDING DOCUMENT

FOR

**Supply of POWER LINE CARRIER COMMUNICATION Equipments & Related
Services for Various Substations of AEGCL in Assam**

under PSDF

(PACKAGE-B)



**ASSAM ELECTRICITY GRID
CORPORATION LIMITED**

BID IDENTIFICATION NO:

AEGCL/MD/PSDF-008/PLCC(Package-B)

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Section – 1
Instruction to Bidders

Section 1 – Instruction to Bidders

This section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening and evaluation of bids and on the award of contract.

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Section 1 - Instructions to Bidders

1.1.0 General

1.1.1. Scope of Bid

- 1.1.1.1. In support of the Invitation for Bids indicated in the Bid Data Sheet (BDS), the **Chief General Manager** on behalf of **Assam Electricity Grid Corporation Limited (AEGCL)** (hereinafter referred to as "the Purchaser" or "AEGCL"), issues this Bidding Document for the supply of Goods and Related Services incidental thereto as specified in Section 3 (Purchaser's Requirements). The name and identification nos. of this Competitive Bidding are provided in the Bid Data Sheet (BDS) attached as Appendix to ITB-1 of this Section.
- 1.1.1.2. Unless otherwise stated, throughout this Bidding Document definitions of terms shall be as prescribed in **Section 4** (Special Conditions of Contract).

1.1.2. Eligible Bidders

- 1.1.2.1. Subject to meeting the Qualifying Requirements, a Bidder may be a firm or company. When the bidder is a firm, the names and address of the partners should be indicated and a copy of the certificate of registration with the concerned Registrar of firms should be enclosed with the Bid.
- 1.1.2.2. When the bidder is a Company, the company registration document along with Memorandum of Association should be submitted.
- 1.1.2.3. When the bidder is an individual carrying on business in a firm's name, the tender should be submitted by the owner of the firm, who may describe himself as carrying on business in the firm's name.

1.2.0 Contents of Bidding Document

1.2.1. Sections of Bidding Document

- 1.2.1.1. The Bidding Document consists of following six Sections, and should be read in conjunction with any Addenda issued in accordance with ITB **Clause 1.2.3**.

Section 1 - Instructions to Bidders (ITB) with Appendix-1 and Appendix-2

Section 2 - Bidding Forms (BDF)

Section 3 - Purchaser's Requirements (PRQ)

Section 4 - "General Conditions of Supply and Erection of AEGCL"

(This section is supplied separately)

Section 5- Special Conditions of Contract (SCC)

Section 6 - Contract Forms (COF)

- 1.2.1.2. *The completed Section 6 shall constitute "the Contract".*
- 1.2.1.3. The Invitation for Bids issued by the Purchaser is not part of the Bidding Document.
- 1.2.1.4. The Purchaser is not responsible for the completeness of the Bidding Document and its addenda, if they were not obtained directly from the source stated by the Purchaser in the Invitation for Bids.
- 1.2.1.5. The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.

1.2.2. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

- 1.2.2.1. A prospective Bidder requiring any clarification of the Bidding Document shall contact the Purchaser in writing at the Purchaser's address indicated in the **BDS** or raise his enquiries during the pre-bid meeting if provided for in accordance with **ITB Clause 1.2.2.4**. The Purchaser will respond to any request for clarification, provided that such request is received no later than seven (7) days prior to the deadline for

submission of bids. The Purchaser's response shall be in writing with copies to all Bidders who have acquired the Bidding Document in accordance with **ITB Clause 1.2.1.4**, including a description of the inquiry but without identifying its source. Should the Purchaser deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under **ITB Clause 1.2.3** and **ITB Clause 1.4.2.2**.

- 1.2.2.2. The Bidder is advised to visit and examine the sites where the works are to be carried out and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for the provision of plant and services. The costs of visiting the sites shall be at the Bidder's own expense.
- 1.2.2.3. The Bidder and any of its personnel or agents will be granted permission by the Purchaser to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Purchaser and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 1.2.2.4. The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the **BDS**. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 1.2.2.5. The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Purchaser not later than **one week** before the pre-bid meeting.
- 1.2.2.6. Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with **ITB Clause 1.2.1.4**. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Purchaser exclusively through the issue of an Addendum pursuant to **ITB Clause 1.2.3** and not through the minutes of the pre-bid meeting.
- 1.2.2.7. Non attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

1.2.3. Amendment of Bidding Document

- 1.2.3.1. At any time prior to the deadline for submission of bids, the Purchaser may amend the Bidding Document by issuing addenda.
- 1.2.3.2. Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Purchaser in accordance with **ITB Clause 1.2.1.4**.
- 1.2.3.3. To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids, pursuant to **ITB Clause 1.4.2.2**.

1.3.0 Preparation of Bids

1.3.1. Cost of Bidding

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

1.3.2. Language of Bid

- 1.3.2.1. The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages into the English language, in which case, for purposes of interpretation of the Bid, such translation shall govern.

1.3.3. Documents Comprising the Bid

1.3.3.1. The Bid shall comprise two envelopes submitted simultaneously, one called the 'Technical Bid' containing the documents listed in **ITB Clause 1.3.3.2** and the other the **Price Bid** containing the documents listed in **ITB Clause 1.3.3.3** . Both the envelopes must be submitted online through e-tendering portal <https://aeqcl.etenders.in> .

1.3.3.2. The Technical Bid submitted by the Bidder shall comprise the following:

- (a) Letter of Technical Bid;
- (b) Bid Security, in accordance with **ITB Clause 1.3.9**;
- (c) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with **ITB Clause 1.3.10.2**;
- (d) Documentary evidence in accordance with **ITB Clause 1.3.5** establishing the Bidder's eligibility and qualifications to perform the contract if its Bid is accepted;
- (e) Documentary evidence establishing in accordance with **ITB Clause 1.3.6** that the plant and services offered by the Bidder conform to the Bidding Document;
- (f) Documents as called for in **ITB Clauses 1.1.2.1, 1.1.2.2, and 1.1.2.3**;
- (g) Any other document required in the **BDS**.

1.3.3.3. The Price Bid submitted by the Bidder shall comprise the following:

- (a) Letter of Price Bid;
- (b) completed schedules as required, including Price Schedules, in accordance with **ITB Clauses 1.3.4** and **1.3.7**; and
- (c) any other document required in the **BDS**

1.3.4. Letter of Bid and Schedules

1.3.4.1. The Letters of Technical Bid and Price Bid, and the Schedules, and all documents listed under **ITB Clause 1.3.3** shall be prepared using the relevant forms furnished in Section 2 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

1.3.5. Documents Establishing the Eligibility and Qualifications of the Bidder

1.3.5.1. To establish its eligibility and qualifications to perform the Contract in accordance with Appendix 2 of ITB (Evaluation and Qualification Criteria), the Bidder shall provide the information requested in the corresponding information sheets included in Section 2 (Bidding Forms).

1.3.6. Documents Establishing Conformity of the Goods and Services

1.3.6.1. 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.

1.3.7. Bid Prices and Discounts

- 1.3.7.1. Unless otherwise specified in the **BDS** and/or Section 3 (Purchaser's Requirements), bidders shall quote for the entire scope of supply and services on a "single responsibility" basis such that the total bid price covers all the Supplier's obligations mentioned in or to be reasonably inferred from the bidding document in respect of the design, manufacture, including procurement, delivery, and completion of the entire scope.
- 1.3.7.2. Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document. No deviation in this regard normally, shall be accepted.
- 1.3.7.3. Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section 2 (Bidding Forms). Separate numbered Schedules included in Section 2 (Bidding Forms) shall be used for each of the following elements. The total amount from each Schedule (1, 1A, 2 & 3) shall be summarized in a Grand Summary (Schedule 3) giving the total bid price(s) to be entered in the Bid Form.
- | | |
|------------------|---|
| Schedule No. 1: | Supply of Goods |
| Schedule No. 1A: | Freight & Insurance |
| Schedule No. 2: | Related Services (Erection , Testing & commissioning) |
| Schedule No. 3: | Grand Summary |
- 1.3.7.4. In the Schedules, bidders shall give the required details and a breakdown of their prices as called for in these Schedules.
- 1.3.7.5. The prices shall be either fixed or adjustable as specified in the **BDS**.
- (a) In the case of Fixed Price, prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated **as non-responsive and rejected**.
- (b) In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport and contractor's equipment in accordance with the procedures specified in the corresponding Appendix to the Contract Agreement. A bid submitted with a fixed price quotation will not be rejected, but the price adjustment will be treated as zero. Bidders are required to indicate the source of labor and material indices in the corresponding Form in Section 2 (Bidding Forms).
- 1.3.8. Period of Validity of Bids**
- 1.3.8.1. Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline date prescribed by the Purchaser. A bid valid for a shorter period **shall be rejected** by the Purchaser as non-responsive.
- 1.3.8.2. In exceptional circumstances, prior to the expiration of the bid validity period, the Purchaser may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with **ITB Clause 1.3.9**, it shall also be extended for a corresponding period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid.
- 1.3.9. Bid Security**
- 1.3.9.1. The Bidder shall furnish as part of its bid, in original form, a Bid Security as specified in the **BDS**. **A scan copy of the bid security is to be uploaded in the e-tendering portal.**
- 1.3.9.2. The bid security shall be a demand guarantee, in the forms of an unconditional bank guarantee from a Scheduled or Nationalized Bank. The bid security shall be submitted using the 'Bid Security Form' included in Section 3 (Bidding Forms). The form must include the complete name of the Bidder. The bid security shall be valid for thirty days (30) beyond the original validity period of the bid, or beyond any period of extension if requested under **ITB Clause 1.3.8.2**.
- 1.3.9.3. Bids not complying with **ITB Clause 1.3.9.1** and **ITB Clause 1.3.9.2**, **shall be rejected** by the Purchaser as **non-responsive**.
- 1.3.9.4. The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

- 1.3.9.5 The bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the performance security pursuant to **ITB Clause 1.6.4**.
- 1.3.9.6 The bid security may be forfeited:
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid Form, except as provided in **ITB Clause 1.3.8.2or**
 - (b) if the successful Bidder fails to:
 - (i) Sign the Contract in accordance with **ITB Clause 1.6.1**; or
 - (ii) Furnish a performance security in accordance with **ITB Clause 1.6.2**.

1.3.10. Format and Signing of Bid

- 1.3.10.1. The Bidder shall prepare one original of the Technical Bid comprising the Bid documents as described in **ITB Clause 1.3.3** and upload the scan copy. The price bid shall be submitted directly in the e-tendering portal by filling in the price schedule templates.
- 1.3.10.2. The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the **BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.
- 1.3.10.3. A bid submitted by a JV shall be signed so as to be legally binding on all partners.
- 1.3.10.4. Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

1.4.0 Submission and Opening of Bids

1.4.1. Online Submission of Bids

- 1.4.1.1. The technical as well as Price bid should be submitted through online portal only.
- 1.4.1.2. For technical bid, all forms and supporting documents as required by **ITB clause 1.3.3** and duly signed and stamped as per **ITB clause 1.3.10** are to be uploaded in the portal. The documents are to be uploaded in PDF format and each file should not exceed 5 MB in size. In case the a document is more than 5MB in size the same may be split to make the size below 5 MB.
- 1.4.1.3. The price bid must be submitted in the price schedule provided in the portal as per the online price schedule.
- 1.4.2. **Deadline for Submission of Bids**
- 1.4.2.1. Bid shall be received ONLINE on or before the date and time in the BDS.
- 1.4.2.2. The Purchaser may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with **ITB Clause 1.2.3**, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended. The bidder will not be able to submit his bid after expiry of the date and time of submission of bid .
- 1.4.3. **Late Bids**
- 1.4.3.1 E-tendering portal shall allow bidders to submit bids upto the date and time specified in **ITB clause 1.4.2** as per server time. However, bidders are advised to submit their bids well in advance of the deadline for submission of bids to avoid any last moment difficulties.

1.4.4. Withdrawal, Substitution, and Modification of Bids

- 1.4.4.1 E-tendering portal shall allow modification of bids any time before the deadline for bid submission . A bidder may withdraw its bid , by sending a written notice , duly signed by an authorized representative , and shall include a copy of the authorization in accordance with ITB clause 1.3.10.1. Notice must be :
- (a) Received by the Purchaser prior to the deadline prescribed for submission of bids , in accordance with ITB Clause 1.4.2 .
- 1.4.4.2. Bids requested to be withdrawn in accordance with **ITB Clause 1.4.2.1** shall be returned unopened to the Bidders.
- 1.4.4.3. No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Technical Bid or any extension thereof.
- 1.4.5. Bid Opening**
- 1.4.5.1. The Purchaser shall conduct the opening of Technical Bids through online process at the address, date and time specified in the **BDS**. The Bid opening committee shall open on-line received Bids in the presence of Bidders designated representatives who choose to attend. The Price Bids will remain unopened until the specified time of their opening.
- 1.4.5.2. First, physical envelopes marked "WITHDRAWAL" shall be read out and the corresponding bid shall not be considered/rejected with comments. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal duly signed by an authorized representative and is read out at bid opening.
- 1.4.5.3. All envelopes holding the Technical Bids shall be opened one at a time, and the following read out and recorded:
- a) the name of the Bidder;
- b) whether there is a modification or substitution;
- c) the presence of a Bid Security, if required; and
- d) any other details as the Purchaser may consider appropriate.
- Only Technical Bids and alternative Technical Bids read out and recorded at bid opening shall be considered for evaluation. No Bid shall be rejected at the opening of Technical Bids except for withdrawn bids.
- 1.4.5.4. The Purchaser shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; and alternative proposals; and the presence or absence of a bid security or a bid securing declaration, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.
- 1.4.5.5. At the end of the evaluation of the Technical Bids, the Purchaser will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Purchaser. Bidders shall be given reasonable notice of the opening of Price Bids.
- 1.4.5.6. The Purchaser shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders' representatives who choose to attend at the address, date and time specified by the Purchaser. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
- 1.4.5.7. All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded:
- a) the name of the Bidder;
- b) whether there is a modification or substitution;

- c) the Bid Prices, including any discounts and alternative offers; and
- d) any other details as the Purchaser may consider appropriate.

Only Bid Prices and discounts read out and recorded during the opening of Price Bids shall be considered for evaluation. No Bid shall be rejected at the opening of Price Bids.

- 1.4.5.8. The Purchaser shall prepare a record of the opening of Price Bids that shall include, as a minimum: the name of the Bidder, the Bid Price (per lot if applicable), any discounts. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.

1.5.0 Evaluation and Comparison of Bids

1.5.1. Confidentiality

- 1.5.1.1. Information relating to the evaluation of bids and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with such process.
- 1.5.1.2. Any attempt by a Bidder to influence the Purchaser in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
Notwithstanding **ITB Clause 1.5.1.2**, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Purchaser on any matter related to the bidding process, it should do so in writing duly signed by an authorized representative..

1.5.2. Clarification of Bids

- 1.5.2.1. To assist in the examination, evaluation, and comparison of the Technical and Price Bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the evaluation of the bids, in accordance with **ITB Clause 1.5.8**.
- 1.5.2.2. If a Bidder does not provide clarifications of its bid by the date and time set in the Purchaser's request for clarification, its bid may be rejected.

1.5.3. Deviations, Reservations, and Omissions

- 1.5.3.1. During the evaluation of bids, the following definitions apply:
- a) "Deviation" is a departure from the requirements specified in the Bidding Document;
 - b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

1.5.4. Preliminary Examination of Technical Bids

- 1.5.4.1. The Purchaser shall examine the Technical Bid to confirm that all documents and technical documentation requested in **ITB Sub-Clause 1.3.3.2** have been provided, and to determine the completeness of each document submitted. If any of these documents or information is missing, **the Bid may be rejected**.
- 1.5.4.2. The Purchaser shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer **shall be rejected**.
- a) Letter of Technical Bid;
 - b) written confirmation of authorization to commit the Bidder;
 - c) Bid Security; and
 - d) Technical Proposal in accordance with **ITB 1.3.6**.

1.5.5. Responsiveness of Technical Bid

- 1.5.5.1. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in **ITB Clause 1.3.3**.
- 1.5.5.2. A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- a) if accepted, would:
 - (i). affect in any substantial way the scope, quality, or performance of the plant and services specified in the Contract; or
 - (ii). limit in any substantial way, inconsistent with the Bidding Document, the Purchaser's rights or the Bidder's obligations under the proposed Contract; or
 - b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
- 1.5.5.3. The Purchaser shall examine the technical aspects of the Bid submitted in accordance with **ITB Clause 1.3.6**, Technical Proposal, in particular to confirm that all requirements of Section 3 (Purchaser's Requirements) have been met without any material deviation or reservation.
- 1.5.5.4. If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

1.5.6. Nonmaterial Nonconformities

- 1.5.6.1. Provided that, a Bid is substantially responsive, the Purchaser may waive any nonconformity in the bid that does not constitute a material deviation, reservation or omission.
- 1.5.6.2. Provided that a Bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 1.5.6.3. Provided that a Bid is substantially responsive, the Purchaser shall rectify nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the method indicated in **Appendix of ITB-2 (Evaluation and Qualification Criteria)**.

1.5.7. Detailed Evaluation of Technical Bids

- 1.5.7.1. The Purchaser will carry out a detailed technical evaluation of the bids not previously rejected as being substantially non-responsive, in order to determine whether the technical aspects are in compliance with the Bidding Document. In order to reach such a determination, the Purchaser will examine and compare the technical aspects of the bids on the basis of the information supplied by the bidders, taking into account the following:
- a) overall completeness and compliance with the Purchaser's Requirements; deviations from the Purchaser's Requirements; conformity of the goods and services offered with specified performance criteria; suitability of the goods and services offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the bid. The bid that does not meet minimum acceptable standards of completeness, consistency and detail will be rejected for non-responsiveness;
 - b) type, quantity and long-term availability of mandatory and recommended spare parts and maintenance services; and
 - c) other relevant factors, if any, listed in **Appendix to ITB-2 (Evaluation and Qualification Criteria)**.

Eligibility and Qualification of the Bidder

The Purchaser shall determine to its satisfaction during the evaluation of Technical Bids whether a Bidder meets the eligibility and qualifying criteria specified in **Appendix to ITB-2** (Evaluation and Qualification Criteria).

1.5.7.2. The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to **ITB Clause 1.3.5**.

1.5.7.3. **An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Purchaser shall not open the Price Bid of the Bidder.**

1.5.8. Correction of Arithmetical Errors

1.5.8.1. During the evaluation of Price Bids, the Purchaser shall correct arithmetical errors on the following basis:

a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the Total Price, the former shall prevail and the latter will be corrected accordingly;

b) where there are errors between the total of the amounts of Schedule Nos. 1, 1A and 2, and the amount given in Schedule No. 3 (Grand Summary), the former shall prevail and the latter will be corrected accordingly; and

c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetical error, in which case the amount in figures shall prevail subject to (a) and (b) above.

1.5.8.2. If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be **disqualified and its bid security may be forfeited**.

1.5.9. Evaluation of Price Bids

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

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

a) the bid price, including taxes, as quoted in the Price Schedules;

b) price adjustment for correction of arithmetical errors in accordance with **ITB Clause 1.5.8.1**; and

c) the evaluation factors if any indicated in Appendix 2 (Evaluation and Qualification Criteria).

1.5.9.3. If price adjustment is allowed in accordance with **ITB Clause 1.3.7.5**, the estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

1.5.10. Comparison of Bids

1.5.10.1. The Purchaser shall compare all substantially responsive Bids to determine the lowest evaluated bid, in accordance with **ITB Clause 1.5.9.2**.

1.5.11. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids

1.5.11.1. The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

1.6.0 Award of Contract

1.6.1. Award Criteria

1.6.1.1. The Purchaser shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be eligible and qualified to perform the Contract satisfactorily.

1.6.2. Notification of Award

- 1.6.2.1. Prior to the expiration of the period of bid validity, the Purchaser shall notify the successful Bidder, in writing, that its bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Purchaser will pay the Contractor in consideration of the execution and completion of the plant and services (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").
- 1.6.2.2. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

1.6.3. Signing of Contract

- 1.6.3.1. Within ten (10) days of receipt of the Letter of Acceptance, the successful Bidder shall be required to sign the Contract Agreement.
- 1.6.3.2. The contract signing shall take place at the premises of the Purchaser.

1.6.4. Performance Security

- 1.6.4.1. Within **seven (07)** days of the receipt of notification of award from the Purchaser, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, using for that purpose the Performance Security Form included in **Appendix – 4, Section 6 (Contract Forms)**, or another form acceptable to the Purchaser.
- 1.6.4.2. Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Purchaser may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Purchaser to be qualified to perform the Contract satisfactorily.

**APPENDIX TO ITB - 1
Bid Data Sheet (BDS)**

A. Introduction

ITB 1.1.1.1	<p>The number of the Invitation for Bid is : AEGCL/MD/Tech-644/PSDF/PLCC/Package B/IFB.</p> <p>The Purchaser is: Assam Electricity Grid Corporation Limited.</p> <p>The name of the Bid is: Supply of Power Line Carrier Communication Equoments for Various Substationsof AEGCL under PSDF.</p> <p>The Identification Numbers of Bids are:</p> <p align="center">AEGCL/MD/PSDF-008/PLCC(Package B)</p>
ITB 1.2.2.1	<p>For clarification purposes only, the Purchaser's address is:</p> <p>Attention: The Managing Director, AEGCL Street Address: Bijulee Bhawan, Paltanbazar Floor/Room number: First Floor City: Guwahati PIN Code: 781001 Country: India Telephone: +91 361 2739520 Facsimile number: +91 361 2739513 Electronic mail address: managing.director@aegcl.co.in</p>
ITB 1.2.2.4	<p>Purchaser may invite intending Bidders to a pre-bid meeting, if Purchaser feels it is necessary. The date and time of such pre-bid meeting shall be intimated to intending bidders in due course of time.</p>
ITB 1.3.3.2(g)	<p>The Bidder shall submit with its Technical Bid the following additional documents:</p> <ol style="list-style-type: none"> 1. Guaranteed and other Technical Particulars as required in Section 3, 'Purchaser's Requirements' 2. Type Test Certificates 3. Manufacturer's Authorization (if applicable).
ITB 1.3.7.1	<p>Unless otherwise specifically indicated in the Section 3 (Purchaser's Requirements), bidders shall quote for the entire plant and services on 'single responsibility basis'.</p>
ITB 1.3.7.5	<p>The prices quoted by the Bidder shall be FIXED for entire period of the Contract.</p>
ITB 1.3.8.1	<p>The bid validity period shall be 180 days.</p>

ITB 1.3.9.1	The Bidder shall furnish a bid security amounting to Rs. 11,00,000.00(Rupees Eleven Lakhs)only
ITB 1.3.10.1	The bidding is through E-tendering portal and received online. However, bidder has to submit any documents in hard copy if asked by the purchaser.
ITB 1.3.10.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of Notarized Power of Attorney.

ITB 1.4.2.1	For bid submission purposes only, the Purchaser's address is (E-Tenders shall be accepted through online portal only) Attention: The Managing Director,AEGCL Street Address: BijuleeBhawan, Paltanbazar Floor/Room number: First Floor City: Guwahati PIN Code: 781001 The deadline for bid submission is Date: 13.10.2017 Time: 12.00 Hours
ITB 1.4.5.1	The bid opening of Technical Bids shall take place at Office of The Managing Director, AEGCL Street Address: Bijulee Bhawan, Paltanbazar Floor/Room number: First Floor City: Guwahati (Assam) PIN Code: 781001 Country: India Date: 13.10.2017 Time: 14.00 Hours

APPENDIX TO ITB – 2
Evaluation and Qualification Criteria (ECQ)

This Appendix contains all the criteria that the Purchaser shall use to evaluate bids and qualify Bidders. In accordance with ITB 1.5.7 and ITB 1.5.8, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 2 (Bidding Forms)

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1. Evaluation

1.1 Technical Evaluation

In addition to the criteria listed in ITB 1.5.7.1 (a) – (c), no other factor shall apply.

1.2 Economic Evaluation

Any adjustments in price that result from the procedures outlined below shall be added, for purposes of comparative evaluation only, to arrive at an “Evaluated Bid Price.” Bid prices quoted by bidders shall remain unaltered.

1.2.1 Quantifiable Deviations and Omissions

Quantifiable Deviations and Omissions from the contractual obligations: No financial assessment shall be made by the Purchaser for deviations and omissions from the requirements of the Bidding Document. All such deviations, omissions or reservations shall be dealt with in accordance with ITB Clauses 1.5.5.2, 1.5.5.3, 1.5.5.4, 1.5.6.1, 1.5.6.2, 1.5.6.3, 1.5.7.1(a) and 1.5.8.

1.3 Time Schedule

Time to complete Works from the Commencement Date specified in **Article 3** of the Contract Agreement for determining time for completion the works is **9 (Nine) months (6 months for supply and 3 months for erection, testing and commissioning)**. Bids not meeting the above time schedule shall be rejected. However, no credit will be given for earlier completion.

1.4 Specific additional criteria

In addition to the above, no additional criteria shall be considered for evaluation of Bids.

2 Qualification

Qualification of bidder will be based on meeting the minimum pass / fail criteria specified below

2.1 General

- 2.1.1 The Bidder must satisfy the requirement of ITB Sub-Clause 1.1.2 and shall submit necessary document as per the said Clause.
- 2.1.2 The Bidder may be a manufacturer or an authorised dealer/distributor/agent of the manufacturer. ***In case, the Bidder is an authorised dealer/distributor/agent, the bidder must submit with the bid, an undertaking using ‘Form-MA’ (Manufacturer’s Authorisation), Section-4 (Bidding Form).***
- 2.1.3 Using the ‘Form LIT – 1’ (Section 4, Bidding Form), bidder shall list all Pending Litigation. All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than **50% percent** of the Bidder’s net worth.

2.2 Financial Situation

- 2.2.1 Submission of audited balance sheets or other financial statements acceptable to the Purchaser, 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, a Bidder’s net worth calculated as the difference between total assets and total liabilities should be positive. Along with audited balance sheet bidder shall submit Form ‘**FIN-1**’ (Section 4, Bidding Form), with the Bid duly filled up.
- 2.2.2 Minimum Average Annual Turnover of **Rs. 11,00,00,000.00 (Eleven Crore only)** calculated as total certified payments received for contracts in progress or completed, within the **last 3 years**. The bidder shall furnish along with its bid the audited balance sheets and duly filled up Form ‘**FIN-2**’ in support of this Clause.
- 2.2.3 Using Forms FIN – 3 Section 4 (Bidding Forms) the Bidder must 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 the cash-flow requirement, of **Rs. 2,00,00,000.00 (Rupees Two Crore only)**

- 2.2.4 In case, the bidder is an authorised dealer/distributor/agent and they are not meeting the above condition of financial requirements, they shall qualify provided the manufacturer of the offered product meets the above financial requirements and shall submit necessary supporting documents as above.
- 2.2.5 A manufacturer already participating through an authorised dealer/distributor/agent, shall not be eligible for participation in this bidding process on its own.

2.3 Technical Qualifying Requirements

- 2.3.1 The Bidder must be manufacturer of Digital PLCC equipment having production facility in India.
- 2.3.2 The Manufacturer must have at least 5 (five) years' experience of manufacturing and supplying similar rated equipment as on date of bid opening. Using Forms EXP – 1 of Section 4 (Bidding Forms) the Bidder must furnish necessary information along with supporting documents (e.g., copy of contracts, performance & completion certificate, etc.) in support of this clause.
- 2.3.3 The Manufacturer of equipment must have designed, manufactured and type tested as per IS/IEC or equivalent standard and supplied the equipment and which are in satisfactory operation for at least last 3 (three) years as on the date of bid opening. Using Forms EXP – 2 of Section 4 (Bidding Forms) the Bidder must furnish necessary information along with supporting documents (e.g., copy of contracts, performance & completion certificate, valid type test reports etc.) in support of this clause.

Section –2 - BIDDING FORMS

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid

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1 Letter of Technical Bid

[Bidder's Letterhead]

Date:

Bid Identification No (s):

:

:

:

Invitation for Bid No.:

To:.....

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 1.2.3;
- (b) We offer to design, manufacture, test and deliver, in conformity with the Bidding Document the following Goods and Related Services:
- (c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

2 Letter of Price Bid
(Bidder's Letterhead)

(not required for e-tendering)

Date:

Bid Identification No:

Invitation for Bid No.:

Name of the Package:

To:.....

We, the undersigned, declare that:

- (i). We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 1.2.3;
- (ii). We offer to design, manufacture, test and deliver in conformity with the Bidding Document the following Goods and Related Services:
- (iii). The total price of our Bid is the sum of:
- (iv). Discount offered (if any) for (i) Supply (Schedule 1)%, (ii) Freight & Insurance (Schedule 1A) & Related Services (Schedule 2).....%
- (v). Our bid shall be valid for a period of days from the date fixed for the submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (vi). If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;
- (vii). We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (viii). We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

3 Price Schedules

PREAMBLE

General

1. The Price Schedules are divided into separate Schedules as follows:
Schedule No. 1: Supply of Goods
Schedule No. 2: Related Services (Freight & Insurance)
Schedule No. 3: Grand Summary
2. The entered rates and prices shall be deemed to cover the full scope as specified in the bidding document, including overheads and profit.
3. If bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with **ITB 1.2.2** prior to submitting their bid.

Pricing

4. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Bidder.
5. Bid prices shall be quoted in the manner indicated in Schedules.
As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.
Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Purchaser's Requirements) or elsewhere in the Bidding Document.

Schedule No.1-Supply of Goods (Package-B)

Sl. No	Item Description	Measuring Unit	Qty	Unit price (exclusive of taxes)	Total Price (exclusive of taxes)
1	2	3	4	5	6=4X5
1	Supply of 220 KV , 0.5 mH , 1250 Amp Line Trap with all fittings and accessories as per specification for substations as under.				
	(i) Mariani 220/132/33 KV S/S	set	4		
	(ii)Tinsukia 220/132/33 KV S/S	set	2		
	(iii)Samaguri 220/132/33 KV S/S	set	4		
2	Supply of 132 KV , 0.5 mH , 800 Amp Line Trap with all fittings and accessories as per specification for substations as under.				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	1		
	(iii)Jorhat 132/33 KV S/S	set	4		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	4		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	4		
	(xii)Lakhimpur 132/33 KV S/S	set	4		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	3		
	(xv)Samaguri 220/132/33 KV S/S	set	2		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	4		
3	Supply of Line Matching Unit (LMU) and Line Matching & Distribution Unit (LMDU)for phase to phase coupling arrangement with fibre box assembly for substation as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		

Sl. No	Item Description	Measuring Unit	Qty	Unit price (exclusive of taxes)	Total Price (exclusive of taxes)
1	2	3	4	5	6=4X5
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S		2		
	(xix)Panchgram 132/33 KV S/S	set	2		
4	Supply of Digital Carrier Terminal Equipment suitable to operate on 48 V DC as per specification for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		
5	Supply of digital teleprotection coupler with all fittings and accessories as per specification for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		

Sl. No	Item Description	Measuring Unit	Qty	Unit price (exclusive of taxes)	Total Price (exclusive of taxes)
1	2	3	4	5	6=4X5
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		
TOTAL					

Name of the Bidder _____

Signature _____

1. All amounts shall be in Rupees.
2. Prices shall be exclusive of taxes.

Schedule No. 1A . Related Services (Freight & Insurance) : Package-B

Item	Description	Measuring Unit	Qty	Unit Price(exclusive of taxes)	Total Price(exclusive of taxes)
1	2	3	4	5	6=4x5
1	F& I Charge Supply of 220 KV , 0.5 mH , 1250 Amp Line Trap with all fittings and accessories as per specification for substations as under.				
	(i) Mariani 220/132/33 KV S/S	set	4		
	(ii)Tinsukia 220/132/33 KV S/S	set	2		
	(iii)Samaguri 220/132/33 KV S/S	set	4		
2	F& I charge for Supply of 132 KV , 0.5 mH , 800 Amp Line Trap with all fittings and accessories as per specification for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	1		
	(iii)Jorhat 132/33 KV S/S	set	4		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	4		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	4		
	(xii) Lakhimpur 132/33 KV S/S	set	4		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	3		
	(xv)Samaguri 220/132/33 KV S/S	set	2		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S		2		
	(xix)Panchgram 132/33 KV S/S	set	4		

Item	Description	Measuring Unit	Qty	Unit Price(exclusive of taxes)	Total Price(exclusive of taxes)
1	2	3	4	5	6=4x5
3	F&I charge for Supply of Line Matching Unit (LMU) and Line Matching & Distribution Unit (LMDU)for phase to phase coupling arrangement with fibre box assembly for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S		3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S		2		
	(xix)Panchgram 132/33 KV S/S	set	2		
4	F&I charge for Supply of Digital Carrier Terminal Equipment suitable to operate on 48 V DC as per specification for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		

Item	Description	Measuring Unit	Quantity	Unit Price(exclusive of taxes)	Total Price(exclusive of taxes)
1	2	3	4	5	6=4x5
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		
5	F&I charge for Supply of digital tele-protection coupler as per specification for substations as under .				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		

	Description	Measuring Unit	Quantity	Unit Price	Total Price
1	2	3	4	5	6=4x5
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		
TOTAL					

Name of the Bidder _____

Signature _____

1. All amounts shall be in Rupees.
2. Prices shall be exclusive of taxes.

Schedule No.2 – Related services (Erection , Testing and Commissioning including civil work)

Item	Description	Measuring Unit	Quantity	Unit Price(exclusive of taxes)	Total Price(exclusive of taxes)
1	2	3	4	5	6=4x5
1	Erection ,Testing and Commissioning of 220 KV , 0.5 mH , 1250 Amp Line Trap with all fittings and accessories for substations as under . (inclusive of all cost of retrofitting including supply of any material to complete the job and also the cost of dismantling of existing equipment)				
	(i) Mariani 220/132/33 KV S/S	set	4		
	(ii)Tinsukia 220/132/33 KV S/S	set	2		
	(iii)Samaguri 220/132/33 KV S/S	set	4		
2	Erection , Testing and Commissioning of 132 KV , 0.5 mH , 800 Amp Line Trap with all fittings and accessories for substations as under . (inclusive of all cost of retrofitting including supply of any material to complete the job and also the cost of dismantling of existing equipment for substations as under .)				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	1		
	(iii)Jorhat 132/33 KV S/S	set	4		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	4		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	4		
	(xii)Lakhimpur 132/33 KV S/S	set	4		

Item	Description	Measuring Unit	Qty	Unit Price	Total Price
1	2	3	4	5	6=4x5
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	3		
	(xv)Samaguri 220/132/33 KV S/S	set	2		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S		2		
	(xix)Panchgram 132/33 KV S/S	set	4		
3	Erection , Testing and Commissioning of Line Matching Unit (LMU) and Line Matching & Distribution Unit (LMDU)for phase to phase coupling arrangement with fibre box assembly for substations as under .(inclusive of all cost of retrofitting including supply of any material to complete the job and also the cost of dismantling of existing equipment for substations as under .)				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S		3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		

Item	Description	Measuring Unit	Quantity	Unit Price	Total Price
1	2	3	4	5	6=4x5
	(xix)Panchgram 132/33 KV S/S	set	3		
4	Erection , Testing and Commissioning of Digital Carrier Terminal Equipment suitable to operate on 48 V DC as per specification for substations as under . (inclusive of all cost of retrofitting including supply of any material to complete the job and also the cost of dismantling of existing equipment for substations as under .)				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		

Item	Description	Measuring Unit	Qty	Unit Price	Total Price
1	2	3	4	5	6=4x5
5	Erection , Testing and Commissioning of Digital teleprotection coupler suitable as per specification for substations as under . (inclusive of all cost of retrofitting including supply of any material to complete the job and also the cost of dismantling of existing equipment for substations as under .)				
	(i)Bokajan 132/33 KV S/S	set	2		
	(ii)Dibrugarh 132/33 KV S/S	set	2		
	(iii)Jorhat 132/33 KV S/S	set	2		
	(iv)Margherita 132/33 KV S/S	set	2		
	(v)Mariani 220/132/33 KV S/S	set	3		
	(vi)Nazira 132/33 KV S/S	set	2		
	(vii)Tinsukia 132/33 KV S/S	set	2		
	(viii)NTPS 132/33 KV S/S	set	2		
	(ix)Depota 132/33 KV S/S	set	4		
	(x)Dhemaji 132/33 KV S/S	set	2		
	(xi)Gohpur 132/33 KV S/S	set	2		
	(xii)Lakhimpur 132/33 KV S/S	set	2		
	(xiii)Lanka 132/33 KV S/S	set	2		
	(xiv)Rowta 132/33 KV S/S	set	2		
	(xv)Samaguri 220/132/33 KV S/S	set	3		
	(xvi)Dullavcherra 132/33 KV S/S	set	2		
	(xvii)Haflong 132/33 KV S/S	set	2		
	(xviii)Pailapool 132 KV S/S	set	2		
	(xix)Panchgram 132/33 KV S/S	set	2		
TOTAL					

Name of the Bidder _____

Signature _____

1. All amounts shall be in Rupees.
2. Prices shall be exclusive of taxes.

Grand Summary

Package	Schedule No.	Column No.	Title	TOTAL (in Rs)
Package - B	1	6	Supply of Goods	
	1A	6	Related Services (Freight & Insurance)	
	2	6	Related Services (Erection, Testing & Commissioning including civil works)	
	GRAND TOTAL to be carried forward to Letter of Price Bid (Package-B)			

Name of the Bidder _____

Signature _____

1. All amounts shall be in Rupees.
2. Prices shall be exclusive of taxes

4 Form of Bid Security

Bank Guarantee

(To be stamped in accordance with Stamp Act)
(The non-Judicial Stamp Paper should be in the name of issuing Bank)

.....**Bank's Name, and Address of Issuing Branch or Office**.....

Beneficiary: **Name and Address of Purchaser**

Date:.....

Bid Security No.:.....

We have been informed that **name of the Bidder**. (Hereinafter called "the Bidder") has submitted to you its bid dated (Hereinafter called "the Bid") for the execution of **Name&Identification No of Bid** under Invitation for Bids No. ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we **name of Bank**. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **amount in figures** (. **amount in words**) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

.....**Bank's seal and authorized signature(s)**

Note: All italicized text is for use in preparing this form and shall be deleted from the final document

5 Contract Execution Schedule

The Bidder shall indicate here his proposed Contract Execution Schedule if the contract is awarded to him. The Schedule shall match with the time for completion specified.

6 Bidders Qualification

To establish its qualifications to perform the contract in accordance with Appendix 2 of ITB (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

6.1 Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents. <ul style="list-style-type: none"> <input type="checkbox"/> 1. In case of single entity/firm, documents, in accordance with ITB 1.1.2.1. <input type="checkbox"/> 2. In case of single Company, documents, in accordance with ITB 1.1.2.2. 	

6.2 Form LIT - Pending Litigation

Each Bidder must fill in this form

Pending Litigation			
<input type="checkbox"/> No pending litigation in accordance with Criteria 2.1.3 of Appendix 2 of ITB (Evaluation and Qualification Criteria)			
<input type="checkbox"/> Pending litigation in accordance with Criteria 2.1.3 of Appendix 2 of ITB(Evaluation and Qualification Criteria)			
Year	Matter in Dispute	Value of Pending Claim in Rupees	Value of Pending Claim as a Percentage of Net Worth

6.3 Form FIN - 1: Financial Situation

Each Bidder must fill in this form

Financial Data for Previous 3 Years [Rupees]		
Year 1:	Year 2:	Year 3:

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profits Before Taxes			
Profits After Taxes			

- Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
 - Historic financial statements must be audited by a certified accountant.
 - Historic financial statements must be complete, including all notes to the financial statements.
 - Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

6.4 Form FIN - 2: Average Annual Turnover

Each Bidder must fill in this form

Annual Turnover Data for the Last 3 Years	
Year	Amount (Rupees)

Average Annual Turnover

The information supplied should be the Annual Turnover of the Bidder in terms of the amounts billed to clients for each year for contracts in progress or completed.

6.5 Form FIN – 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total cash flow demands of the subject contract or contracts as indicated in **Appendix 2 of ITB** (Evaluation and Qualification Criteria) with necessary supporting documents.

Financial Resources		
No.	Source of financing	Amount (Rupees)
1		
2		
3		

6.6 Form EXP – 1: General Experience

Each Bidder must fill in this form

General Experience				
Starting Month Year	Ending Month Year	Years	Contract Identification and Name Name and Address of Purchaser Brief Description of the Works Executed by the Bidder	Role of Bidder

6.7 Form EXP – 2: Specific Experience

Fill up one (1) form per contract.

Contract of Similar Size and Nature	
Contract No. of	Contract Identification
Award Date	Completion Date
Role in Contract	<input type="checkbox"/> Contractor <input type="checkbox"/> Subcontractor
Total Contract Amount	(Rupees)
Purchaser's Name Address Telephone/Fax Number E-mail	
Description of the similarity in accordance with Criteria 2.4.2 /2.5 of Section 3	
1. Brief Specification of Goods supplied 2. Date of commissioning.	
Attached are copies of the following original documents. <ul style="list-style-type: none"> <input type="checkbox"/> 1. Type Test Certificates. <input type="checkbox"/> 2. Recent performance certificates <input type="checkbox"/> 3. Copy of the Contract Document. 	

7 Manufacturer's Authorization

[The Bidder, in pursuant to ECQ Clause 2.1.2 (if applicable) shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. Please refer to notes at bottom]

(Manufacturer's Letterhead)

Date: [insert date (as day, month and year) of Bid Submission]

Bid No.: [insert number of bidding process]

To: [Insert: full name of Purchaser]

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

- 1. _____
- 2. _____
- _____

We hereby extend our full guarantee and warranty in accordance with **Clause 5.11.0** of the Special Conditions of Contract, for the above specified Goods supporting the Supply of specified Goods and fulfilling the Related Services by the Bidder against this Bidding Documents, and duly authorize said Bidder to act on our behalf in fulfilling these guarantee and warranty obligations. We also hereby declare that, we will furnish the Performance Guarantee in accordance with **SCC Clause 5.9.2**. Further, we also hereby declare that we and, [insert: name of the Bidder] have entered into a formal relationship in which, during the duration of the Contract (including related services and warranty / defects liability) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer

Signed: _____

Date: _____

In the capacity of [insert: title of position or other appropriate designation](and this should be signed by a person having the power of attorney to legally bind the manufacturer).

Date:.....

Place:.....

(Signature).....

(Printed Name).....

(Designation).....

(Common Seal).....

Notes:

1. The letter of Undertaking should be on the letterhead of the Manufacturer and should be signed by a person competent and having **Power of Attorney to sign on behalf of the Manufacturer duly Notarized** (to be attached with this Manufacturer's Authorisation) to legally bind the Manufacturer. It shall be included by the bidder in its bid.

2. **Above undertaking shall be registered or notarized so as to be legally enforceable.**

Section - 3

Purchaser's Requirements

Section 3 - Purchaser's Requirements

This Section contains the Technical Requirements and supplementary information that describe the Goods and Related Services

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Section 3

Purchaser's Requirements

3.1 SCOPE

This specification provides for frequency planning, design, manufacture, inspection, testing at manufacturer's works, packing and supply at site including transportation, erection, testing and commissioning of equipment as specified herein for Power Line Carrier Communication equipment. The specification shall be complete for speech communication in dialing mode and/or through 4 wire Express Telephone, data communication and carrier aided protection for 220KV & 132KV Transmission Lines. All communication equipment shall be suitable for good quality voice communication among new & existing Sub- Stations, reliable tele-protection and also data communication from RTU and SAS (via GATEWAY) to SLDC, Kahilipara. Regarding the stations where PLCC equipment are already in operation, the contractor shall be responsible for coordinating the equipment supplied by them with the existing PLCC equipment in the said stations.

3.1.1 The brief description of scope covered under this Bidding Document is furnished below:

- a) Design, manufacture and testing at manufacturers' works of following Power Line Carrier Communication Equipment with all fittings and accessories including mounting structures as applicable.
 - i) 220 and 132 KV Line Trap
 - (ii) LMU/LMDU
 - (ii) Digital PLCC
 - (iii) Digital Protection Coupler
- a) Loading at manufacturer's works, transportation and delivery of the above PLCC equipments at respective AEGCL substation
- b) The bidder shall submit their offer for the above, as well as, for Erection, Testing and Commissioning of new PLCC Equipments.
- c) The works to be done in the grid sub-station shall be as per Price Schedule and interlaid generally include:
 - Construction of the new foundation for the above equipment, if required
 - Supply, erection, testing & commissioning of new equipment
 - All control cables, HF cable, optical fibre for new equipment etc will have to be laid as and where applicable.
- d) This work include the joint survey of the site for assessment of existing works (e.g. foundation, erection of substation structure etc.) , preparation of joint survey report, dismantling of the existing equipment/structure as required and foundation as per requirement, packing the dismantled structure item-wise, transportation of the dismantled structure item-wise, stacking the same in the store and handing over the same to the AEGCL's officer.

The repairing, if not being dismantled, of the existing foundation of equipment and structures as well as all other civil works as and where required will have to be done by the bidder and the same shall be considered included in the scope of work of bidder. The payment of such works shall be done as per unit Price Schedule.

- e) The work is to be taken up from concept, engineering, design, preparation of all drawing, survey, layout, erection to commissioning including supply of all required equipments and material, testing of the same at manufacture's works. All equipment / material etc (including steel, cement) will have to be supplied, erected, tested and commissioned as per the AEGCL's specification by the bidder.
- g) The tenderer shall include in the total cost of his tenderer the cost of delivery of the whole of the equipments and materials for delivery at the site including all taxes duties, insurance, freight etc as well as packing, loading, transportation, unloading and handling over to store.
- h) The contractor shall provide suitable erection, supervision personnel to supervise the work of erection of the equipment under taken by him / them.
- i) This also includes the supply, delivery, installation, testing and commissioning of all necessary parts and equipments including supply, delivery and erection of structures, etc., required for successful commissioning of the equipments after the installation works.
- j) All clearances, if any shall be the responsibility of the contractor. All expenditures towards the above shall be borne by the tender / contractor. However, AEGCL shall extend all assistance in obtaining the clearance from the Govt. Deptt.
- l) Dismantled civil materials to be dumped at any suitable place as directed by the respective Resident Engineer of Grid S/S of AEGCL.
- m) The scope of work shall include all works as detailed in the price schedule of the Bid specification.
- n) It shall also be the responsibility of the Contractor to obtain any road permits and any other permits or licenses to execute the works assigned to them.

3.2. SERVICE CONDITIONS

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

- | | |
|--|-------------------------------|
| a) Peak ambient day temperature in still air | : 45°C |
| b) Minimum night temperatures | : 0°C |
| c) Ground temperatures | : 40°C |
| d) Reference ambient day temperature | : 45°C |
| e) Relative Humidity a) Maximum | : 100 % |
| b) Minimum | : 10 % |
| f) Altitude | : Less than 1000 M above MSL |
| g) Maximum wind pressure | : As per IS: 802 latest code. |
| h) Seismic Intensity | : ZONE-V as per IS 1893. |

3.3 STANDARDS :

The equipment shall conform to the following latest Edition of the Indian Standards as amended up to date and as per latest relevant I.E.Cs. :

The details are given below :

1. IEC 353 for line trap
2. IS 8792 for line trap
3. I.E.C. 481 for coupling devices
4. I.E.C. 495 for power line carrier terminals
5. I.S. 8997 for coupling devices
6. I.S. 3156 for CVT
7. I.E.C. 358 for C.C. & CVT
8. I.S. 9348 for coupling capacitor
9. I.S. 11967 for Co-axial Cable
10. I.E.C. for Planning of SSB PLCC system
11. I.E.C. for Surge Arrestors
12. I.E.C. 96 for HF Cable
13. I.E.C834-I Part-I for Performance and Testing of Teleprotection equipment
14. I.S. 9428 for Characteristic values of Inputs and outputs of single side band PLC terminals
15. I.S. 9528 for frequency planning of power line carrier equipments

3.4 PROPOSED ARRANGEMENT:

- 3.4.1 The power line carrier communication equipment required by the owner is to provide primarily efficient, secure and reliable information link for carrier aided protection for both direct and permissive tripping of remote-end breaker and also for speech & data communication between 220KV & 132KV Sub-Stations.
- 3.4.2 For security reasons each 220 KV transmission line is protected as given below:
Main-I: Numerical distance protection with permissive inter-tripping
Main-II: Numerical distance protection with permissive inter-tripping
So, there shall be 4 independent tripping channels comprising two permissive and two direct transfer tripping signal for protection of single circuit 220 KV transmission line.
- For 132 KV & 220 KV double circuit line there shall be PLCC terminal and protection coupler in each circuit. However, there shall be 4 independent tripping channels comprising two permissive and two direct transfer tripping signal, the latter being priority for protection of each circuit of 220 KV double circuit transmission lines.
- 3.4.3 The equipment for protection signals shall have high degree of reliability and speed. It shall be guaranteed to function reliably in the presence of noise impulse caused by isolator or breaker operation.
- 3.4.4 For reasons of reliability, phase to phase coupling between adjacent phase i.e. either R-Y or Y-B shall be employed throughout. This shall, however, be fully confirmed by Bidder after conducting detailed computer study taking into account the transposition of lines for optimum coupling mode over these line sections. The coupling arrangement shall be fully optimized by the bidder after conducting detailed computer range study of every line section individually, taking into account the temperature variations, transpositions, earth resistivity, conductor configuration and other relevant details. Line attenuation shall be calculated at different frequencies for the following values of earth resistivity.

- i) 30 Ohm - metre
- ii) 100 Ohm - metre
- iii) 200 Ohm - metre
- iv) 300 Ohm - metre
- v) 1000 Ohm – metre

3.4.5 The bidder shall have to check and prove through field test for phase combination in addition to his computer studies that attenuation due to transposition in the line is minimum out of all possible phase combinations within limits and the offered equipment will perform satisfactorily within limits of attenuation.

3.4.6 Furthermore, the bidder shall submit curves illustrating 'failure to trip probability' plotted against corona noise level in the presence of impulse noise due to switching of isolator and circuit breaker etc. Details of field tests and laboratory test for successful operation of this equipment under such adverse condition shall be furnished by the Bidder. These are to be related to end to end signaling and shall take into account the type of communication link. Details of field test and laboratory test for successful operation of the equipment under the above circumstances shall be submitted by the bidder illustrating the above parameters.

3.5 FREQUENCY PLANNING :

3.5.1 The contractor shall be responsible for doing the carrier frequency planning for these PLC links.

3.5.2 The equipment to be supplied by the contractor shall be complete with H.F hybrid permitting adjacent channel working.

3.5.3 The carrier frequency plan shall be prepared within one month of receipt of the frequency details of the existing PLCC Network from AEGCL. The contractor will submit detailed calculations with his frequency plan and also the recommendations regarding the line traps based upon his frequency planning.

3.5.4 The carrier frequency plan recommended by the contractor will be submitted for approval of Wireless Adviser/PTCC, New Delhi if required as per existing rules. In case a change is proposed by those authorities in the recommended carrier frequency plan, the contractor will have to modify his studies and propose accordingly to suit their requirement.

3.6 INTERCONNECTION DETAILS FOR TELE-PROTECTION:

3.6.1 Contractor should provide interconnection details between the protection coupler and the existing distance protection system at concerned protection and communication division of AEGCL.

3.7 DRAWINGS AND TECHNICAL LITERATURE and training:

For the purpose of submission of bid, the following Drawings and Technical Literature in Triplicate shall be submitted by the bidder along with the bid :

- a) Network diagram for data communication with SLDC, Kahilipara from the Grid Substations of AEGCL
- b) Detailed Drawing of each equipment showing Block Diagram, Plan, Elevation and Side view with all dimensions and weight.
- c) Schematic drawing of complete installation of equipment at each substation
- d) Technical Literature covering details of erection, operation, maintenance and technical particulars of each equipment

3.7.1 The Bidder will have to impart training of above PLCC equipment, particularly digital PLCC and Protection Coupler to at least 2 engineers of each circle of AEGCL **Free of Cost** so that the new incumbents get **acquainted with the new technology and can supervise these individually.**

3.8 SPARES:

Bidder to ensure that for all equipment, provision for supply of spares in future will be at least for another 15(fifteen) years.

3.9 TYPE TEST REPORTS

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

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

- (a) tests are conducted in an independent and well known testing laboratory, *or*
- (b) tests are conducted in manufacturer's own laboratory. In this case (i) the laboratory must have ISO 9000 (or its equivalent) series certification; and (ii) tests have been witnessed by technically qualified representatives of earlier clients or purchaser.

3.9.3 Test reports to be acceptable must be related directly to the materials offered. Test reports for higher class of items are acceptable with commitment to perform the type tests free of any charge on the particular items after the award of contract.

3.9.4 Type Test Reports older than five (5) years on the date of Technical bid opening shall not be accepted.

3.9.5 The above clauses have reference to bid document Clause 2.3.3, Appedix-2 of ITB, Section-1, 'Evaluation and Qualification Criteria'.

3.10 GUARANTEED TECHNICAL PARTICULARS

3.10.1 The Guaranteed Technical Particulars of the equipment shall be furnished by the Bidders in the prescribed Schedules of this Section with the Technical Bid. The Bidder shall also furnish any other information which, in their opinion, is needed to give full description and details to judge the item(s) offered by them.

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

3.11 TECHNICAL SPECIFICATION OF LINE TRAP

3.11.1 This specification provides for design, engineering, manufacture, stage testing, inspection and testing before dispatch, packing and delivery at destination of Line Trap along with all accessories specified herein. The line trap to be inserted into high voltage A.C transmission lines to prevent undue loss of carrier signal power, typical in the range 30KHz to 500KHz, under all power system conditions and to minimize interference from carrier signaling systems on adjacent transmission lines.

3.11.2 STANDARDS:

Unless otherwise specified elsewhere in this specification, the rating as well as performance and testing of the line trap shall conform but not limited to the latest revisions and amendments available at the time of placement of order of all the relevant standards as listed hereunder.

SI No	Standard No.	Title
1	IEC60353 Second edition , 1989-90	Line Trap for AC Power System
2	IS : 8792-1978	LINE TRAPS FOR AC POWER SPECIFICATION SYSTEMS -(First Revision)
3	IS : 8793-1978	LINE TRAPS FOR AC POWER SPECIFICATION SYSTEMS METHODS OF TESTS -(First Revision)
4	IS-9859 (PART-I)-1981	CODE OF PRACTICE FOR INSTALLATION AND MAINTENANCE OF OUTDOOR POWER LINE CARRIER EQUIPMENT PART I LINE TRAPS (Incorporating Amendment No. 1)
5	IEC 99	Lightning Arresters
6	IEC 99 - 1(1970)	Part-1 , Non-Linear resistor type arresters for AC systems
7	IEC 60099-4/2006	Metal-oxide surge arresters without gaps for a.c. systems
8	IS : 5561-1970	Terminal Clamp / Connector

3.11.3 PRINCIPAL TECHNICAL PARAMETERS:

The Line Trap covered in this specification shall meet the technical requirements listed hereunder. Line traps of different voltage rating shall conform to the following technical particulars:-

SI No	Technical Parameters	Specifications	
		132 kV	220 kV
2	Type of mounting	suspension	suspension

3	Suitable for system Frequency	50 Hz	50 Hz
4	Nominal System Voltage	132 KV	220 KV
5	Highest System Voltage	145 KV	245 KV
6	Rated Continuous Current	800 A	1250 A
7	Rated Short time current for 1 second	31.5 kA	40 KA
8	Asymmetrical peak value of the first half wave of the rated short time current	51 KAp	102 KAp
9	Rated inductance	0.5 mH	0.5 mH
10	Type of Tuning	Broad Band	Broad Band
11	Blocking Band frequency range	30-500 KHz	30-500 KHz
12	Minimum Guaranteed resistive component of impedance in Blocking Frequency range	570 ohm	570 ohm
13	Protective device	a) Non-linear resistive type Gapped lightning arresters for a.c. system b) polymer housed metal oxide surge arrester without gaps for AC system	a) Non-linear resistive type Gapped lightning arresters for a.c. system b) polymer housed metal oxide surge arrester without gaps for AC system
14	Nominal discharge current of protective device	10 KA	10 KA
15	Rated voltage of protective device	4.5 KV	9 KV
16	Minimum value of power frequency spark over voltage (Dry and wet) of protective device	6.75 KV rms	13.5 KV rms
17	Visual corona extinction voltage	97 KV rms	156 KV rms
18	Radio Influence Voltage (RIV)	< 500 micro volt	< 500 microvolt
19	Attenuation in tuned frequency band	>7.5 dB	>7.5 dB
20	Maximum tapping loss over blocking band I & II stated above	2.6 dB	2.6 dB

21	Maximum tapping loss based on blocking resistance	2.6 dB	2.6 dB
22	Insulation class	Class F	Class F
23	Maximum working stress	Twice the weight of wave trap + 500 Kgs	Twice the weight of wave trap + 500 Kgs

3.11.4 GENERAL TECHNICAL REQUIREMENTS:

A line trap, consisting of a main coil in the form of an inductor, a tuning device and a protective device, is intended for insertion in a high voltage power transmission line between the point of connection of carrier frequency signals and adjacent power system elements such as busbar, transformers etc. The tuning device connected across the main coil ensures, with proper adjustment, that the line trap presents relatively high impedance at one or more carrier frequencies or carrier frequency bands, whereas the impedance of the line trap at power frequencies is negligible. A line trap may also be used to limit the loss of carrier-frequency at a power system tee point.

3.11.4.1 Main Coil:

An inductor carries the power frequency current of the high voltage transmission line. Wave trap shall consist of a main coil designed to carry continuously the rated current at the maximum ambient temperature and at full operating line voltage. It shall be supplemented with a protective device and a tuning device.

3.11.4.2 Tuning Device:

Line traps are to be tuned for a carrier frequency band, which will depend upon the operation carrier frequency pair chosen for transmission lines in question. The resistive component of impedance of the wave trap within its band shall not be less than 570 ohms. The wave traps should be provided with suitable barriers to prevent the entry of birds into the same.

3.11.4.3 Protective Device:

The device connected across the main coil and tuning device which prevents the line trap from being damaged by transient over voltages which may occur across it. The protective device shall be so designed and arranged that neither a significant alteration in its protective function nor physical damage shall result either from the temperature rise or magnetic field of the main coil at continuous rated current, rated short-time current or from emergency overload current. It shall neither enter into operation as a result of the power frequency voltage developed across the line trap by rated short time current nor shall it remain in operation after a response to a transient over voltage which is immediately followed by the power frequency voltage developed across the line trap by rated short-time current.

3.11.4.4 The protective device shall be shunt connected to the main coil and the tuning device.

3.11.4.5 For proper coordination with the lightning arrester installed in the substations and generating stations, the wave traps shall be provided with protective device with nominal discharge current of 10 KA.

3.11.5 DESIGN REQUIREMENTS:

3.11.5.1 Ability to withstand rated short-time current: The line trap so designed shall be capable to withstand the mechanical forces produce by asymmetrical peak value of the short-time current.

3.11.5.2 Insulation level:

The insulation level for the insulation between the terminals of a line trap is governed by the rated voltage of the protective device. The insulation of the main coil and the tuning device shall be adequately rated for:-

- a) the voltage developed across the line trap at the rated power frequency by the rated short-time current. The rated voltage of the protective device shall be higher than this voltage developed across the line trap.
- b) the front of wave impulse spark over voltage or the residual voltage caused by the nominal discharge current of the protective device, whichever is higher.

3.11.5.3 System Voltage insulation:

The system voltage insulation of a line trap is provided by insulator strings or post insulators. The line trap system voltage insulation shall be consistent with the other equipment in the associated high voltage transmission network.

3.11.5.4 Tensile strength of suspension system:

The suspension system of a line trap shall be designed for a tensile stress of at least twice the mass of the line trap in kilograms, multiplied by 9.81 to convert to newtons, plus 5000 N.

3.11.6 **Accessories :**

a. **Bird barriers:** The bird barrier design shall be such that no entrance to the line trap shall admit a sphere having a diameter of 16 mm.

b **Terminal clamp/connectors:** The clamp shall be suitable for AAAC/ACSR Zebra conductor in case of 220 kV system and AAAC/ACSR Panther conductor in case of 132 kV system. The clamp, connectors, nuts, bolts and hardware shall be of nonmagnetic material and shall conform to IS: 5561. The clamp shall be fitted on incoming and outgoing pad of Line Trap. The incoming and outgoing conductor shall be on either side of the clamp fitted with the help of bolts and nuts arrangements. The clamp shall be designed to carry the continuous load of 800 Amp at 132 KV and 1250 Amp at 220 KV and shall withstand a dynamic short circuit current of 31.5 and 40 KA respectively for 1 second. The temperature rise shall not exceed 35°C over 50°C ambient. All the castings shall be free from blowholes, surface blisters, cracks and cavities. All sharp edges shall be blurred, rounded off and buffed. Clamp and connectors shall be designed to avoid corona formation. The visual corona extinction voltage shall not exceed 97 KV (rms.) for 132 kV and 156 kV (rms) for 220 kV. Radio interference voltage for clamp and connectors shall not exceed 500 microvolt at 97 KV (rms.) for 132 kV and 156 kV (rms) for 220 kV. No current carrying parts of the Clamps and connector shall be less than 10 mm of thickness.

3.11.7 **RATING PLATES:**

The main coil, the tuning device and the protective device shall be provided with rating plates of weatherproof material fitted so that they are readily visible.

3.11.8 The Line Trap shall be supplied with fitted Tuning Pot and Lightning Arrester. All the type test reports as per relevant IS/IEC of the Line Trap offered shall be invariably enclosed with the offer. Offers without Type Test Report shall not be considered. The Line Trap shall be fitted with top and bottom clamp with Connector etc. complete in all respect for connecting line trap to line side and equipment side respectively. The clamp, connector, nut, bolts, etc. which is affected by magnetic field of line trap shall be of nonmagnetic material. All iron parts shall be hot dip galvanized. The arrangement of

minimum three nos. of tie rod assembly shall be required to avoid shearing from thread of tie rod assembly.

3.11.9 DRAWINGS:

The following drawings indicating all the dimensions etc. with complete technical details shall be enclosed together with technical bid :

- (i) General arrangement for Line Trap indicating dimensions, technical parameters, weight etc
- (ii) Suspension / mounting arrangement indicating dimensions
- (iv) Tuning pot ckt arrangement
- (v) Details of terminal clamp/connectors suitable for AAAC/ACSR conductor
- (viii) Suspension fittings (hardware) for line trap
- (ix) Disc Insulator with general technical specification
- (x) Lightning Arrestor as protective device for Tuning Pot
- (xi) Bird barriers
- (xii) Other accessories of Line Trap
- (xiii) Any other components/drawings not covered

3.12 TECHNICAL SPECIFICATIONS OF LINE MATCHING UNIT/LINE MATCHING DISTRIBUTION UNIT (LMU/LMDU):

3.12.1 GENERAL REQUIREMENT:

The indoor PLCC equipments are connected to line through co-axial cable – outdoor coupling device – Coupling Capacitors for transmission & reception of carrier frequency signals. Coupling devices are connected in between HF terminal of Coupling Capacitor and indoor PLCC terminals through co-axial cable.

The coupling device proposed to be procured shall perform following functions as a composite unit:

1. Compensate the reactive component of coupling capacitor(s) impedance in order to efficiently transmit the carrier signals with the help of tuning device.
2. It shall match the impedance between power line and coaxial cable end.
3. Two numbers 'phase to earth' type coupling filters shall be used to achieve 'phase to phase/' Inter-circuit coupling'. Connection between secondaries of the two phase to earth type coupling device shall be through a balancing transformer/hybrid such that reliable communication shall be ensured even when one of the coupled phase is earthed or open circuited on the line side.
4. Galvanic isolation of primary & secondary terminals of coupling device.
5. It shall drain the power frequency current derived from coupling capacitor(s) to earth.
6. It shall arrest the voltage surges received from power line at the terminal of coupling device.
7. It shall provide direct & efficient earthing to primary terminals of the coupling device. The equipments shall be of latest components, technology and highly reliable. The equipments offered must have been type tested.

3.12.2 SCOPE OF SUPPLY:

Line Matching Unit / Line matching Distribution Unit shall be supplied fully wired complete in all respect with all interconnections and coaxial cable termination facilities with UHF glands. The equipment shall be of latest design with modular construction.

3.12.3 SPECIFICATION:

(a) STANDARDS :

The coupling device offered shall confirm to following standards:

1. IS 8997: Specification for coupling devices for PLC system
2. IEC 481: Coupling devices for power line carrier system
3. IS 8998: Methods for tests for coupling devices for PLC System

(b) CONSTRUCTION:

The coupling device offered shall be fully programmable.

The Unit shall be modular in design and should accommodate tunable modules for different use.

The bidder will furnish the details of tunable modules, which can be used along with the device.

The composite unit shall be housed in *waterproof Fibre Box modular construction cabinet with proper ventilation & vermin proofing arrangement*. Proper arrangement for mounting the same on G. I. supporting structure shall be made.

The equipments shall work satisfactorily under hot humid & polluted atmospheric conditions.

Suitable arrangements shall be provided for the connection of co-axial cables in the coupling device and supply of cable connectors shall be in the scope of supply.

Cable glands of good quality suitable for co-axial cables shall be provided.

3.12.4 FEATURES:

1. The coupling device offered shall be suitable for nominal equipment side impedance of 75 ohms unbalanced and 150 ohm balanced as required.
2. The equipment offered shall work satisfactorily for carrier frequency range of 50-500 KHz.
3. The line side impedance shall be 200 Ohms to 400 Ohms for phase to earth couplings and 400 ohms to 600 ohms for phase to phase coupling.
4. The coupling device shall be suitable for use with coupling capacitor of 2200 to 8800 pf and shall be programmable.
5. Insulation withstand voltage shall be 10 kV RMS for one minute.
6. Impulse withstand voltage for high voltage input side to ground shall be 10 kV and co-axial cable input to ground shall be 3 kV.
7. The nominal peak power of the coupling device shall not be less than 1000W.

8. The coupling device shall have inbuilt three element protective device consisting of drainage coil, Lighting Arrestor and Earthing Switch confirming to relevant standards. The same shall be generally meet the following requirements:
- (a) **Drainage Coil:** The drainage coil shall effectively ground the 50Hz power frequency current received from coupling capacitor(s) but shall not permit HF signal to ground. The power frequency impedance shall be less than 1.5 ohm and continuous current capacity at power frequency shall be 1.5Amp.
 - (b) **Lightning Arrestor:** The lightning arrestor shall effectively ground the high voltage surges coming from power line side at the terminal of coupling device. The lightning arrestor shall stand spark over voltage of 3.3 kV.
 - (c) **The Earth Switch:** The earthing switch shall ground the primary terminal of coupling device when required. The rated current for earthing switch shall not be less than 150 Amp.
9. The interconnections in the coupling device shall be made with special high frequency Liz wires.
10. The impedance matching shall be perfect so that the return loss is minimum.

3.12.5 TYPE TESTS:

Valid Type Test reports not more than 5 Year old performed for following tests along with all test result sheets & reference documents shall be submitted with the offer here under.

- Composite Loss
- Return Loss
- Distortion & Intermodulation
- Lightning Impulse Voltage Withstand
- Power frequency Voltage Withstand
- Drain Coil
- Environmental test
- Degree of protection : IP 55
- Earth switch

3.12.6 TECHNICAL PARTICULARS FOR MODULAR COUPLING DEVICE

SI No	Description	Specification
1	Carrier Frequency Range	78-500 kHz
2	Maximum temperature limit for satisfactory operation of coupling device mounted outdoor	65° C
3	Composite loss	≤ 1 dB

4	Return loss	≥ 12 dB
5	Nominal line side impedance	240/320 ohms (Phase to earth)
6	Nominal carrier equipment side impedance	75ohms unbalanced and 150 ohm balanced
7	Nominal Peak Envelop power with Distortion and Inter-modulation Products 80 dB Down)	1000 watts for frequency \geq 100 kHz
8	Power frequency Impedance between primary terminal and Earth Terminals of Coupling Device	Less than 20 ohm
9	Maximum number of PLC terminals that can be connected in parallel	
	(a) 20 W (P.E.P.) PLC Terminals	(a) 8 to 12 nos.
	(b)40 W (P.E.P.) PLC Terminals	(b) 6 to 8 nos.
	© 100 W (P.E.P.) PLC Terminals	© 4 to 6 nos.
10	1 Minute Power Frequency Insulation level between Primary and Secondary Terminals of Coupling Device	10 KV rms
11	Impulse (1.2/50 micro-sec) withstand level between Primary and Secondary Terminals of Coupling Device	10 kV peak
12	Drainage Coil :	
13	(a) Power frequency impedance	0.2 to 0.7 mH for High-pass 40 mH for bandpass filter
	(b) Continuous power frequency current	≤ 1.5 Arms
	(c) Short time rating for 0.2 sec	≤ 50 A
14	Lighting Arrestor :	
15	(a) Type of construction	Non linear resistor type with spark gap
	(b) Rated Voltage	660 V
	(c) Rated discharge current	5 KA _{peak}
	(d) Maximum permissible short time current	30 kA peak
	(e) Impulse spark over voltage (max)	3300 V _{peak}
16	Earthing Switch	
	(a) Rated Current	300 A _{rms}
	(b) Short time current	16 kA, 1 sec
17	Details of interlock provided with cover enclosed	
18	Overall dimensions	
19	No of HF terminals provided for carrier equipment connection	
20	Whether suitable for mounting Outdoor in Switchyard & Type of mounting	

3.13 Technical Specifications Digital Power Line Carrier Equipment

3.13.1 General

Power Line Carrier (PLC) System will primarily be used for tele-protection, voice & data communication. The new Power Line Carrier (PLC) circuits in conjunction with existing OPTICAL communication network shall connect the new SAS networks (IEC61850) of existing and new 132 and 220 KV substations of AEGCL via GATEWAY to the nearest Wideband nodes to SLDC, Kahilipara for data communication. Digital PLCC equipment shall be procured under this project. A number of RTUs are spread over several grid substations of AEGCL. DPLC shall be applied in analog mode via FSK channels or in digital mode via the implemented data pump to transmit RTU information. Data transmission through RTU in bandwidth less than 4 kHz shall be applied in point-to-point or point-to-multipoint applications (e.g. polling SCADA).

3.13.2 The PLC equipment shall comply with the standard IEC 60495, second edition, 1993.

3.13.3 For safety, the equipment shall conform to IEC 60950-1, 2005.

3.13.4 For EMC and EMI, the equipment shall comply with IEC 61000-6-2(Immunity) and IEC610006-6-4 (Emission). In particular, it shall comply with IEC 60255-5, IEC 61000-4-2/-3/-4/-5/-6/-8/-12/-16/-17/-18, IEC 60255-22-1, EN 55022 / CISPR22.

3.13.5 The system shall be of modular design and allow for easy upgrading.

3.13.6 The PLC equipment shall not use fans or similar for artificial cooling under normal operating conditions.

3.13.7 Carrier frequency section

3.13.8 The PLC equipment shall support DPLC (Digital PLC) and APLC (Analog PLC) mode of operation in the same platform, software programmable via PC/Notebook.

3.13.9 Modulation shall be SSB (Single-Side-Band) for APLC operation MCM(Multi-Carrier- Modulation) with Trellis Coding for DPLC mode operation.

3.13.10 Modulation and coding shall be implemented as software functions in DSP (Digital Signal Processor) technology.

3.13.11 Transmission mode shall be 2-wire frequency duplex.

3.13.12 The nominal carrier frequency shall be programmable from 40 kHz to 500 kHz minimum, preferably however up to 1000 KHz for nominal bandwidths ≥ 4 kHz.

3.13.13 The carrier frequency stability over the stated temperature operating range shall be equal or better than ± 1 ppm.

3.13.14 The nominal bandwidth B_N for transmitting or receiving shall be programmable from 4 kHz to 32 kHz in steps of 4 kHz, and to 2 kHz or 2.5 kHz (for single purpose teleprotection).

3.13.15 Transmit (T_x) and receive (R_x) bands shall be configurable for adjacent or non- adjacent operation.

3.13.16 Transmit output power shall be user-programmable up to 50 W (Peak Envelop Power). 100 W PEP transmit power shall be available as an option. The output power shall be reducible in steps of 1 dB via user interface program (HMI).

3.13.17 The nominal output impedance shall be 75 Ohm unbalanced or 150 Ohm balanced as an option.

3.13.18 The return loss in the transmit band shall be ≥ 10 dB, according to IEC 60495.

3.13.19 The tapping loss shall be ≤ 10 dB, according to IEC 60495.

3.13.20 The receiver selectivity shall be > 65 dB at 300 Hz from the band edges.

3.13.21 The AGC range of the receiver shall be 40 dB minimum.

3.13.22 System Operation

- 3.13.23 The PLC shall be programmable via PC with HMI/GUI (Graphical User Interface) based on MS-Windows.
- 3.13.24 The PLC system shall facilitate the programming and monitoring of the remote terminal from the local terminal using the standard GUI/HMI (Human-Machine-Interface).
- 3.13.25 An EMS (Element Management Service) shall be incorporated in the HMI for monitoring and programming of the PLC terminals in the network. The EMS shall allow remote cyclic alarm polling of all the PLC terminals in a network.
- 3.13.26 Supervision of a PLC network shall optionally be possible using SNMP (Simple Network Management Protocol), serving communication network management systems with alarm and equipment information.
- 3.13.27 Remote access to the equipment over IP networks shall make use of the SSL/TLS protocol for secure communication. Equipment internal user authentication and logging of security relevant data shall be supported.
- 3.13.28 Command and alarm events as well as special system events (e.g. equipment reset) shall be stored by an internal event-recorder in a non-volatile memory. At least 1'000 command events and another 1'000 alarm/system events shall be recordable. The latest 1'000 events of each type must always be available, even in case of a memory overflow.
- 3.13.29 A clock synchronizing input shall be provided, to synchronize the internal real time clock with an external IRIG-B signal.
- 3.13.30 Back-up batteries for preserving the data (configuration, event recorder, etc.) during loss of supply are not accepted.
- 3.13.31 The Workstation or PC/Notebook shall be connectable via a serial RS-232 port or via Ethernet/IP port(s).
- 3.13.32 With the Ethernet/IP interface option it shall be possible to access the PLC terminal via LAN intranet.
- 3.13.33 **Speech and Audio Frequency (AF) signal transmission**
- 3.13.34 The PLC shall be configurable for providing up to 3 analog AF (audio-frequency) channels with 4 kHz gross bandwidth each.
- 3.13.35 The useful frequency band shall range from 300 Hz to 3720 Hz for each AF channel.
- 3.13.36 For each channel, a speech low-pass filter shall be configurable with a programmable upper cut-off frequency, ranging from 2 kHz to 3.4 kHz in steps of 200 Hz.
- 3.13.37 Speech interfaces shall be configurable as 4-wire E&M, 2-wire FXO or 2-wire FXS.
- 3.13.38 It shall be possible to configure 3 analog speech channels in 8 kHz or in 12 kHz RF-transmission bandwidth.
- 3.13.39 Inter-channel crosstalk shall be compliant with IEC 60495.
- 3.13.40 A compandor according to ITU-T G.162 shall be configurable via HMI for each speech channel. Control inputs shall be provided for compandor switching (on/off) by the PABX.
- 3.13.41 The frequency band above speech shall be available for the transmission of narrowband modem signals from internal or external modems.
- 3.13.42 The level range of the AF-input/output ports shall be in accordance with IEC 60495.
- 3.13.43 Digital transit filters, programmable with respect to bandwidth and center-frequency in steps of 60 Hz, shall be available for each AF channel for the local extraction, insertion and transit-connection of selected teleoperation frequency bands.
- 3.13.44 An equalizer shall be available for each AF channel for equalizing amplitude response distortions of up to +/- 12 dB.
- 3.13.45 The equalizer shall also be configurable for equalizing group delay distortions of up to 2 ms.

- 3.13.46 The frequency response before and after equalization shall be displayed in graphical form by means of the GUI (HMI).
- 3.13.47 Equalization of the channel frequency response in both directions shall be possible from one (either) end.
- 3.13.48 Integrated Digital Compressed Voice shall be available as an option. Up to 16 digital compressed speech channels shall be supported per PLC link.
- 3.13.49 The data rate required for one compressed speech channel shall be less than 7 kbit/s.
- 3.13.50 In a substation, selected compressed voice channels shall be through connectable on a digital basis to other PLC terminals/links.

3.13.51 **Narrowband Data Transmission**

- 3.13.52 The PLC shall provide - as software options – up to four integrated modems for narrowband data transmission.
- 3.13.53 Transmission speed, channel center-frequencies and the spectral bandwidth shall be programmable in steps for commonly used data rates, ranging from 100 bit/s to 9'600 bit/s in bandwidth of 240 Hz to 3'400 Hz respectively.
- 3.13.54 The narrowband modems shall be designed for low delay and short recovery times following a link disturbance.
- 3.13.55 Adaptive equalizers, individually configurable for each narrowband modem, shall ensure optimum performance over time, by compensating changing channel characteristics. In a 4 kHz channel, it shall be possible to transmit up to 4 x 2'400 bit/s, or 2 x 4'800 bit/s, or 1 x 9'600 bit/s.
- 3.13.56 Data transmission above 2 kHz band-limited speech shall be possible at 2 x 2'400 bit/s or 1 x 4'800 bit/s.

3.13.57 **Broadband Data Transmission**

- 3.13.58 The PLC shall provide – as software option – an integrated modem for broadband / high speed data transmission. Transmission speed and spectral bandwidth shall be programmable via PC/Notebook.
- 3.13.59 The speed and transmission bandwidth shall be programmable for up to 32 kbit/s in 4 kHz spectral bandwidth, up to 128 kbit/s in 16 kHz bandwidth and up to 256 kbit/s in 32 kHz bandwidth.
- 3.13.60 The data rates shall be selectable in steps, compliant with commonly used standardized data rates.
- 3.13.61 The system shall support automatic transmission speed adaptation in five user-defined steps, self-adapting to the prevailing line condition (noise and interference).
- 3.13.62 The broadband modem shall provide a facility for automatic detection and suppression of narrowband interferers.
- 3.13.63 Special operating modes shall allow transferring analog speech (with an upper cut-off frequency of 2 kHz) and a broadband modem (operated in the frequency band above 2 kHz) in channels with nominal bandwidth B_N of 4 kHz and 8 kHz. The data rate of the broadband modem using the remaining 2 kHz bandwidth shall be at least 9.6 kbit/s, the data rate of the broadband modem using the remaining 6 kHz bandwidth shall be up to 48 kbit/s.

3.13.64 **Data Multiplexing**

- 3.13.65 The PLC equipment shall provide an internal multiplexer for the time-division multiplexing of up to 6 serial data channels and/or Ethernet/IP traffic.
- 3.13.66 Data ports shall be compliant with V.24/V.28, RS-232 and/or V.11/X.21/X.24.

- 3.13.67 The internal multiplexer shall provide data flow control for the asynchronous ports and speed adaptation for the synchronous ports according to the prevailing aggregate data rate and HV power line condition.
- 3.13.68 All data ports shall be electrically isolated from ground and against each other.
- 3.13.69 Point-point and point-multipoint operation with channel-sharing shall be possible, for polling SCADA protocols.
- 3.13.70 Three Ethernet/IP ports - electrical 10/100 Mbit/s, auto sensing - shall be available as an option. Preferably, a fourth port with exchangeable SFP transceivers for optical connection shall be provided.
- 3.13.71 The Ethernet/IP ports can be used for equipment programming & monitoring and/or for Ethernet/IP traffic switching/routing via the PLC link. No external device(s) shall be required for the latter purpose.
- 3.13.72 IP header compression shall be configurable in order to minimize bandwidth.
- 3.13.73 In switching mode, VLAN support shall be configurable (ID & priority). In routing mode, ≥ 10 IP routes and port based priority shall be configurable.
- 3.13.74 The bandwidth of the Ethernet/IP service via the PLC link shall follow the automatic speed adaptation of the broadband modem.

3.13.75 SALIENT FEATURES OF DIGITAL PLCC

The salient features for the Digital PLCC are detailed out as follows

A. HIGH FREQUENCY CHARACTERISTICS

- | | |
|--|---|
| 1. Frequency Range | 40-500 KHz as per IEC 60495 |
| 2. Center Frequency Programmable | In steps of 1 Hz |
| 3. Nominal Impedance | 75 ohm unbalanced (150 ohm balanced as an option) |
| 4. Return Loss in the transmitted band | ≥ 10 dB according to IEC 60495 |
| 5. Tapping loss | ≤ 1.5 dB according to IEC 60495 |
| 6. Image rejection | ≥ 75 dB |

B. TRANSMITTER / RECEIVER

- | | |
|--|---|
| 1. Nominal transmit output power (PEP) | 50 W fine adjustment through software(100 W as an option) |
| 2. Nominal Bandwidth | 4- 32 kHz (each direction) |
| 2. Output Level Adjustment | In steps of 1 dB (via user interface program (HMI)) |
| 3. Receiver Sensitivity | -30 dBm |
| 4. Receiver Selectivity | As per IEC-60495 |
| 5. AGC Range (Automatic Gain Control) | 40 dB dynamic range |
| 6. Minimum Signal to Noise Ratio | 20dB(QAM16/TCM32)/24dB(QAM64/TCM128) |

C.GENERAL CHARACTERISTICS

- | | |
|----------------|--|
| 1. Application | Universally applicable in analog, digital, or mixed operation. |
| 2. Modulation | Single Side Band with Suppressed carrier SSB) |

	Multi-Carrier (OFDM) modulation with Trellis Coding and forward error correction.
	Single step frequency conversion with Direct Digital Synthesis (DDS).
3. Gross Bit rate	32 kbps in 4 kHz, 128 kbps in 16 kHz upto 256 kbps in 32 kHz bandwidth
4. Test Facilities	Inbuilt accessible via HMI
5. Standards compliance	IEC 60495, IEC 60834-1, IEC 60950-1, IEC 61000-6-2, IEC 61000-6-4

D. USER INTERFACES

1. Data Interfaces and bit rates supported	RS- 232 (upto 19.2 kbps)/V.24 Ethernet, V.11
2. Voice interfaces supported	2W/4W E&M, FXO/FXS, Hotline
3. Speech level adjustment	Transmit level (-20 to + 5 dBm) Receive level (-20 to + 8 dbm)

E. OTHER CHARACTERISTICS

1. Alarms	Supported on panel
2. Operating Temperature and humidity	0 to +45 deg C, 90% humidity
3. Power supply voltage	-48 VDC +20/- 15%
4. Maximum power consumption	135 W for normal operation @ 75 Ohm

3.14 TECHNICAL SPECIFICATION OF TELE-PROTECTION COUPLER

- 3.14.1** The Digital protection signalling equipment is required to transfer the trip commands from one end of the line to the other end in the shortest possible time with adequate security and dependability. It shall also monitor the healthiness of the link from one end to the other and give alarms in case of any abnormality. The protection signalling equipment shall have a proven operating record in similar application over EHV systems and shall operate on 48V DC (+15%, -10%). It shall provide suitable interfaces for protective relays, which operate at 220/110V DC. Power supply points shall be immune to electromagnetic interface.

Principle of operation

During normal operation, protection signalling equipment shall transmit a guard signal/code. In case Protection signalling equipment is actuated by protective relays for transmission of commands, it shall interrupt the guard signal/code and shall transmit the command code to the remote end. The receiver shall recognize the command code and absence of the guard code and will generate the command to the protective relays.

All signal processing i.e. generation of tripping signal and the evaluation of the signals being received shall be performed completely digital using Digital Signal Processing techniques.

Loop testing

An automatic loop testing routine shall check the tele protection channel.

It shall also be possible to initiate a loop test manually at any station by pressing a button on the front of the equipment.

Internal test routine shall continuously monitor the availability of the protection signalling equipment.

Proper tripping signal shall always take the priority over the test procedure.

The high speed digital protection signalling equipment shall be designed and provided with following features.

- Shall work in Digital PLCC Terminal.
- Full Duplex operation
- Auto loop facility shall be provided
- Shall be able to transmit upto 4 commands with trip counter

Bidder shall quote for protection signalling equipment suitable for 4 commands with separate trip counters for transmit and receive. With regard to trip counters alternate arrangement .i.e. Laptop along with software & all accessories to download events including carrier receipt and transmit shall be acceptable. Laptop for the above shall be supplied at each substation under substation package.

High security and dependability shall be ensured by the manufacturer. Probability of false tripping and failure to trip shall be minimum. Statistical curves/figures indicating above mentioned measures shall be submitted along with the bid.

The DPC can be either housed in offered PLCC Panel or in separate panel.

Reports of the following tests shall be submitted for approval for protection signalling equipment and relays associated with the protection signalling equipment and interface unit with protective relay units, if any.

i) General equipment interface tests :

- a. Insulated voltage withstand tests
- b. Damped oscillatory waves disturbance test
- c. Fast transient bursts disturbance test
- d. Electrostatic discharge disturbance test
- e. Radiated electromagnetic field test
- f. RF disturbance emission test

ii) Specific power supply tests

- a) Power supply variations
- b) Interruptions

- c) LF disturbance emission
- d) Reverse polarity

iii) Tele-protection system performance tests

- a) Security
- b) Dependability
- c) Jitter
- d) Recovery time
- e) Transmission time
- f) Alarm functions
- g) Temperature and Humidity tests (As per IEC 68-2)
 - a. Dry heat test (50°C for 8 hours)
 - b. Low temperature test (-5°C for 8 hours)
 - c. Damp heat test (40°C/95%RH for 8 hours)

All the above tests at i, ii & iii (except temperature & humidity tests) shall be as per IEC 60834-1 and the standards mentioned therein.

iv) Relays

- a) Impulse voltage withstand test as per IEC 60255.
- b) High frequency disturbance test as per IEC 60255.

- 3.14.2 The bidder shall offer voice frequency transmission equipment, which shall work on frequency shift or coded signal principle for transmission/ reception of protection signals.
- 3.14.3 The teleprotection shall conform to IEC 60834-1, 1999.
- 3.14.4 Up to two integrated, independent teleprotection systems shall be configurable, each operating in its respective channel for single- or dual-channel PLC configurations.
- 3.14.5 Each teleprotection system shall support the transmission of up to four independent and simultaneous commands, programmable individually for blocking, permissive tripping or direct tripping (intertripping).
- 3.14.6 The transmission of the command signals shall be accomplished within the speech bandwidth or within the spectral bandwidth of the broadband modem, i.e. the teleprotection shall not require the allocation of extra / separate bandwidth.
- 3.14.7 During transmission of protection commands, other services like speech and data shall be temporarily interrupted in order to transmit the protection signal at increased power (command signal boosting).
- 3.14.8 The nominal transmission time shall be < 11 ms, < 12 ms and < 13 ms for blocking, permissive tripping and direct tripping respectively.
- 3.14.9 The equipment for protection shall have high degree of reliability and speed. It shall be guaranteed to function reliably in the presence of noise impulse caused by isolator or breaker operation.
- 3.14.10 The required SNR shall be less or equal than 6 dB for a dependability of < 1E-03 for blocking and permissive tripping, and for a dependability of < 1E-04 for direct tripping, i.e. the probability of missing a command in a maximum actual transmission time $T_{tr} = 15$ ms, 17 ms and 22 ms respectively.
- 3.14.11 The probability of an unwanted command (security) shall for any SNR condition (worst case) be not higher than 1E-03, 1E-06 and 1E-09 for blocking, permissive tripping and direct tripping respectively.

- 3.14.12 Electrically isolated opto-coupler inputs, solid-state outputs and mechanical relay outputs shall be available as I/O interfaces to the protection devices. Voltage range shall be selectable from 24 VDC to 250 VDC nominal.
- 3.14.13 Commands shall be freely allocatable to the inputs and the outputs, alarms shall be freely allocatable to the outputs (programmable via HMI).
- 3.14.14 It shall be possible to individually delay and prolongate the input command signals or to prolongate the output command signals and to monitor their duration (all parameters configurable via HMI).
- 3.14.15 All transmitted and received commands shall be logged with time stamps of 1 ms resolution by the internal event-recorder.
- 3.14.16 The teleprotection shall provide an integrated cyclic loop test.
- 3.14.17 The teleprotection shall be software-programmable via PC HMI with GUI.
- 3.14.18 For single-purpose teleprotection applications, the nominal transmission bandwidth of the PLC terminal shall be configurable for 2 kHz or 2.5 kHz in each direction. A service phone channel shall optionally be available in this operating mode.

3.14.19 PRINCIPAL TECHNICAL REQUIREMENTS OF TELE PROTECTION COUPLER :

Application	Transmission of protection commands for line and objects protection via DPLC equipment.
Number of units	2 integrated teleprotection module fitted in Digital PLCC cabinet or in a separate panel.
Number of commands	4 simultaneous commands per system, simultaneously transmitted. Individually configurable for blocking, permissive or direct tripping. Single purpose teleprotection in the 2 kHz APLC channel: 3 independent commands (as above) and 1 prioritised command (for direct tripping).
Secure against	Noise (continuous or impulsive), speech and sweep tones, DTMF (CCITT 48430 or ITU-T Q.23) in-band signalling
Bandwidth requirement	Nil; command signal transmission in-band (alternate purpose with signal boosting)
Processing of received signal	Adaptive (to prevailing channel condition, always ensuring shortest transmission time)
Guard signal	Pilot signal or own guard signal in speech band
Number and type of inputs Method of tripping Voltage ranges	4 optocoupler per teleprotection interface Contact and battery, or dry contact 24 to 250 V DC, selectable in 4 ranges
Number and type of outputs Tripping voltage Tripping current	4 solid state relays and 2 mechanical relay contacts per teleprotection interface. 5 to 250 V DC ≤ 1 A carry / 2 A peak solid state 5 A carry / 20 A peak mechanical relay
HMI configurable	Command and alarm assignment to I/O ports, Command pick-up times, hold times, duration monitoring State of command outputs during link alarm Alarm and unblocking level thresholds
Test facilities	Manual or periodic loop test every 1,3,6,12,24 hours.

Event recording	Time-stamped command events, command counters, stored in non-volatile memory. Clock synchronizing input for IRIG-B available		
Teleprotection performance	Blocking	Permissive tripping	Direct tripping
Nominal transmission time	<11 ms	<12 ms	< 13 ms
Dependability(SNR=6 dB) (Probability of not receiving a command in a maximum actual transmission time)	<1E-03	<1E-03	<1E-04
	15 ms	17 ms	22 ms
Security (Probability of unwanted command under worst-case SNR condition)	<1E-03	<1E06	<1E-09

ANNEXURE-I
GUARANTEED TECHNICAL PARTICULARS OF LINE TRAP
(TO BE FILLED AND SIGNED BY THE BIDDER)

SI No	Description	FOR 132 KV LINE TRAP	FOR 220 KV LINE TRAP
1	Name and address of manufacturer and country		
2	Type /Model		
3	System voltage rating		
4	Continuous current rating at 50° C		
5	Maximum symmetrical short circuit current rating for 3 sec. duration		
6	Asymmetrical peak value of first half of rated short time current		
7	Rated inductance		
8	Blocking range		
9	Minimum Guaranteed resistive component of impedance in Blocking Frequency range		
	a. Centre frequency		
	b. Over Blocking range		
10	Type of tuning		
11	Variation in 50 Hz impedance over degree centigrade variation in ambient temperature		
12	Variation in resonant frequency band per degree centigrade variation in ambient temperature		
13	Impedance at tuned frequency		
14	Change in impedance per degree Centigrade change in ambient temp.		
15	Attenuation in Tuned Frequency Band		
16	Attenuation at the distance of 10 kHz from the tuned frequency band		

17	Maximum Tapping loss		
18	Type of Mounting		
19	Class of insulation of line trap		
20	Temperature rise in line trap under rated continuous current (Specify the value)		
21	Visual corona Inception voltage		
22	Visual corona Extinction voltage		
23	Radio interference voltage		
24	Type of incoming & outgoing terminal		
25	Maximum working stress		
26	Ultimate tensile strength		
Technical data for protective device			
1	Type of Protective device provided for protection of capacitors and coil against voltage surges & type of class		
2	Basic insulation level		
3	Standard nominal discharge current of protective device for 8/20 micro second wave impulse		
4	Rated voltage of the protective device (Arrester)		
5	Minimum value of power frequency spark over voltage (dry & Wet) of protective device		
6	Impulse spark over voltage of protective device		
7	Virtual steepness and maximum front of wave impulse spark over voltage of protective device		
8	Maximum residual discharge voltage of protective device for 8/20 micro second impulse discharge current of		
	a) 5000 A		
	b) 1000 A		
Technical data for tuning device			
1	Power frequency withstand voltage for 5 sec		
2	Tuning band (Blocking band)		
1	Material of main coil		
2	Material of terminal connector		
3	Material of suspension link		
4	Material of mounting hard wares		
5	Net weight		
6	Whether corona rings are provided?		
7	Whether Bird barriers are provided?		
8	Overall diameter		
9	Total height		
10	No. of turns in Line trap main coil		
11	Type of conductor whether solid or stranded		
12	Cross sectional area of conductor		
13	Overall conductor size		
14	Type of construction i.e. No. of coils and whether open type or covered with insulating material		
15	Type and material of spacers between turn to		

	turn		
16	No. of tie rods in tie rod Assembly		

ANNEXURE-I
GUARANTEED TECHNICAL PARTICULARS COUPLING DEVICE
(TO BE FILLED AND SIGNED BY THE BIDDER)

SI No	Description	Particulars
A	Name of manufacturer, address and country	
B	Type, Model and Catalogue No	
1	Carrier Frequency Range	
2	Maximum temperature limit for satisfactory operation of coupling device mounted outdoor	
3	Composite loss	
4	Return loss	
5	Nominal line side impedance	
6	Nominal carrier equipment side impedance	
7	Nominal Peak Envelop power with Distortion and Inter-modulation Products 80 dB Down)	
8	Power frequency Impedance between primary terminal and Earth Terminals of Coupling Device	
9	Maximum number of PLC terminals that can be connected in parallel	
	(a) 20 W (P.E.P) PLC Terminals	
	(b) 40 W (P.E.P.) PLC Terminals	
	© 100 W (P.E.P.) PLC Terminals	
10	1 Minute Power Frequency Insulation level between Primary and Secondary Terminals of Coupling Device	
11	Impulse (1.2/50 micro-sec) withstand level between Primary and Secondary Terminals of Coupling Device	
12	Drainage Coil :	
13	(a) Power frequency impedance	
	(b) Continuous power frequency current	
	(c) Short time rating for 0.2 sec	
14	Lighting Arrestor :	
15	(a) Type of construction	
	(b) Rated Voltage	
	(c) Rated discharge current	
	(d) Maximum permissible short time current	
	(e) Impulse spark over voltage (max)	

16	Earthing Switch	
	(a) Rated Current	
	(b) Short time current	
17	Details of interlock provided with cover enclosed	
18	Overall dimensions	
19	No of HF terminals provided for carrier equipment connection	
20	Whether suitable for mounting Outdoor in Switchyard & Type of mounting	

ANNEXURE-I
GUARANTEED TECHNICAL PARTICULARS OF DIGITAL POWER LINE CARRIER COMMUNICATION
TERMINAL
(TO BE FILLED AND SIGNED BY THE BIDDER)

SI No	Decription	Particulars		
1	Name and address of manufacturer and country			
2	Model No			
3	Operating mode			
4	Modulation			
5	Nominal Bandwidth			
6	Standard compliance			
7	Nominal transmit output power (PEP)			
8	Carrier frequency range and stability			
9	Nominal output impedance			
10	Return loss in the transmit band			
11	Tapping loss			
12	AGC (Automatic Gain Control)			
13	Receiver sensitivity			
14	Receiver selectivity			
15	Power supply			
16	Power consumption			
17	Alarm relay outputs			
18	Event recording			
19	Ambient Conditions			
	Climatic condition			
	Mechanical condition			
	Vibration and shock			
20	Dimensions and weight			
21	Speech Interface	E&M	FXS	FXO
	a) Impedance			
	b) Transmit level range			
	c) Receive level range			
22	No Transit Filters			
23	No of data ports and bit rate supported			
	a) V.24 ports/RS232			
	b) V.11 ports			
	c) LAN ports			
24	Speech + data + teleprotection channel at 8 kHz B.W.			
25	Type of speech channel			
26	No of speech channel in 8 kHz and 12 kHz Bandwidth			
27	Minimum signal to noise ratio			
28	Gross bit rate			
29	Voice interfaces supported			
30	Speech level adjustment (T _x and R _x)			
31	Speech coding algorithm and bit rate supported			
32	Number of Broadband modems,transmission bandwidth and data rates			
33	Number of narrowband modems, bandwidth and data rate			
34	Type and No of channels of data multiplexer			

35	No of Digital transit ports	
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ANNEXURE-I
GUARANTEED TECHNICAL PARTICULARS OF DIGITAL TELE PROTECTION COUPLER
(TO BE FILLED AND SIGNED BY THE BIDDER)

SI No	Description	Particulars			
1	Application				
2	Number of units				
3	Number of commands				
4	Secure against				
5	Bandwidth requirement				
6	Processing of received signal				
7	Guard signal				
8	Number and type of inputs Method of tripping Voltage ranges				
9	Number and type of outputs Tripping voltage Tripping current				
10	Whether HMI configurable, if yes specify				
11	Test facilities				
12	Event recording				
13	Teleprotection performance		Blocking	Permissive	Direct
	Nominal transmission time	T			
	Dependability(SNR=6 dB) (Probability of not receiving a command in a maximum actual transmission time)	P			
		T _r			
Security (Probability of unwanted command under worst-case SNR condition)					

Section - 4

**General Conditions of Supply and Erection of
AEGCL**

This Section 'General Conditions of Supply and Erection of AEGCL' is supplied separately and supplementary to Section -5 'Special Conditions of Contract' of this document.

Whenever there is a conflict, the provisions in SCC or the other Sections of this document shall prevail over those in the 'General Conditions of Supply and Erection of AEGCL'.

Section 5 - Special Conditions of Contract

This Section 'SCC' is supplementary to Section -4 'General Conditions of Supply and Erection of AEGCL'.

Whenever there is a conflict, the provisions in this Section shall prevail over those in the 'General Conditions of Supply and Erection of AEGCL'.

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Section - 5 Special Conditions of Contract

5.1.0 DEFINITION OF TERMS

“Contract” means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Document) of the Contract Agreement (including any amendments thereto).

“Contract Price” means the price payable to the Supplier as specified in the Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Day” means calendar day

“Year” means 365 days.

“Month” means calendar month.

“Party” means the “Purchaser” or the “Supplier”, as the context requires.

“*Purchaser*” means the Assam Electricity Grid Corporation Limited (in short AEGCL) and its assignees.

The “*Supplier*” shall mean the tenderer / bidder whose tender/ bid has been accepted by the “Purchaser” and shall include the bidder’s legal representatives, successors and assignees.

“Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.

“Delivery” means the transfer of the Goods from the Supplier to the Purchaser in accordance with the terms and conditions set forth in the Contract.

“Completion” means the fulfilment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract.

“Related Services” means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other similar obligations of the Supplier under the Contract.

The “Specification” shall mean the “Purchaser’s Requirements”.

“Supplier” means the natural person, a company/firm, or a combination of these, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Agreement, and includes the legal successors or permitted assigns of the Supplier.

5.2.0 CONTRACT DOCUMENTS

5.2.1. Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

5.3.0 LEGAL JURISDITCTION

5.3.1. For any litigation arising out of the contract which cannot be resolved through mutual agreement or through Arbitration the honorable Guwahati High Court will have sole jurisdiction of all settlement.

5.4.0 LANGUAGE

5.4.1. The ruling language of the Contract shall be English.

5.5.0 SCOPE OF SUPPLY

5.5.1. The Goods and Related Services to be supplied shall be as specified in Schedule No. 1, Schedule No. 1A and Schedule No. 2 of Section -2, Bidding Forms.

5.5.2. Unless otherwise stipulated in expressly limited in the **Purchaser's Requirements**, the Scope of Supply shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Delivery and Completion of the Goods and Related Services as if such items were expressly mentioned in the Contract.

5.6.0 DELIVERY SCHEDULE

5.6.1. For the purpose of determining the completion time of the Contract, the date on which the Supplier signs the Contract Agreement, shall be taken as Commencement Date of the contract.

5.6.2. The Delivery of the Goods and Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Article 3 of the Contract Agreement (Contract Forms) or within such extended time to which the Supplier shall be entitled under SCC **Clause 5.17.0** hereof.

5.7.0 CONTRACT PRICE

5.7.1. The Contract Price shall be as specified in **Article 2 (Contract Price)** of the Contract Agreement.

5.7.2. Unless an escalation clause is provided for in the **Article 2 (Contract Price)**, the Contract Price shall be a firm shall not subject to any alteration, except in the event of a Change in the Works or as otherwise provided in the Contract.

5.8.0 TERMS OF PAYMENT

5.8.1. The Contract Price shall be paid as specified in subsequent sub-clauses, if not provided in Contract Forms, Section-6.

5.8.2. Payment against Goods and F&I (Price Schedule 1& 1A) shall be made as follows:-

100% payment would be admissible within six (6) weeks from the date of receipt of the plants/ materials /equipment at site in full and good condition less deduction of Retention Money (as per **SCC Clause 5.10.0**) and advance (if and as applicable as per **SCC Clause 5.8.4**) and as per terms and conditions stipulated in the Contract Agreement.

Payments as above will be made under following conditions:-

- a. Advance copy of bills in duplicate and following documents are received sufficiently in advance:
 - Suppliers invoice showing LOA reference, Goods description, quantity dispatched, unit price, total amount (6 Copies);
 - Packing List;

- Railway receipt/ LR;
 - Manufacturer's guarantee certificate of Quality;
 - Material inspection Clearance Certificate for dispatch issued by Purchaser;
 - Insurance certificate;
 - Physical verification certificate of material received at site by Purchaser/Purchaser's site representative.
- b. Any charges on account of late intimation and/or delivery of documents by the Bank are to be borne by the Supplier.
- c. The supplier should intimate the dispatch of each and every consignment to the "Purchaser" and the Consignee.
- d. All Bank charges are to be borne by the Supplier.

5.8.3. Payment against Installation and Other Services (Price Schedule 2) shall be made as follows:-

Payment up to 100% of erection items will be made against progressive monthly bills within six (6) weeks from the date of submission of bills less deduction of Retention Money (as per **SCC Clause 5.10.0**) and advance (if and as applicable as per **SCC Clause 5.8.4**) and as per terms and conditions stipulated in the Contract Agreement.

5.8.4. ADVANCE PAYMENT

No advance payment is applicable for this contract.

5.9.0 PERFORMANCE SECURITY DEPOSIT

5.9.1. Subject to **Clause 5.9.2**, the Supplier shall have to deposit to the extent of 10% (ten percent) of the total value of the order as performance security (Bank Guarantee), within seven (07) days of receipt of notification of award, duly pledged in favor of the Purchaser and such security deposits shall be valid up to 30 days beyond the warranty period.

5.9.2. In case the Supplier is not a Manufacturer, then this performance security shall be deposited as under:

(a) The Supplier shall have to deposit to the extent of 2.5% (two point five percent) of the total value of the order.

(b) The Manufacturer shall have to deposit to the extent of 10% (ten percent) of the total value of the order.

5.9.3. If the Supplier fails or neglects to observe, perform any of his obligations under the contract, it will be lawful for the "Purchaser" to forfeit either in full or in part at his absolute discretion, the security deposit furnished by the supplier.

5.9.4. No interest shall be payable on such deposits.

5.10.0 RETENTION MONEY

5.10.1. In addition to above Performance Security deposit, 10% value of each progressive bill will be retained by the Purchaser as 'Retention Money'. The amount will be held by the Purchaser till the supply and related services under the contract is completed.

5.10.2. No interest shall be payable on such retentions.

5.11.0 WARRANTY

- 5.11.1. The Supplier/Manufacturer warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
- 5.11.2. The Supplier/Manufacturer further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.
- 5.11.3. The warranty shall remain valid for ***Eighteen (18) months*** after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Purchaser's Requirement, or for ***twelve (12)*** months after the date of successful commissioning, whichever period concludes earlier.
- 5.11.4. If during the Period Warranty any defect should be found, the Purchaser shall give Notice to the Supplier/Manufacturer stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier/Manufacturer to inspect such defects.
- 5.11.5. If having been notified, the Supplier/Manufacturer fails to remedy the defect within a period of 15 (fifteen) days, the Purchaser may, following notice to the Supplier/Manufacturer, proceed to do such work, and the reasonable costs incurred by the Purchaser in connection therewith shall be paid to the Purchaser by the Supplier or may be deducted by the Purchaser from any monies due the Supplier or claimed under the Performance Security.

5.12.0 COPYRIGHT ETC

- 5.12.1. The Supplier shall indemnify the purchaser against all claims actions, suits and proceedings for the infringement or alleged infringement of any patent, design or copyright protected either in the country of origin or in India by the use of any equipment supplied by the Supplier but such indemnity shall not cost any use of the equipment other than for the purposes indicated by or reasonably to be inferred from the specification.

5.13.0 QUANTITY VARIATION

- 5.13.1. "Purchaser" shall have the right to increase the ordered quantity by 20% within 50 days of the period of completion and the same shall be carried out at the same rates /prices and terms and conditions stipulated in the order except in regard to completion schedule, which shall be mutually agreed upon in case of enhancement of the ordered quantity.

5.14.0 INSPECTION AND TESTING

- 5.14.1. The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in Sections 3, Purchaser's Requirements.
- 5.14.2. The inspections and tests may generally be conducted on the premises of the Supplier/Manufacturer, at point of delivery. Subject to Sub-Clause 5.14.3, The Supplier shall furnish, all reasonable facilities and assistance, including access to drawings and production data to the inspectors at no charge to the Purchaser.
- 5.14.3. The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in SCC Sub-Clause 5.14.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

- 5.14.4. Whenever the Supplier is ready to carry out any such test and/or inspection, the Supplier shall give a reasonable advance notice (not less than 30 days) of such test and/or inspection and of the place and time thereof to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
- 5.14.5. The Supplier/manufacture shall provide the Purchaser with a certified report of the results of any such test and/or inspection.
- 5.14.6. The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to SCC Sub-Clause 5.14.4
- 5.14.7. If it is agreed between the Purchaser and the Supplier that the Purchaser shall not attend the test and/or inspection, then the Supplier may proceed with the test and/or inspection, and should provide the Purchaser with a certified report of the results thereof.
- 5.14.8. The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to SCC Sub-Clause 5.14.5 & 5.14.7, shall release the Supplier from any warranties or other obligations under the Contract.

5.15.0 INSURANCE

- 5.15.1. The "Supplier" shall, have, unless, otherwise specified by the Purchaser, insure the materials through their underwrites at their cost and shall keep it insured against any loss/ damaged/ pilferage in transit, destruction or damage by fire/ flood, without exposure to vagaries of weather or through riot, civil commotion, war or rebellion, for the full value of the materials until the materials are received at the purchaser's destination store.
- 5.15.2. The "Supplier" shall be responsible for safe arrival at destination, unloading and receipt of the materials by the consignee. The Purchaser will discharge consignee's responsibilities only and shall not be responsible for any damage/ loss/ pilferage/ non-delivery by the carriers.
- 5.15.3. In case of any loss/ damage/ pilferage/ non-delivery/ short delivery by carriers etc.; the Supplier shall replace free of cost missing / damaged / lost materials within 30(thirty) days from the receipt of report thereof from the consignee(s) without waiting for settlement of their claims with their carriers / under-writers. Normally, such reports from the consignee(s) to the supplier shall be initiated within a period of 30(thirty) days from the date of receipt of each consignment by him /them.
- 5.15.4. If it is considered necessary that the damaged equipment either in part or in full to be sent back to the manufacturer's works for repair, the manufacturers/ suppliers will furnish the Bank Guarantee for the full value of equipment needing repairs and such Bank Guarantee shall remain valid till such time, the equipment are repaired and returned to the consignee in good condition. The to and fro freight, handling and insurance charges in such cases will be borne by the Supplier.
- 5.15.5. Unless, otherwise mutually agreed upon, in case of failure by the Supplier to replenish /make good of the loss /damage /short supplied quantities, within the stipulated period, the Purchaser reserves the right to forfeit the security deposit and/ or adjust any outstanding payment to the "Supplier" with the Purchaser or take any other appropriate action.

5.16.0 FORCE MAJEURE

- 5.16.1. "Force Majeure" shall mean any event beyond the reasonable control of the Purchaser or of the Supplier, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:
- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
 - (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
 - (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
 - (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
 - (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster
 - (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.
- 5.16.2. If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.
- 5.16.3. The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with **SCC Clause 5.17.0**.

5.17.0 EXTENSION OF TIME FOR COMPLETION

- 5.17.1. The Time(s) for Completion specified in the Article 3 of the Contract Agreement (Contract Forms) shall be extended if the Supplier is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:
- (a) any Change in the scope of works by the Purchaser; which justifies extension of completion time as provided in **SCC Clause 5.13.0**; and
 - (b) any occurrence of Force Majeure as provided in **SCC Clause 5.16.0**.
- 5.17.2. Except where otherwise specifically provided in the Contract, the Supplier shall submit to the Purchaser's Representative a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Purchaser and the Supplier shall agree upon the period of such extension. In the event that the Supplier does not accept the Purchaser's estimate of a fair and reasonable time extension, the Supplier shall be entitled to refer the matter to a Dispute Board, pursuant to **SCC Sub-Clause 5.20.0**.

5.18.0 LIQUIDATED DAMAGE

- 5.18.1. The Supplier guarantees that it shall attain Completion of the Works within the Time for Completion specified in the Contract Agreement pursuant to **SCC Sub-Clause 5.6.2**, or within such extended time to which the Supplier shall be entitled under **SCC Clause 5.17.0** hereof.

5.18.2. If the Supplier fails to attain Completion of the Works within the Time for Completion or any extension thereof under **SCC Clause 5.17.0**, the Supplier shall pay to the Purchaser liquidated damages at the rate of $\frac{1}{2}$ % (**half percent**) of the total Contract Price per week or part thereof delay. The aggregate amount of such liquidated damages shall in no event exceed **10% (ten percent)** of the total contract price.

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

5.18.3. Once the aggregated "Liquidated damage" reaches 10% of the total contract price, the Purchaser may consider following actions:

- (a) Procure the undelivered material/ equipment and/or complete the balance works from elsewhere giving notice to the supplier and to recover any extra expenditure incurred thereby for having to procure these materials and works at higher price, at the risk and responsibility of the Supplier; or
- (b) Cancel the contract wholly or in part and to complete the works at the full risk and cost of the Supplier and forfeit the security deposit.
- (c) Declare it as a "Contractual Failure" and act in accordance with **SCC Clause 5.19.0**.

5.19.0 CONTRACTUAL FAILURE

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

5.20.0 ARBITRATION

5.20.1. If at any time, any question, disputes or differences whatsoever shall rise between the Purchaser and the Supplier, upon or in relation to or in connection with the contract, either party may forthwith give notice to the other in writing of the existence of such question of dispute or difference and the same shall be referred to the adjudication of three Arbitrators, one to be nominated by the Purchaser the other by the Supplier and the third by the President of the Institution of Engineers, India/ Retired or Sitting Judge not below the status of a retired Judge of High Court of India. If either of the parties fail to appoint its arbitrators within 60(sixty) days after receipt of notice of the appointment of arbitrators then the President of the Institution of Engineers /retired or sitting Judge of India, as the case may be, shall have the power at request of either of the parties, to appoint an Arbitrator. A certified copy of the "President" making such an appointment shall be furnished to both parties

5.20.2. The arbitration shall be conducted as per provisions of the Indian Arbitration Act, shall be held at Guwahati or any other place as may be decided by the Purchaser. The decision of the majority of Arbitrators shall be final & binding upon the parties and the expenses of the arbitration shall be paid as may be determined by the Arbitrator. However, any dispute arising out of this contract will first be discussed and settled bilaterally between Purchaser and the Supplier.

Section - 6

Contract Forms

(This Section contains the Letter of Acceptance, the Contract Agreement and Appendices to the Contract Agreement which, once completed, will form the Contract along with the Section 4 and Section 5. The Bidder should note that this Section shall be completed fully at the time of Contract signing)

Section 6 – Contract Forms

This Section contains the Letter of Acceptance, the Contract Agreement and Appendices to the Contract Agreement which, once completed, will form the Contract along with the Section 4 and Section 5. The Bidder should note that this Section shall be completed fully at the time of Contract signing.

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1. Notification of Award

[AEGCL's letter head]

Letter of Acceptance Supply of Goods and Related Services

[date]

To: [Name and address of the Supplier]

This is to notify you that your Bid dated [date] for execution of the [name of the Contract and identification number, as given in the Contract Data] for the Contract Price in the aggregate of [amounts in numbers and words] [name of currency] (as per Price Schedule-1), as corrected and modified in accordance with the Instructions to Bidders is hereby accepted, and it is decided to award on you the 'Supply and Delivery Contract' covering inter-alia Ex-works supply and Delivery of all Goods including Related Services.

You are requested to furnish the Performance Security within seven (7) days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in this Section 6 (Contract Forms) of the Bidding Document

[Authorized Signature]

[Name and Title of Signatory]

Assam Electricity Grid Corporation Limited

Attachment: Contract Agreement

2. Contract Agreement

THIS AGREEMENT made the _____ day of _____, _____,
BETWEEN

Assam Electricity Grid Corporation Limited (herein after referred to as AEGCL), a corporation incorporated under the laws of Company Act, 1956 and having its registered office at First Floor, BijuliBhawan, Paltanbazar, Guwahati-781001, Assam and [**name of Supplier**], a firm/company incorporated under the laws of Company Act, 1956 and having its principal place of business at [**address of Supplier**] (hereinafter called "the Supplier"). [**in case of JV insert name and address of the Lead Partner as well as other Partners**]

WHEREAS AEGCL desires to engage the Supplier to the 'Supply and Related ServiceContract' covering inter-alia supply of **PLCC Equipment for its 220 kV & 132 kV Transmission Network with all accessories and delivery to various Substation Sites of AEGCL and Related Services for Package-B**, as detailed in the Contract Document, and the Supplier has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1 Contract Documents

- 1.1 **Contract Documents** (Reference SCC Clause 5.2.0)
The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract:
- a) This Contract Agreement and the Appendices hereto
 - b) LOA issued by the purchaser
 - c) Letter of Price Bid and Price Schedules submitted by the Supplier
 - d) Letter of Technical Bid and Technical Proposal submitted by the Supplier
 - e) Special Conditions of Contract
 - f) General Conditions of Supply and Erection.
 - g) Specification(Purchaser's Requirements)
 - h) Other completed Bidding Forms submitted with the Letters of Technical and Price Bids
 - i) Guaranteed and other Technical Particulars (as submitted with the Bid).
 - j) Any other documents (if necessary) shall be added here
- 1.2 **Order of Precedence** (Reference SCC Clause 5.2.0)
In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.
- 1.3 **Definitions** (Reference SCC Clause 5.1.0)
Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the SCC.

Article 2

- 2.1 **Contract Price** (Reference SCC Clause 5.7.0)

Contract Price and Terms of Payment

The Purchaser hereby agrees to pay to the Supplier the Contract Price in consideration of the performance by the Supplier of its obligations hereunder. The Contract Price shall [. . . **amounts in rupees in words** . . .], [. . . **amounts in figures**. . .] as specified in Price Schedule No. 3 (Grand Summary).

The Contract Price is FIXED for entire period of the Contract.

2.2 Terms of Payment (Reference SCC Clause 5.8.0)

The terms and procedures of payment according to which the Purchaser will pay the Supplier are given in the Appendix (Terms and Procedures of Payment) hereto.

Article 3 Commencement Date and Completion Time**3.1 Commencement Date** (Reference SCC Clause 5.6.1)

The Commencement Date upon which the period until the Time for Completion of the total scope under the Contract shall be counted from is the date when the LoA is issued.

3.2 Completion Time (Reference SCC Clause 5.6.2)

The whole scope under this Contract shall be completed within **9 (Nine)** months from Contract Commencement Date with following schedule:

Article 4. Appendices

5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.

5.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Purchaser and the Supplier have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Purchaser

[**Signature**]

[**Title**]

in the presence of

[**Signature**]

[**Title**]

Signed by, for and on behalf of the Supplier

[**Signature**]

[**Title**]

in the presence of

[**Signature**]

[**Title**]

APPENDICES

- Appendix 1 - Terms and Procedures of Payment
- Appendix 2 - Time Schedule
- Appendix 3 - Performance Security.
- Appendix 4- PriceSchedules.
- Appendix 5- Guaranteed and Other Technical Particulars.

Appendix 1 – Terms and Procedure of Payment

In accordance with the provisions of SCC Clause 5.8.0 (Terms of Payment), the Purchaser shall pay the Supplier in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules.

(A) Terms of Payment

Schedule No. 1, 1A, 1B & 1C–Payment for Goods Supplied and F & I

100% payment would be admissible within six (6) weeks from the date of receipt of the Goods at site in full and good condition less deduction of Retention Money (as per **SCC Clause 5.10.0**) and advance (if and as applicable as per **SCC Clause 5.8.4**) and as per terms and conditions stipulated in the Contract Agreement.

Schedule No. 2 - Related Services (Supervision of Erection, Testing and Commissioning)

100% payment would be admissible within six (6) weeks from the date of submission of bills less deduction of Retention Money (as per **SCC Clause 5.10.0**) and advance (if and as applicable as per **SCC Clause 5.8.4**).

(B) Payment Procedures

The procedures to be followed in applying for certification and making payments shall be as follows:

1. Progressive Payment for Supply of Goods:

Application for interim payment shall be made once in a calendar month subject to that the total net amount payable under all such payment certificate is at least 1% or more of the total contract price.

(A) EXW Price and F&I (Schedule-1, 1A, 1B & 1C):

Upon receipt of plants and equipment at site, the Supplier shall notify the Purchaser and submit the following documents in advance:

- (i) Application for payment
- (ii) Suppliers invoice showing LOA reference , Goods description, quantity dispatched , unit price, total amount (6 Copies)
- (iii) Packing List
- (iv) Railway receipt/ LR
- (v) Manufacturer's guarantee certificate of Quality
- (vi) Material inspection Clearance Certificate for dispatch issued by Purchaser
- (vii) Insurance certificate.
- (viii) Physical verification certificate of material received at site by Purchaser/Purchaser's site representative

The above documents shall be received by the Purchaser before arrival of the Goods and if not, the Suppliers will be responsible for any consequent expenses."

(B) Taxes and Duties (Schedule-1& 1A):

Goods and Services Taxes in respect of transaction between Purchaser as applicable for

destination site on all items of supply including bought-out finished items (as identified in the Contract), which shall be dispatched directly from the sub-vendor's works to the Purchaser's site (sale-in-transit) will be paid after each shipment against documentary evidence. This payment shall be released by Purchaser directly subject to statutory deductions to the Supplier against invoices to be submitted by the Supplier.

**2. Progressive Payment for Related Services (Supervision of Erection, Testing and Commissioning)
(Schedule-2):**

The Contract price shall be paid progressively (monthly) on pro-rata basis on receipt of Payment Application and on certification by the Purchaser/ his site representative, on quantum of work done successfully.

Appendix 2 - Time Schedule

(Bidders shall furnish with bids a construction schedule in form of bar chart. The time schedule should match with the completion time mentioned elsewhere in the Bidding Document)

Appendix 3 - Form of Performance Security**Bank Guarantee**

(To be stamped in accordance with Stamp Act)

To: _____ [name of Purchaser]
 _____ [address of Purchaser]

WHEREAS _____ [name and address of Supplier/Manufacturer] has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ [name of Supplier/Manufacturer and brief description of Scope along with name of the Package] (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier/Manufacturer shall furnish you with a Bank Guarantee by a recognized/scheduled bank for the sum specified therein as security for compliance with its obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Supplier/Manufacturer such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Supplier/Manufacturer, up to a total of _____ [amount of Guarantee]¹ _____ [in words], such sum being payable in the currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of Guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier/Manufacturer before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the scope to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the date, 30 days beyond the Warranty Period as per the Contract.

¹ An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.

Signature and Seal of the Guarantor _____
Name of Bank _____
Address _____
Date _____