**DELHI TRANSCO LIMITED**  
**WEB NOTIFICATION**

Sealed Two Part Open ICB Tender is invited for the following works:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Tender Enquiry No.</th>
<th>Name of Work</th>
<th>Estimated Cost(Rs)</th>
<th>Earnest Money Deposit (EMD) (Rs)</th>
<th>Tender Fee(Rs)</th>
<th>Work Completion period</th>
<th>Scheduled Date/Time</th>
</tr>
</thead>
</table>
| 1.    | T18P080211         | Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories. | Rs. 27,72,42,910.41 (Rs. Twenty Seven Crore Seventy Two Lakh Forty Two Thousand Nine Hundred Ten and Paisa Forty One Only) | Rs. 55,44,900/- (Rs. Fifty Five Lakh Forty Four thousand Nine Hundred Only) | 10,000/- | 09 months | Start of Sale of Tender 01.01.2019 10:00 Hrs  
Start of Bid Submission 01.01.2019 10:00 Hrs  
End of Sale of Tender 30.01.2019 17:00 Hrs  
End of Bid Submission 31.01.2019 11:00 Hrs  
Opening of Tender 31.01.2019 11:30 Hrs |

*All correspondence/communication, Sale, submission and opening of Tender/Bid shall be from the office of DGM (T) Contract, C&MM, Room No. 107, 1st Floor, Pre-Fabricated Bldg., Rajghat Power House, New Delhi. Ph No. +011-23275290, Fax No.011-23275289, E-Mail: dgmcontract.cmm@dtl.gov.in*

Date: 26.12.2018
Bidding Documents

For


Volume – I, II & III

Tender No: T18P080211
Bidding Documents

For


Volume – I

CONDITIONS OF CONTRACT

Tender No: T18P080211
VOLUME-I

CONDITIONS OF CONTRACT

CONTENTS

Section - I     Invitation for Bid (IFB)

Section - II    Instruction to Bidders (ITB)

Section - III   Conditions of Contract (CC)

Section –IV     Forms and Procedures (F&P)
SECTION-I

INVITATION FOR BID
(IFB)
SECTION-I

INVITATION FOR BID (IFB)


(Date of issuance of IFB) : …. (as per web notification and relevant corrigendum)……

Tender No: T18P080211


The supply of major equipments includes:

i. High Temperature Low Sag (HTLS) conductor.
ii. Hardware fittings suitable for HTLS conductor
iii. Clamps for Hardware fittings suitable for HTLS conductor
iv. Accessories for HTLS conductor

1.1 All the equipments shall be complete with all fittings and components necessary for its effective working and efficient performance and satisfactory maintenance under the various operating conditions specified. All such parts shall be deemed to be included within the scope of supply whether specifically included or not in this specification in the tender schedule. The successful tenderer shall not be eligible for extra charges for such accessories and works.

1.2 A complete set of Bidding Documents may be purchased by any interested eligible Bidder or Bidder’s designated representative, on the submission of a written application to the address below and upon payment (Non-refundable) of US$ 250/- or Rs.10,000/- towards the cost of the documents, in the form of a Demand Draft payable to Delhi Transco Ltd. on all working days upto …. (as per web notification and relevant corrigendum).…… between 11.00 hours to 16.00 hours.

Bidder should also submit the following details:

<table>
<thead>
<tr>
<th>1.</th>
<th>Name of Vendor</th>
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<tbody>
<tr>
<td>2.</td>
<td>Address with Pin code</td>
</tr>
<tr>
<td>3.</td>
<td>PAN No.</td>
</tr>
<tr>
<td>4.</td>
<td>GST No.</td>
</tr>
<tr>
<td>5.</td>
<td>GST Vendor classification : Whether Registered /Not Registered/Compounding</td>
</tr>
</tbody>
</table>
### Particulars of Bank Account:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>A. Name of the Branch</td>
<td></td>
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<tr>
<td>B. Branch Code</td>
<td></td>
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<tr>
<td>C. Address of the Bank</td>
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</tr>
<tr>
<td>D. Type of Account</td>
<td></td>
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<tr>
<td>E. Account Number</td>
<td></td>
</tr>
<tr>
<td>F. IFSC CODE</td>
<td></td>
</tr>
<tr>
<td>G. MICR CODE</td>
<td></td>
</tr>
<tr>
<td>H. SWIFT/BIC Code</td>
<td></td>
</tr>
<tr>
<td>I. Bank Number</td>
<td></td>
</tr>
</tbody>
</table>

1.3 The Qualifying Requirements are given in the Bidding Documents of the subject Package A, B and C. The complete Bidding Documents including tender drawings are also available at our website [http://www.delhitransco.gov.in](http://www.delhitransco.gov.in). Interested bidders can download the Bidding Documents and commence preparation of bids to gain time. However, they will be required to purchase the Bidding Documents from Delhi Transco Ltd., (for submission of the bid), which will be duly authenticated by the executive issuing the documents. In case of any discrepancy between the documents downloaded by the prospective bidder and the Bidding Documents (hard copy) issued by Delhi Transco Ltd. official, the later shall prevail.

1.4 All bids must be accompanied by a Bid Security of Indian Rupees of Rs. 55,44,900/- (Rs Fifty Five Lakh Forty Four thousand Nine Hundred Only).

**BID SECURITY AND INTEGRITY PACT MUST BE SUBMITTED IN PHYSICAL FORM IN EACH PACKAGE SEPARATELY AT THE ADDRESS GIVEN AT 1.7 BELOW, ON OR BEFORE THE TIME AND DATE OF OPENING OF TECHNO-COMMERCIAL PART OF THE BID**

1.5 No margin of preference will be granted to plant & equipment manufactured in employers country.

1.6 Deleted

1.7 Bids must be delivered to Delhi Transco Ltd. at the address below, not later than Time & Date …. (as per web notification and relevant corrigendum)...... and the Techno-Commercial bids(Part-I) shall be opened on …. (as per web notification and relevant corrigendum)...... in the presence of Bidder’s representatives who choose to attend, at the address below:

**DGM (T) Contract, Delhi Transco Limited, Room No.-107, 1ST Floor Pre-Fabricated Building, Rajghat Power House, New Delhi-110002 (India)**

The Techno-Commercial bids (Part-I) so opened shall be evaluated & the Price bids (Part-II) of techno-commercially successful bidders shall only be opened thereafter. The date of opening of Part-II of the bids i.e. Price bids shall be communicated to all techno-commercially successful bidders.

1.8 Deleted.
1.9 Delhi Transco Ltd. shall not be responsible for any postal delays in respect of request for issuance of Bidding Documents and / or dispatch of Bidding Documents and / or submission of bids.

1.10 Delhi Transco Ltd. reserves the right to cancel/ withdraw this Invitation for Bids without assigning any reason and shall bear no liability whatsoever consequent upon such a decision.

2.0 All correspondences with regard to the above shall be made to the address below by post/ in person:

   DGM (T) Contract,
   Delhi Transco Limited,
   Room No.-107, 1ST Floor Pre-Fabricated Building,
   Rajghat Power House,
   New Delhi-110002 (India),
   Phone : 23275290
   Fax No. 011-23275289,
   Email : dgmcontract.cmm@dtl.gov.in

   For more details, please visit our website http://www.delhitransco.gov.in

   NOTE: Date of Bid submission and Bid opening shall be as per the web notification and subsequent corrigendum, if any.

3.0 Integrity Pact must be submitted alongwith the bid in physical form for each Package separately at the address given at para 1.7 above.
SECTION-II

INSTRUCTION TO BIDDER
(ITB)
SECTION – II

Instructions to Bidders (ITB)

A. Introduction

1.0 Eligible Bidders

1.1 This Invitation for Bids, issued by the Employer, is open to all eligible bidders. Name of the Employer: DELHI TRANSCO LIMITED.

1.2 Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates that has been engaged by the Employer, to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the facilities, to be purchased under this Invitation for Bids.

1.3 Government-owned enterprises in the India may also participate on their own or as members of a joint venture or a consortium, if they are legally and financially autonomous, operate under commercial law, and are not dependent agencies of the Delhi Transco Limited.

1.4 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices in accordance with sub-clause 34.1.

2.0 Eligible Plant, Equipment, and Services

2.1 For the purposes of these bidding documents, the words “facilities”, “plant and equipment” “installation services,” etc., shall be construed in accordance with the respective definitions given to them in the Conditions of Contract.

3.0 Cost of Bidding

3.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Employer will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

B. The Bidding Documents

4.0 Content of Bidding Documents

4.1 The facilities required, bidding procedures, contract terms and technical requirements are prescribed in the bidding documents. The bidding documents include:

Volume - I: Conditions of Contract
- Section I Invitation for Bids (IFB)
- Section II Instructions to Bidder (ITB)
- Section III Conditions of Contract (CC)
- Section IV Forms and Procedures (F&P)

Volume - II: Technical Specification

Volume - III: Bid Form, Attachments, Price Schedules
- Section I Bid Form
- Section II Attachments
4.2 The Bidder is expected to examine all instructions, forms, terms, specifications and other information in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive, to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

5.0 Clarification of Bidding Documents

5.1 A prospective Bidder requiring any clarification of the bidding documents may notify the Employer in writing or by electronic media (hereinafter, the term cable is deemed to include Electronic Data Interchange (EDI), or telefax) at the Employer's mailing address indicated below. Similarly, if a Bidder feels that any important provision in the documents, such as those listed in ITB Sub Clause 21, will be unacceptable, such an issue should be raised at this stage. The Employer will respond in writing to any request for clarification or modification of the bidding documents that it receives no later than twenty eight (28) days prior to the deadline for submission of bids prescribed by the Employer. Written copies of the Employer's response (including an explanation of the query but not identification of its source) will be sent to all prospective Bidders that have purchased the bidding documents.

Address of Employer, telephone, facsimile numbers & E-mail address:

DGM (T) Contract,
Delhi Transco Limited,
Room No.-I07, 1st Floor Pre-Fabricated Building,
Rajghat Power House,
New Delhi-110002 (India),
Phone : 23275290
Fax No. 011-23275289,
Email : dgmcontract.cmm@dtl.gov.in

5.2 The Bidder is advised to visit and examine the site, where the facilities are to be installed 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 supply and installation of the facilities. The costs of visiting the site shall be at the Bidder's own expense.

5.3 The Bidder and any of its personnel or designated representative will be granted permission by the Employer to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, its personnel and designated representative will release and indemnify the Employer and its personnel and designated representative 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.

5.4 Deleted.

6.0 Amendment of Bidding Documents

6.1 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at its own initiative, or in response to a clarification requested by a prospective Bidder, amend the bidding documents.
6.2 The amendment will be notified in writing or by electronic media to all prospective Bidders that have purchased the bidding documents and will be binding on them. Bidders are required, to immediately acknowledge receipt of any such amendment, and it will be assumed that the information contained therein will have been taken into account by the Bidder in its bid.

6.3 In order to afford prospective Bidders, reasonable time in which to take the amendment into account, in preparing their bid, the Employer may, at its discretion, extend the deadline for the submission of bids, in which case, the Employer will notify all the bidders in writing of the extended deadline.

C. Preparation of Bids

7.0 Language of Bid

7.1 The bid prepared by the Bidder and all correspondence and documents related to the bid exchanged by the Bidder and the Employer shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in the English language, in which case, for purposes of interpretation of the bid, the translation shall govern.

8.0 Documents Comprising the Bid

8.1 The bid submitted by the Bidder shall comprise the following documents:
   (a) Bid Form duly completed and signed by the Bidder, together with all Attachments identified in ITB Sub-Clause 8.3 below.

   (b) Price Schedules duly completed by the Bidder.

   (c) Tender document and subsequent amendment(s) (if any) issued by DTL, duly signed and stamped on each page, by the bidder to confirm that he agrees to terms and conditions of the bid. However, where ever specific deviation has been taken the same must be listed only in attachment 6 and 6A.

   (d) All the Bidders shall submit the proof of work executed by them along with the Performance Certificates in support of their qualification. The performance certificate should be directly issued by the concerned organization on their letterhead and should have contact details including complete address, designation, contact no, email-id etc. of issuing authority.

8.2 Bidders shall note that, they are entitled to submit an alternative bid. In such cases, Bidders shall submit full details and justifications, etc., in Attachment 7 to the bid as indicated in ITB Sub-Clause 8.3 (g).

8.3 Each Bidder shall submit with its bid the following attachments:
   (a) **Attachment 1: Bid Security**
       A bid security furnished in accordance with ITB Clause 12.

   (b) **Attachment 2: Power of Attorney**
       A power of attorney, duly authorized by a Notary Public, indicating that the person(s) signing the bid has the authority to sign the bid and thus that the bid is
binding upon the Bidder during the full period of its validity in accordance with ITB Clause 13.

(c) **Attachment 3: Bidder's Eligibility and Qualifications**  
In the absence of prequalification, documentary evidence that the Bidder is eligible to bid in accordance with ITB Clause 1 and is qualified to perform the contract if its bid is accepted.

The documentary evidence of the Bidder's qualifications to perform the contract, if its bid is accepted, shall establish to the Employer's satisfaction that the Bidder has the financial, technical, production, procurement, shipping, installation and other capabilities necessary to perform the contract, and, in particular, meets the experience and financial criteria specified in the Qualifying Requirement and ITB.

A firm can be a partner in only one joint venture or consortium; bids submitted by joint ventures or consortia including the same firm as partner will be rejected.

Qualification requirements for bidders, including members of joint ventures, subcontractors or vendors are enclosed as Annexure-A to the ITB.

Unless otherwise mentioned in ITB, bids submitted by a joint venture of two or more firms as partners, if allowed as per stipulated Qualification Requirements in Annexure-A (ITB), shall comply with the following requirements:

(i) The bid shall include all the information required for Attachment 3 as described above for each joint venture partner.

(ii) The bid shall be signed so as to be legally binding on all partners.

(iii) One of the partners responsible for performing a key component of the contract shall be designated as leader; this authorization shall be evidenced by submitting with the bid a power of attorney signed by legally authorized signatories.

(iv) The leader shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture, and the entire execution of the contract shall be done exclusively with the leader, provided otherwise requested by the joint venture and agreed between the Employer and the leader. The Payment shall be made in the name of Joint Venture / Consortium.

(v) All partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms.

(vi) A copy of the agreement entered into by the joint venture partners shall be submitted with the bid, including inter-alia delineation of responsibilities and obligations of each partners in respect of planning, design, manufacturing, supply, installation, commissioning and training appended thereto, notwithstanding the joint and several liability.

(d) **Attachment 4 & 4A: Eligibility and Conformity of the Facilities**  
Documentary evidence established in accordance with ITB Clause 2 that the facilities offered by the Bidder in its bid or in any alternative bid (if permitted) are eligible and conform to the bidding documents.

The documentary evidence of the eligibility of the facilities shall consist of a statement on the country of origin of the plant and equipment offered, which shall be confirmed by a certificate of origin issued at the time of shipment.

The documentary evidence of the conformity of the facilities to the bidding
documents may be in the form of literature, drawings and data, and shall furnish:

(i) a detailed description of the essential technical and performance characteristics of the facilities;

(ii) a list giving full particulars, including available sources, of all spare parts, special tools, etc., necessary for the proper and continuing functioning of the facilities for 15 years, following completion of facilities in accordance with provisions of contract; and

(iii) a commentary on the Employer's Technical Specifications and adequate evidence demonstrating the substantial responsiveness of the facilities to those specifications. Bidders shall note that standards for workmanship, materials and equipment designated by the Employer in the bidding documents 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 Employer's satisfaction, that the substitutions are substantially equivalent or superior to the standards designated in the Technical Specifications.

(c) **Attachment 5: Subcontractors Proposed by the Bidder**

The Bidder shall include in its bid details of all major items of supply or services, that it proposes to purchase, and shall give details of the name and nationality of the proposed Subcontractor, including vendors, for each of those items. Bidders are free to list more than one Subcontractor against each item of the facilities. Quoted rates and prices will be deemed to apply to whichever Subcontractor is appointed, and no adjustment of the rates and prices will be permitted.

The Bidder shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITB Sub-Clause 1.1, and that any plant, equipment or services to be provided by the Subcontractor comply with the requirements of ITB Clause 2.

The Employer reserves the right to delete any proposed Subcontractor from the list prior to award of contract, and after discussion between the Employer and the Contractor, Appendix 5 to the form of Contract Agreement shall be completed, listing the approved Subcontractors for each item.

Qualification requirements for bidders, including members of joint ventures, subcontractors or vendors are enclosed as Annexure-A to the ITB.

(f) **Attachment 6 and 6A: Deviations**

In order to facilitate evaluation of bids, deviations, if any, from the Terms & Conditions of Technical/ Commercial Specifications shall be listed in Attachment 6 and 6A for Part-I, Techno commercial Bid. The price of withdrawal of these deviations, if any, shall be included in the Part-II Price Bid in Attachment 6 & 6A. However, the attention of the Bidders is drawn to the provisions of ITB Sub-Clause 21.4 regarding the rejection of bids that are not substantially responsive to the requirements of the bidding documents. Bidder’s attention is also drawn to the provisions of ITB Sub-Clause 21.4.1 which requires the bidders to indicate the cost of withdrawal for deviations proposed, if any, to critical provisions relating to clauses listed therein, failing which their bid will be rejected.
Bidders may further note that except for the deviations listed in Attachment 6 and Attachment 6A, the bid shall be deemed to comply with all the requirements in the bidding documents and the bidders shall be required to comply with all such requirements of bidding documents and Technical Specifications without any extra cost to the Employer irrespective of any mention to the contrary, anywhere else in the bid.

(g) Attachment 7: Alternative Bids

(i) Bid with alternative time schedule is not acceptable.

(ii) Except as provided under subparagraph (iii) below, bidders wishing to offer technical alternatives to the requirements of the bidding documents must first price the Employer's design of the facilities as described in the bidding documents, and shall further provide all information necessary for a complete evaluation of the alternatives by the Employer, including drawings, design calculations, technical specifications, break-up of prices, proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated bidder conforming to the basic technical requirements shall be considered by the Employer. Alternative bid is acceptable.

(iii) When bidders are permitted in the ITB to submit alternative technical solutions for specified parts of the facilities, Technical Specifications and Drawings. Technical alternatives that comply with the performance and technical criteria specified for the facilities shall be considered by the Employer on their own merits, pursuant to ITB Sub-Clause 23.2. Alternative bid is acceptable.

(h) Attachment 8: Deleted (Not applicable)

(i) Attachment 9: Work Completion Schedule.

(j) Attachment 10: Guarantee Declaration.

(k) Attachment 11: Information regarding ex-employees of Employer in Bidder’s firm.

(l) Attachment 12: Unequivocal consent of the proposed Indian Associate for the purpose of executing the ‘Second Contract’ and/or ‘Third Contract’ as an independent Contractor (Applicable to Foreign Bidders).

(m) Attachment 13: Capacity and Experience of Proposed Indian Associate (Applicable to Foreign Bidders).

(n) Attachment 14: Integrity Pact *(submission of Hard Copy in ‘Original’)*

The Bidder shall complete the accompanying Integrity Pact, which shall be applicable for bidding as well as contract execution, duly signed on each page by the person signing the bid and shall be returned by the Bidder in two (2) originals along with the Techno - Commercial Part in a separate envelope, duly superscripted with ‘Integrity Pact’. “The Bidder shall submit the Integrity Pact on a non judicial stamp paper of Rs. 100/-

The required format for Integrity Pact shall be as per Attachment 14.

If the Bidder is a partnership firm or a consortium, the Integrity Pact shall be signed by all the partners or consortium members.
Bidder’s failure to submit the Integrity Pact duly signed in Original along with the Bid or subsequently pursuant to ITB Sub-Clause 20 shall lead to outright rejection of the Bid.

(o) Attachment 15: Indemnity Bond
(p) Attachment 16: Checklist

8.4 Bidder should submit GST registration No., PAN and EPF No., if applicable.

9.0 Bid Form and Price Schedules

9.1 The Bidder shall complete the Bid Form and the appropriate Price Schedules furnished in the bidding documents as indicated therein and in the Subsection Bid Form and Price Schedules of the bidding documents, following the requirements of ITB Clauses 10 and 11.

10.0 Bid Prices

10.1 Unless otherwise specified in the Technical Specifications, Bidders shall quote for the entire facilities on a "single responsibility" basis such that the total bid price covers all the Contractor's obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the facilities including supply of mandatory spares (if any). This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the facilities and, where so required by the bidding documents, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the bidding documents, all in accordance with the requirements of the Conditions of Contract. Items against which, no price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items.

10.2 Bidders are required to quote the price for the commercial, contractual and technical obligations outlined, in the bidding documents. If a Bidder wishes to make a deviation, such deviation shall be listed in Attachment 6 and 6A of its bid. The Bidder shall also provide the additional price, if any, for withdrawal of the deviations.

10.3 Bidders shall give a break-up of the prices in the manner and detail called for in the Price Schedules. Where no Price Schedules are included in the bidding documents, Bidders shall present their prices in the following manner:

Separate numbered Schedules shall be used for each of the following elements. The total amount from each Schedule 1 to 6 shall be summarized in a Grand Summary (Schedule 7) giving the total bid price(s) to be entered in the Bid Form.

- **Schedule 1** Plant and Equipment (including Mandatory Spares Parts) to be supplied from Abroad, including Type Test to be conducted Abroad.
- **Schedule 2** Plant and Equipment (including Mandatory Spares Parts) to be supplied from India, including Type Test to be conducted in India.
- **Schedule 3** Local Transportation, Insurance and other Incidental Services (including port clearance etc.).
- **Schedule 4** Installation Charges
Schedule 5a  | Break-up of Type Test Charges for Type Tests to be conducted abroad (Not Applicable).
Schedule 5b  | Break-up of Type Test Charges for Type Tests to be conducted in India (Not Applicable).
Schedule 6a  | Training charges for training to be imparted Abroad (Shall be inclusive)
Schedule 6b  | Training charges for training to be imparted in India (Shall be inclusive)

**The training shall be provided at no extra cost to employer, the training charges shall be inclusive in the bid price.**

Schedule 7  | Grand Summary of the Quoted Bid Price
Schedule 8  | Deleted.
Schedule 9  | Deleted
Schedule 10 | Details of recommended spare parts & recommended test equipment (in line with Technical specifications).

Bidder shall note that the plant and equipment included in schedule No. 1 and 2 above exclude materials used for civil, building and other construction works. All such materials shall be included and priced under schedule No. 4 – Installation services.

10.4  In the schedules, Bidder shall give the required details and a break-up of their price considering and taking into account the Input Tax Credit (ITC) as may be available under the Goods and Services Tax (GST) Laws and Regulations, in the schedules as follows:

(a)  Plant and equipment including mandatory spares to be supplied from abroad (Schedule 1) and type test charges for type test to be conducted abroad shall be quoted on a CIF port-of-entry basis. In addition, the FOB price shall also be indicated.

(b)  Plant and equipment including mandatory spares manufactured or fabricated within the Employer's country (Schedule 2) including type test charges for type test to be conducted in India shall be quoted on an EXW (ex factory, ex works, ex warehouse or off-the-shelf, as applicable) basis, and shall be inclusive of all costs. Taxes, duties and levies as per GST Rules in respect of transactions between the Employer and the Contractor shall not be included in the base price but shall be quoted separately.

**The price quoted in respect of all items in the above schedule shall be excluding GST applicable on transaction between the Employer and the Contractor.**

(c)  Local transportation, insurance, port handling and custom clearance and port charges and other local costs incidental to delivery of the Plant and Equipment including mandatory spares shall be quoted separately (Schedule 3). The Employer shall be responsible and be liable for payment of custom duty and Taxes, duties and levies as per GST Rules on CIF component of the Plant and equipment including mandatory spares to be supplied from abroad. However, the Employer, as an importer, shall furnish promptly necessary clarifications and documents as
may be required to be furnished by the importer for the purpose of customs clearance.

(d) Installation/Erection Charges shall be quoted separately (Schedule 4) and shall include rates and prices for all labour, Contractor’s equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, provision of operations and maintenance manuals etc. wherever identified in the bidding documents as necessary for the proper execution of all installation services except those priced in other schedules. The expatriate supervision charges shall be included in the charges for installation services.

(e) The break-up of Type test charges shall be furnished separately in Schedule 5a for the tests to be conducted abroad and in schedule 5b for the tests to be conducted in India (if applicable). Similarly break-up of Training Charges shall be furnished separately in Schedule 6a for the training to be imparted abroad and in Schedule 6b for the training to be imparted in India (shall be inclusive).

(f) The bidder shall quote separately the Taxes, duties and levies as per GST Rules for the portion of supply of the Goods & Services in Employer’s country, as applicable in their quoted bid price and Employer would not bear any additional liability on this account except as stated in the bid. Employer shall, however, deduct such taxes at source as per the rules and issue Tax Deducted at Source (TDS) Certificate to the bidder as per prevailing tax laws applicable to the contract.

(g) In case the taxes, duties and levies as per GST Rules on transactions between employer and the contractor is covered under the Reverse Charge provisions full tax has to be stated/mentioned in the quoted prices/bid. However, where the Reverse Charge Mechanism provisions are applicable, DTL shall not pay the applicable tax amount to the contractor and will deposit directly to the Govt. treasury.

To facilitate the bidders, Employer has indicated an HSN/SAC code and rate of GST against each item in the Price Schedule. It shall entirely be the responsibility of the bidder to check the HSN/SAC code and rate of GST given against each item. The bidder may either confirm the HSN and rate of GST or if the bidder opts to classify the item in question under a different HSN/SAC code or opts to indicate a different rate of GST, bidder may indicate the same in the columns provided. The bidders shall solely be responsible for HSN/SAC classification and the rate of GST for each item. Employer’s liability for reimbursement of GST shall be GST applicable at the rate as confirmed/deemed confirmed in the bid and as accepted by the employer.

The Input Tax Credit (ITC) available, if any, under the GST law as per the relevant Government policies wherever applicable shall be taken into account by the Bidder while quoting bid price.

(h) Recommended Spare parts and Recommended Test equipment shall be quoted separately (Schedule 10) as specified in either sub-paragraph (a) or (b) above in accordance with the origin of the spare parts and test equipment. Schedule 10 shall not be part of Bid Evaluation.

10.4.1 **Deemed Export Benefits

There will be no Deemed Export Benefits.
10.5 The terms EXW, CIF, CIP, etc., shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, 38 Cours Albert 1er, 75008 Paris, France.

10.6 The 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.

10.7 It is obligatory that the Bidders shall avail centralized shipping arrangements through the 'Chartering Wing viz., 'TRANSCHART' of Ministry of Surface Transport, Govt. of India or otherwise the Bidders shall obtain on their own 'No objection Certificate' from Ministry of Surface Transport, Govt. of India well in advance. However, DTL shall not be responsible for any delay whatsoever on this account.

11.0 Bid Currencies

11.1 Prices shall be quoted in INR only.

12.0 Bid Security

12.1 The bidder shall furnish, as a part of its bid, a bid security in INR of Rs. 55,44,900/- (Rs Fifty Five Lakh Forty Four Thousand Nine Hundred Only).

The bid security must be submitted in the form provided in the bidding document.

12.2 The bid security shall, at the Bidder's option, be in the form of a crossed bank draft/pay order/banks certified cheque/irrevocable letter of credit or a bank guarantee issued either:
   (a) by a reputed bank located in the country of Employer and acceptable to the Employer, or
   (b) by a foreign bank confirmed by either its correspondence bank located in the country of Employer which should be reputed and acceptable to the Employer, or;
   (c) By a Public Sector Bank in the country of Employer.

The format of the bank guarantee shall be in accordance with the form of bid security included in the bidding documents. Bid security shall remain valid for a period of forty-five (45) days beyond the original bid validity period, and beyond any extension subsequently requested under ITB Sub-Clause 13.2.

The detail of DTL’s Bank account is as under:

<table>
<thead>
<tr>
<th>Name of Bank with Address</th>
<th>Delhi Transco Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBI</td>
<td>Chandni Chowk Delhi.</td>
</tr>
<tr>
<td>Current Account No.</td>
<td>10820056547</td>
</tr>
<tr>
<td>Codes</td>
<td>RTGS/IFSC No : SBIN0000631</td>
</tr>
<tr>
<td></td>
<td>MICR No : 110002018</td>
</tr>
</tbody>
</table>

12.3 Any bid not accompanied by an acceptable bid security shall be rejected by the Employer...
as being non-responsive. The bid security of a joint venture must be in the name of all the partners in the joint venture submitting the bid.

12.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, but not later than twenty-eight (28) days after the expiration of the bid validity period.

12.5 The bid security of the successful bidder will be returned when the bidder has signed the Contract Agreement, pursuant to ITB Clause 31, and has furnished the required performance security, pursuant to ITB Clause 32.

12.6 The bid security may be forfeited
   a) If the Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form; or
   
   b) In case the Bidder does not withdraw the deviations proposed by him, if any, at the cost of withdrawal stated by him in the bid; or

   c) If the bidder does not accept the correction of its Bid Price pursuant to ITB Sub-Clause 21.2; or

   d) If, as per the Qualifying Requirements the Bidder has to submit a Deed of Joint Undertaking and he fails to submit the same, duly attested by Notary Public of the place(s) of the respective executants(s) or registered with the Indian Embassy/High Commission in that country, before opening of price bid; or

   e) In the case of a successful Bidder, if the Bidder fails within the specified time limit
      (i) To sign the Contract agreement, in accordance with ITB Clause 31, or
      (ii) To furnish the required performance security, in accordance with ITB Clause 32.”

12.7 In case the Bid is submitted by a Joint Venture, the Bid Security shall be in the name of the Joint Venture covering all partners of the Joint Venture and not in the name of the Lead Partner or any partner(s) of the Joint Venture alone.

13.0 Period of Validity of Bid

13.1 Bids shall remain valid for 180 days after the date of opening of bids (excluding the date of Bid Opening) pursuant to ITB Sub-Clause 16.1. A bid valid for a shorter period shall be rejected by the Employer as being non-responsive.

13.2 In exceptional circumstances, the Employer may solicit the Bidders' consent to an extension of the bid validity period. The request and responses thereto shall be made in writing or by cable. If a Bidder accepts to prolong the period of validity, the bid security shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required nor permitted to modify its bid.

14.0 Format and Signing of Bid

14.1 The Bidder shall prepare an original and two copies/sets of the bid, clearly marking each one as "Original Bid," "Copy NO. 1", "Copy NO. 2", etc as appropriate. In the event of any discrepancy between them, the original shall govern.

14.2 The original and all copies of the bid, each consisting of the documents listed in ITB Sub-
Clause 8.1, shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the contract. The authorization shall be indicated by written power of attorney accompanying the bid and submitted as Attachment 2 to the Bid under ITB Sub-Clause 8.3. All pages of the bid, except for un-amended printed literature, shall be initialed by the person or persons signing the bid.

14.3 Any interlineations, erasures or overwriting shall only be valid if they are initialed by the signatory (ies) to the bid.

D. Submission of Bids

15.0 Sealing and Marking of Bids

15.1 The Bidder shall submit the sealed bids in Two Parts i.e. PART-I (TECHNO-COMMERCIAL BID)” and PART-II i.e. PRICE BID in separate envelopes. The Bidder shall seal the original and each copy of the bid(s) in separate envelopes duly marking the envelopes as "ORIGINAL BID” and "COPY NO. [Number]”.

Bid security in the amount stipulated in the ITB shall be submitted in a separate sealed envelope having marking as “Bid Security”.

The Integrity Pact shall be submitted in two (2) originals in separate sealed envelope along with bid having marking as “Integrity Pact”. The separate envelopes containing original & copies of PART-I (TECHNO-COMMERCIAL BID)”, “PART-II (PRICE BID), Bid Security and Integrity Pact shall then be sealed in an outer envelope.

15.2 The inner and outer envelopes shall

(a) be addressed to the Employer at the address given in the ITB,

In Person or by post:

DGM (T) Contract,
Delhi Transco Limited,
Room No.-107, 1ST Floor Pre-Fabricated Building,
Rajghat Power House,
New Delhi-110002 (India),
Phone : 23275290
Fax No. 011-23275289,
Email : dgmcontract.cmm@dtl.gov.in

and

(b) bear the contract name indicated in the ITB, the Invitation for Bids title and number indicated in the ITB., and the statement "DO NOT OPEN BEFORE [date],"{except on the envelope containing Part-II{Price bid}} to be completed with the time and date specified in the ITB, pursuant to ITB Sub-Clause 16.1.

BID TITLE:


Tender No: T18P080211
Do not open before 11.30 Hrs on… (as per web notification and relevant corrigendum)…..

Bid guarantees in original shall be submitted in a separate envelope on which the contents shall be super scribed.

The Bid Forms and Price Schedules shall be enclosed in separate envelope on which the contents shall be super scribed.

The Integrity Pact shall be enclosed in separate envelope on which the contents shall be super scribed.

15.3 The inner envelopes shall also indicate the name and address of the Bidder so that the bid can be returned unopened in case it is declared "late."

15.4 If the outer envelope is not sealed and marked as required by ITB Sub-Clause 15.2 above, the Employer will assume no responsibility for the bid's misplacement or premature opening. If the outer envelope discloses the Bidder's identity, the Employer will not guarantee the anonymity of the bid submission, but this disclosure will not constitute grounds for bid rejection.

15.5 Bid should be submitted in Bound Form and each page of bid should be signed.

16.0 Deadline for Submission of Bids

16.1 Bids must be received by the Employer at the address specified under ITB Sub Clause 15.2 no later than the time and date stated in the ITB. In the event of the specified date for the submission of bids being declared a holiday for the Employer, the bids will be received upto the appointed time on the next working day. Dead line for submission of Bid and its modification and withdrawal, if any:

Date & Time:…. (as per web notification and relevant corrigendum)………………

16.2 The Employer may, at its discretion, extend this deadline for submission of bids by amending the bidding documents in accordance with ITB Sub-Clause 6.3, in which case all rights and obligations of Employer and Bidders will thereafter be subject to the deadline as extended.

17.0 Late Bids

17.1 Any bid received by the Employer after the bid submission deadline prescribed by the Employer, pursuant to ITB Clause 16, will be rejected and returned unopened to the Bidder.

18.0 Modification and Withdrawal of Bids

18.1 The Bidder may modify or withdraw its bid after submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline prescribed for bid submission.

18.2 The Bidder's modifications shall be prepared, sealed, marked and dispatched as follows:
(a) The Bidders shall provide one original and two copies of any modifications to its bid in two parts as provided in ITB clause 15, clearly identified as such, in two inner envelopes duly marked "Bid Modifications-Original" and "Bid Modifications-Copies." The inner envelopes shall be sealed in an outer envelope, which shall be duly marked "Bid Modifications." One (1) original and two (2) copies.

(b) Other provisions concerning the marking and dispatch of bid modifications shall be in accordance with ITB Sub-Clauses 15.2, 15.3 and 15.4.

18.3 A Bidder wishing to withdraw its bid shall notify the Employer in writing prior to the deadline prescribed for bid submission. The notice of withdrawal shall

(a) be addressed to the Employer at the address named in the ITB, and

(b) bear the contract name, the IFB number, and the words "Bid Withdrawal Notice." Bid withdrawal notices received after the bid submission deadline will be ignored, and the submitted bid will be deemed to be a validly submitted bid.

Deadline for submission of Bid, its modification and withdrawal, if any:

Date & Time:…. (as per web notification and relevant corrigendum)………………

18.4 No bid may be withdrawn in the interval between the bid submission deadline and the expiration of the bid validity period specified in ITB Clause 13. Withdrawal of a bid during this interval may result in the Bidder's forfeiture of its bid security, pursuant to ITB Sub-Clause 12.6.

E. Bid Opening and Evaluation

19.0 Opening of Bids by Employer

The bids submitted by the bidders shall be opened in two phases. In the first phase, the techno commercial bid (Part-I) shall be opened and the bids of the bidders found techno commercially successful after detailed evaluation shall be opened in the second phase.

19.1 The Employer will open the bids including withdrawals and modifications made pursuant to ITB Cl.18, in the presence of bidder’s designated representative who chooses to attend the opening at the time, on the date and at the place specified in the ITB. Bidders' representatives shall sign a register as proof of their attendance.

“In the event of the specified date of bid opening being declared a holiday for the Employer, the bids shall be opened at the appointed time and location on the next working day.”

Bid Opening (Techno-commercial part-I):

DGM (T) Contract,  
Delhi Transco Limited,  
Room No.-107, 1st Floor Pre-Fabricated Building,  
Rajghat Power House,  
New Delhi-110002 (India),  
Phone : 23275290  
Fax No. 011-23275289,
Envelopes marked “WITHDRAWAL” shall be opened first and the name of the Bidder shall be read out. Bids for which an acceptable notice of withdrawal has been submitted pursuant to ITB Clause 18 shall not be opened.

The bidders’ names, deviations, bid modifications and withdrawals, the presence (or absence) of bid security, Integrity Pact, and any such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. Subsequently, all envelopes marked “MODIFICATION” shall be opened and the submissions therein read out in appropriate detail. No bid shall be rejected at bid opening except for late bids pursuant to ITB Clause 17. At the time of opening of price bids the bid prices, including any alternative bid prices or deviations, any discounts, and any such other details as the employer may consider appropriate, will also be announced by the employer.

The Employer will prepare minutes of the bid opening, including the information disclosed to those present in accordance with ITB Sub-Clause 19.3.

Bids not opened and read out at the time of techno commercial bid opening in part – I shall not be considered for further evaluation, irrespective of the circumstances.

**Clarification of Bids**

During evaluation of bid i.e. Part-I and Part-II, the Employer may, at its discretion, ask the Bidder(s) for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the price or substance of the bid shall be sought, offered or permitted.

The Employer will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

Arithmetical errors will be rectified on the following basis:

If there is a discrepancy between the unit price and the total price, which is obtained by multiplying the unit price and quantity, or between subtotals and the total price, the unit or subtotal price shall prevail, and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words will prevail. If the Bidder does not accept the correction of errors, its bid will be rejected and the bid security will be forfeited in accordance with ITB Sub-Clause 12.6 (c).”

The Employer may waive any minor informality, nonconformity or irregularity in a bid that does not constitute a material deviation, whether or not identified by the Bidder in Attachment 6 and 6A to its bid, and that does not prejudice or affect the relative ranking of any Bidder as a result of the technical and commercial evaluation, pursuant to ITB Clauses 23 and 24.

Prior to the detailed evaluation of PART-I (TECHNO-COMMERCIAL BID)”, the Employer will determine whether each bid is of acceptable quality, is generally complete and is substantially responsive to the bidding documents. For purposes of this
determination, a substantially responsive bid is one that conforms to all the terms, conditions and specifications of the bidding documents without material deviations, objections, conditionalities or reservations. A material deviation, objection, conditionality or reservation is one (i) that affects in any substantial way the scope, quality or performance of the contract; (ii) that limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the successful Bidder's obligations under the contract; or (iii) whose rectification would unfairly affect the competitive position of other Bidders who are presenting substantially responsive bids. The PART-II (PRICE BID) shall be opened only of those bidders whose TECHNO-COMMERCIAL BID is of acceptable quality.

21.4.1 “Bids containing deviations from critical provisions relating to (i) to (vii) below will be considered as non responsive:

(i) Appendix 2 to the Form of Contract Agreement (Price Adjustment): Clause No. 10.6 ITB

(ii) Bid Security: Clause No. 12.1, 12.2 ITB.

(iii) Performance Security: Clause 13.3 CC

(iv) Liquidated Damages & (Functional Guarantee): Clause 28 & 28.5 CC

(v) Defect Liability: Clause No. 27 CC

(vi) Payment: Clause No. 12 CC

(vii) Time Schedule Appendix-IV

However, the bidders wishing to propose deviations to any of the above provisions must provide in the Attachment - 6A of the bid, with the cost of withdrawal of such deviations. If the deviation to any of these provisions is not priced, the bid will be rejected. The evaluated cost of the bid shall include, in addition to the costs described in ITB Clause 24, the cost of withdrawal of the deviations from the above provisions to make the bid fully compliant with these provisions.

At the time of Award of Contract, if so desired by the Employer, the bidder shall withdraw these deviations listed in Attachment 6 and Attachment 6A at the cost of withdrawal stated by him in the bid. In case the bidder does not withdraw the deviations proposed by him, if any, at the cost of withdrawal stated by him in the bid, his bid will be rejected and his bid security forfeited.”

21.5 If a bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by the Bidder by correction of the nonconformity. The Employer’s determination of a bid’s responsiveness is to be based on the contents & compliance of the complete provisions of TECHNO-COMMERCIAL bid itself without recourse to extrinsic evidence.

22.0 Conversion to Single Currency: Deleted

23.0 Detailed Technical & Commercial Evaluation (Part-I)

23.1 The Employer will carry out a detailed evaluation of the Techno-Commercial (Part-I) offer to determine whether the technical/Commercial aspects are in accordance with the
requirements set forth in the bidding documents. In order to reach such a determination, the Employer will examine and compare the technical/commercial aspects of the bids on the basis of the information supplied by the bidders, taking into account the following factors:

(a) overall completeness and compliance with the Techno-Commercial Specifications and Drawings; deviations from the Technical Specifications as identified in Attachment 6 to the bid; suitability of the facilities 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) achievement of specified performance criteria by the facilities & Qualifying requirements as provided in Annexure-A of ITB. The evaluation will also take into account the Bidder's financial, technical and production capabilities.

(c) type, quantity and long term availability of mandatory and recommended spare parts and maintenance services.

(d) any other relevant factors, if any, listed in the ITB, or that the Employer deems necessary or prudent to take into consideration.

23.2 When alternative technical sections have been permitted and offered in Attachment 7 to the bid, the Employer will make similar evaluation of the alternatives, which will be treated in the technical and commercial evaluations as if they were base bids. Where alternatives are not permitted, but have in any event been offered, they shall be ignored.

24.0 Evaluation of Price Bids (Part-II)

Evaluation and Comparison of Bids:

24.1 The Employer will evaluate and compare the Bids previously determined to be substantially responsive, pursuant to ITB Clause 21.

24.2 The Employer's evaluation of Bid will exclude and not take into account any allowance for price adjustment during the period of execution of the Contract, if provided in the Bidding Documents.

24.3 The comparison shall be of ex-works price of the goods offered from within India, such price shall include all costs as well as duties and taxes paid or payable on components and raw-materials incorporated or to be incorporated in the goods and the CIF Port-of-Entry price of the goods offered from outside India.

24.4 Arithmetical errors will be rectified on the following basis:

If there is a discrepancy between the unit price and the total price, which is obtained by multiplying the unit price and quantity, or between subtotals and the total price, the unit or subtotal price shall prevail, and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words will prevail. If the Bidder does not accept the correction of errors, its bid will be rejected.

24.5 The Employer's evaluation of Bid will take into account, in addition to the Ex-works/CIF bid price, the following factors.
(a) **For goods offered from within India.**

(i) Cost of inland transportation, insurance of finished goods.
(ii) Cost of installation services viz., unloading, storage, handling at site, insurance, installation including associated civil works, testing & commissioning of equipment/material, as specified.
(iii) Taxes, duties and levies as per GST Rules payable on all goods including bought out items which is to be mentioned by the bidder separately.
(iv) The cost of incidental services.
(v) Performance and productivity of the equipment offered
(vi) Cost of Withdrawal of Deviations (Attachment 6 & 6A Vol III)
(vii) Time Schedule

(b) **For goods offered from abroad.**

(i) Cost of inland transportation & insurance including charges for port clearance/port handling.
(ii) Cost of installation viz., unloading, storage, handling at site, insurance, installation including associated civil works, testing & commissioning of equipment/materials to be supplied.
(iii) Indian customs duty and any other similar import taxes which may be levied for importation of the goods.
(iv) The cost of incidental services.
(v) Taxes, duties and levies as per GST Rules which is incidental to the delivery of goods at the final destination site which is to be mentioned by the bidder separately.
(vi) Performance and productivity of the equipment offered.
(vii) Cost of withdrawal of Deviation (Attachment 6 & 6A Vol-III.)
(viii) Time Schedule

The method will be followed in respect of the following:

24.6 **(a) Inland Transportation, ex-factory or from Port of Entry, Insurance and Incidentals:**
Bidder shall quote separately for inland transportation (including port handling & port clearance for goods offered from abroad) insurance charges and other incidental costs for delivery of goods to the Final Destination Site. The Bidders shall be required to assess the distance of the site from Ex-factory/Port of Entry to India and shall quote a composite and uniform unit rate for each equipment and also the total price for inland transportation & insurance charges for the package.

(b) **Cost of Installation services**

i) The cost of services for unloading, storage, handling at site, insurance installation including associated civil works, testing & commissioning of equipment/material shall be quoted by the Bidder in the manner indicated in price schedule.

ii) Total charges of expatriate personnel of a Foreign Bidder and imported equipment, is deemed to be included in the cost of installation services (including all foreign and Indian travel expenses, boarding and lodging charges, all tax liabilities and other incidental expenses).

(c) **Contractual and Commercial Deviations**

A. Bids containing deviations from critical provisions relating to the following clauses will be considered as non – responsive:
(i) Appendix 2 to the Form of Contract Agreement (Price Adjustment): Clause No. 10.6 ITB

(ii) Bid Security: Clause No. 12.1, 12.2 ITB.

(iii) Performance Security: Clause 13.3 CC

(iv) Liquidated Damages & (Functional Guarantee): Clause 28 & 28.5 CC

(v) Defect Liability: Clause No. 27 CC

(vi) Payment: Clause No.12 CC

(vii) Time Schedule: Appendix-4

However, the Bidders, wishing to propose deviations to any of the above provisions, must provide the cost of withdrawal of such deviations in Attachment 6A Volume-III of the Bidding Documents.

The cost of withdrawal of other Technical and Commercial deviations, if any, be given in Attachment 6 of bidding document Vol-III.

If the deviation to any of the provisions is not priced, the bid will be rejected.

At the time of award of contract, if so desired by the Employer, the Bidder shall withdraw the deviations listed in Deviation Schedules of Bid Form, Price and Other Schedules in their bid at the cost of withdrawal stated by him in the bid. In case the Bidder does not withdraw the deviations proposed by him, if any, at the cost of withdrawal stated by him in the bid, his bid will be rejected and his bid security forfeited.

B. The evaluation shall be based on the evaluated cost of fulfilling the Contract with all commercial, contractual and technical obligations under the Bidding Documents. In arriving at the evaluated cost, the price of withdrawal of deviations as mentioned above, shown in the relevant schedule of Bid Form, price and other schedules, will be used.

(d) Cost of incidental services  Deleted

(e) Performance & productivity of the Equipment

(i) Bidder shall state the guaranteed performance or efficiency in response to the Technical Specifications. Plant & Equipment offered shall have minimum performance specified in Technical Specification to be considered responsive. Bids offering Plant and Equipment with a performance less that the specified may be rejected.

(ii) For the purpose of evaluation, the adjustment on the basis of per unit of differential loss in terms of Indian Rupees indicated in Clause 28.5 of Conditions of Contract will be added to the bid price.

The best parameter of loss quoted for the equipment by any technically responsive bidder shall be taken as basis and that quoted by the particular bidder shall be used to arrive at differential price to be applied for the bid.
(f) No credit will be given for the earlier delivery/completion and offers with delivery/completion beyond the completion period will be treated as unresponsive.

24.7 Bidder has to quote for the complete scope of work for one, two or all subject package(s) as stated in Section- Technical Specification, Vol.-II & Section I Vol.- I of the Bidding Documents. Bids covering partial scope of the work as specified in Technical Specification will be treated as incomplete and shall be rejected.

24.8 Conditional discount/rebate, if any, offered by the bidder shall not be taken into consideration for evaluation. It shall, however, be considered in case of award.

Discount(s)/rebate(s) offered by the bidder shall be indicated as a percentage of price component(s) and not as a lump sum amount. Bidder shall also indicate in his bid, the price component(s) on which the percentage discount is to be applied. In case the price component(s) on which the percentage discount is applicable is not indicated in the bid, then the discount will be adjusted in the total bid price [i.e. proportionately on each price component], in the event of award. However, if lump sum discount is offered, the same shall be adjusted in full from the ex-works price component (by proportionately reducing ex-works price of individual items), in case of award.

24.9 Any adjustments in price that result from the above procedures shall be added, for purposes of comparative evaluation only, to arrive at an "Evaluated Bid Price." Bid prices quoted by Bidders shall remain unaltered.

25.0 No margin of preference will be granted to plant & equipment manufactured in employers country.

26.0 Contacting the Employer

26.1 From the time of the opening of bids to the time the contract is awarded if any bidder wishes to contact the Employer on any matter related to the bid, it should do so in writing.

26.2 Any effort by a Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidder's bid.

F. Award of Contract

27.0 Post-Qualification

27.1 The Employer will determine to its satisfaction whether the Bidder selected as Techno- commercially qualified & having submitted the lowest evaluated responsive bid is qualified to satisfactorily perform the contract in terms of the qualifying requirements stipulated in the ITB 8.3 (c) and (e)."

27.2 The determination will take into account the Bidder's financial, technical and production capabilities, in particular its contract, work in hand, future commitments and current litigation. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder in Attachment 3 to the bid, as well as such other information as the Employer deems necessary and appropriate.

27.3 An affirmative determination will be a prerequisite for award of the contract to the Bidder. A negative determination will result in rejection of the Bidder's bid, in which event the Employer will proceed to the next lowest evaluated bid to make a similar determination of
that Bidder's capabilities to perform satisfactorily.

27.4 The capabilities of the vendors and subcontractors proposed in Attachment 5 to the bid to be used by the lowest evaluated Bidder will also be evaluated for acceptability. Their participation should be confirmed with a letter of intent between the parties, as needed. Vendor or subcontractor be determined to be unacceptable, the bid will not be rejected, but the Bidder will be required to substitute an acceptable vendor or subcontractor without any change to the bid price.

28.0 Award Criteria

28.1 Subject to ITB Clause 29, the Employer will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and to be the lowest evaluated bid, further provided that the Bidder is determined to be qualified to perform the contract satisfactorily.

28.2 The Employer may request the Bidder to withdraw any of the deviations listed in Attachment 6 and 6A to the winning bid, at the price shown for the deviation in Attachment 6 and 6A to the bid. Bidder would be required to comply with all other requirements of the Bidding Documents except for those deviations which are accepted by the Employer."

28.3 The Employer reserves the right to vary the quantity of any of the spares and/or delete any items of spares altogether at the time of Award of Contract."

28.4 The mode of contracting with the successful bidder will be as per stipulation outlined in CC and briefly indicated below:

In the case of successful Indian Bidder, the award shall be made as follows:

(i) First Contract: For Ex-Works supply and CIF supply, if any, of all equipments and materials including mandatory spares identifying separately the CIF and EXW components of the Supply.

(ii) Second Contract: For providing all services i.e. inland transportation for delivery at Site, unloading storage, handling at Site, installation, Testing and Commissioning including performance testing in respect of all the equipments supplied under the "First Contract" and any other services specified in the Contract Documents.

Both contracts will contain a cross fall breach clause specifying that breach of one will constitute breach of the other.

In the case of successful foreign Bidder, the award shall be made as follows:

(i) First Contract: For CIF supply of all offshore equipments and materials including mandatory spares.

(ii) Second Contract: For Ex-Works supply of all equipments and materials including mandatory spares and

(iii) Third Contract: For providing all services i.e. port handling and custom clearance for the imported goods, further loading and inland transportation for delivery at Site, unloading, storage, handling at Site, installation, testing and commissioning
including performance testing in respect of all the equipment supplied under the First and Second Contracts and

All the three contracts will contain a cross fall breach clause specifying that breach of one will constitute breach of the others. The foreign bidder, however, has the option, to be exercised as a part of his bid proposal, to propose an Indian Associate to execute the Second and/or Third Contract.

Further, in case of Foreign Bidder having proposed Indian Associate in its bid to execute the Second and Third Contract and having also furnished written unequivocal consent of the proposed Indian Associate to work as independent Contractor on the terms offered by the bidder and the proposed Indian Associate for the Second Contract (On-Shore Supply) and Third Contract (On-Shore Services Contract) is determined to be qualified and determined to have capacity and capability, as per the Qualification Requirement specified in Annexure-A (ITB), to perform the contract satisfactorily, then the employer will award the Second and Third Contract on said Indian Associate notwithstanding the overall responsibility and liability of the Foreign Bidder for successful performance of the Contract(s) in the event of award.

It is our understanding that as per extant provisions, Indian Income Tax is not payable on sale of goods, if contract is on Principal-to-Principal basis and the title of goods passes to the Employer outside India as in the proposed First Contract. The bidders are, however, advised to check the position from their own sources.

29.0 Employer's Right to Accept Any Bid and to Reject Any or All Bids.

29.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer's action. DELHI TRANSCO LIMITED reserves the right to waive minor deviations if they do not materially affect the capability of the Bidder to perform the contract.

30.0 Notification of Award

30.1 Prior to the expiration of the period of bid validity, the Employer will notify the successful Bidder in writing by registered letter or by cable, to be confirmed in writing by registered letter, that its bid has been accepted. The notification of award will constitute the formation of the contract.

30.2 Upon the successful Bidder's furnishing of the performance security pursuant to ITB Clause 32, the Employer will promptly notify each unsuccessful Bidder and will discharge its bid security, pursuant to ITB Sub-Clause 12.4.

31.0 Signing the Contract Agreement

31.1 At the same time as the Employer notifies the successful Bidder that its bid has been accepted, the Employer will send the Bidder the Contract Agreement provided in the bidding documents, incorporating all agreements between the parties.

31.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign and date the Contract Agreement and return it to the Employer.
32.0 Performance Security

32.1 Within twenty-eight (28) days after receipt of the notification of award, the successful Bidder shall furnish the performance security 10% (Ten percent) of the contract price in the form provided in the section "Sample Forms and Procedures" of the bidding documents or in another form acceptable to the Employer. The performance security of a joint venture shall be in the name of joint venture.

32.2 Failure of the successful Bidder to comply with the requirements of ITB Clause 31 or Clause 32 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

33.0 Adjudicator

33.1 No provision for adjudicator.

34.0 Corrupt or Fraudulent Practices

34.1 The DTL requires that Bidders/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the DTL:

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

   (i) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution; and

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

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

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

34.2 Furthermore, Bidders shall be aware of the provision stated in sub-clause 42.2 of the Conditions of Contract.

35.0 After award of Contract, the contractor shall be solely responsible for RBI permissions for foreign bidders, if required, for opening Project office and project account in Delhi for execution of contract.

36.0 Anti-Profiteering Clause
The bidder shall comply with the provision of section 171 of the GST Act, 2017 and all the benefits accrued to him on account of any reduction in rate of tax on any supply of goods or service will be supplied to DTL under this Tender will be passed on to Delhi
Transco Limited by way of commensurate reduction in the prices. In future, if anything found contrary, the bidder will be accountable for any contravention of the law and shall indemnify Delhi Transco Limited for the loss suffered on account of not passing the aforesaid benefit.

37.0 Instructions for filling and submission of Price Schedule:—

i. All the Price Schedules shall be filled in the Excel (.xlsx) format as uploaded with the web notification.

ii. Bidder is required to enter HSN/ SAC code, Unit Rate, GST/TAX & Duties in editable cells and submit the signed Price Schedule in hard copy in sealed envelope as per Cl. 15 of Section ITB.

iii. The signed hard Copy shall only be considered in Price evaluation.

iv. Price Schedule in .xlsx format uploaded is to facilitate the bidders to fill the prices. However, liability and responsibility of calculation correctness shall be on account of the bidder only.
Qualification Requirement


QUALIFICATION OF THE BIDDER

1.0 General

Qualification of bidder will be based on meeting the minimum pass/fail criteria specified below regarding the Bidder’s Technical Experience and Financial Position as demonstrated by the Bidder’s responses in the corresponding Bid Schedules.

The Employer may assess the capacity and capability of the bidder to successfully execute the scope of work covered under the package within stipulated completion period. The assessment shall inter-alia include (i) document verification; (ii) bidder’s works/ manufacturing facilities visit; (iii) manufacturing capacity, details of work executed, works in hand, anticipated in future & balance capacity available for the present scope of work; (iv) details of plant and machinery, manufacturing and testing facilities, manpower and financial resources; (v) details of quality system in place; (vi) past experience and performance; (vii) customer feedback; (viii) Banker’s feedback etc.

DTL reserves the right to waive minor deviations if they do not materially affect the capability of the Bidder to perform the contract.

1.1 Eligible Bidder

a) Manufacturer of Conductor having experience of manufacturing, supply, stringing, testing & commissioning of EHV transmission line Conductors as per the experience criteria mentioned for Manufacturing and ETC of Conductors as per clause 2.1 & 2.2 respectively.

OR

b) Manufacturer of Conductor having experience of manufacturing, supply of conductor as per criteria mentioned in clause 2.1 and erection is carried out through an erector meeting experience criteria as per clause 2.2. The bid shall include consent letter (as per format annexure-B1) from the proposed erector.

OR

c) Erectors who have the experience as per the criteria mentioned in 2.2 below and supply HTLS conductor from such manufacture(s) who fulfills the criteria mentioned at 2.1(i) or 2.1(ii) below. The bid shall include consent letter (as per format Annexure-B2) from the proposed HTLS Conductor manufacturer. In addition to the Contract Performance Guarantee to be furnished by the bidder and a confirmation letter from the manufacturer stating that the manufacturer shall furnish back up performance guarantee in the form of bank guarantee for a period of two years for amount equivalent to 10% of the Ex-works cost of the HTLS conductor in the bid documents for successful performance of HTLS conductor to be manufactured and supplied under the contract.

OR
d) A Joint venture/Consortium consisting of two or more partners including the lead partner meeting the following conditions:

(i) All the Partners of JV/Consortium shall meet collectively the requirement of Clause 2.1 & 2.2 below.

(ii) Each of the partners of the joint venture/Consortium must meet the minimum qualifying requirements as mentioned in clause No. 2.1 or 2.2 below.

2.0 Technical Experience

2.1 Experience of Manufacturer:

The Bidder shall be a manufacturer of conductor for the last five years. The Manufacturer’s experience should include the following:

(i) The Manufacturer should have manufactured, tested and supplied at least Twenty Five (25) km of High Temperature Low Sag (HTLS except GAP type) conductor having at least same or more number of strands or having minimum 150 sq. mm Aluminium cross section area as that of the conductor being offered in the package during last five (5) years and the same should have been in satisfactory operation for a period of at least 02 years as on the original date of bid opening.

OR

(ii) Indian Conductor manufacturer not meeting the requirement as stipulated above at clause 2.1(i) can also participate provided such manufacturers have manufactured, tested and supplied at least one thousand (1000) km of ACSR/ AAAC/ ACAR/ AACSR conductor and ten (10) km High Temperature Low Sag (HTLS except GAP type) conductor having at least same or more number of strands or having minimum 150 sq. mm Aluminium cross section area as that of the conductor being offered in the package during last five (5) years as on the originally scheduled date of bid opening. The same should have been in satisfactory operation for a period of at least 01 (one) year as on the originally scheduled date of bid opening.

OR

(iii) In case, the Bidder is an Indian Entity meeting the requirement stipulated in above clause at 2.1 (ii) except HTLS conductor, but has established manufacturing and testing facilities in India for HTLS conductor of sane technology as that of the conductor being offered in this package having minimum 150 sq. mm Aluminium cross section area shall also be considered provided the bidder meets the following requirements:

a) The bidder must have manufactured HTLS conductor based on the technological support of the Principal / Collaborator(s) and the bidder should have tested HTLS conductor manufactured in Indian facility as per applicable standard i.e IS / IEC/ ASTM or any other equivalent standard as on the originally schedule date of bid opening. Provided further that the Principal / collaborator(s) of the bidder meets qualifying requirements as per clause 2.1 (i) mentioned above.
b) Further, the bidder shall also submit the following along with the bid:

1) A legally enforceable undertaking (jointly with the parent company (principle) or collaborator(s) to guarantee quality, timely supply, performance and warranty obligations as specified for the equipment(s).

2) A confirmation letter from the principal/ Collaborator(s) stating that the principal/Collaborator(s) shall furnish performance guarantee for an amount equivalent to 10% of the ex-works cost of HTLS conductor to be supplied in this package. This performance guarantee shall be addition to contract Performance guarantee to be submitted by the bidder.

3) A valid collaboration agreement for technology transfer/ license to design, manufacture, test and supply HTLS conductor of same technology as that of the conductor being offered in this package in India.

(iv) In case, a foreign conductor manufacturer meeting The eligibility criteria as per clause no. 2.1(i) is submitting it bid as a single bidder .

1) The bidder should have completed stringing of HTLS conductor of not less than 25 Km of cumulative route length of transmission line of 220 kV or higher voltage class in India as on the originally schedule date of bid opening.

OR

2) The bidder should have, in its bid, proposed an Indian associate for executing the On-shore supply and On-Shore service contract, as per the provision of bidding documents. The proposed Indian associate shall meet the erection experience criteria as per clause number 2.2.

Foreign manufacturer / suppliers should submit performance certificate from an end user located in a country other than the country where the product has been manufactured in support of satisfactory operation of the product offered for at least two years or more as on the originally scheduled date of bid opening.

2.2 Experience of Erector

The erector should have completed stringing of HTLS conductor for transmission line of cumulative circuit kilometers not less than 25 kms of 66 kV or higher voltage class in India as a prime contractor or as a partner in a Joint Venture within the last five (5) years and the same should have been in satisfactory operation for a period of at least 02 years as on the originally date of bid opening.

+Note: In case of works executed under a contract that had been awarded on a Joint Venture, the experience of individual Joint Venture partner shall be considered limited to the scope of that partner under the said contract.

3.0 Techno- Commercial and Legal Arrangement of Joint Venture/consortium:

In case of Joint Venture/consortium, the following conditions shall also apply:
i. The bid, and in case of successful bid, the specified Form of Agreement shall be signed so as to be legally binding on all partners (Form enclosed).

ii. Each of the Partners of the Joint Venture/consortium must meet the minimum qualifying requirements given under clause 2.1 or 2.2. However, all the partners of Joint Venture/consortium shall meet collectively, the requirements of Clauses 2.1 and 2.2 above.

iii. One of the partners shall be nominated as Lead Partner, and the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture/consortium. Thus the lead partner shall be authorized to represent the Joint Venture/consortium for the purpose of execution of the contract. The payment shall be in the name of Joint Venture/consortium. The authorization shall be evidenced by submitting a Power of Attorney signed by legally authorized signatory of all the partners as per bidding documents.

iv. All the partners of the joint venture/consortium shall be liable jointly and severally for the execution of the Contract in accordance with the Contract terms, and a statement of this effect shall be included in the authorization mentioned under (iii) above as well as in the Bid Form and in the Contract Form (in case of a successful bid);

v. Agreement entered into by the Joint Venture/consortium partners shall be submitted with the bid.

4.0 Financial Position

4.1 Individual Firms

a) Net worth for last 3 financial years should be positive.

b) Minimum Average Annual Turnover* (MAAT) for best three years i.e. 36 months out of last five financial years of the bidder should not be less than

\[
\text{MAAT (Rs.)} = \frac{(1.5 \times \text{Estimated cost})}{\text{completion period in years}}.
\]

MAAT (Rs.) = Rs. 41,58,64,366/-

* Note: Annual total income as incorporated in the profit and loss account except non-recurring income i.e. sales of fixed assets etc.

c) Bidder shall have liquid assets (L.A) or/and evidence of access to or availability of credit facilities of not less than

\[
\text{LA (Rs.)} = \frac{(3 \times \text{Estimated Cost})}{\text{Completion period in months}}.
\]

LA (Rs.) = Rs. 6,93,10,728/-

Note: In case the completion period is less than one (1) year the denominator to calculate MAAT and LA shall be considered as one (1) and twelve (12) respectively.

In case bidder is a holding company, financial position criteria referred to in clause 4.1 above shall be of that holding company only (i.e. excluding its subsidiary/group companies). In case bidder is a subsidiary of a holding company, financial position criteria referred to in clause 4.1 above shall be of that subsidiary company only (i.e. excluding its holding company).
4.2 Joint Venture/consortium Firms:

The figures for each of the partners of the joint venture/consortium shall be added together to determine the bidder’s compliance with the minimum qualifying criteria set out in Clause 4.1 (a), (b) & (c) above. However, in order for a joint venture to qualify, partners of the joint venture/consortium must meet the following minimum criteria:

The lead partner shall meet, not less than 40% of the minimum criteria given at Para 4.1 (a), (b) & (c) above.

Each of the other partner(s) shall meet not less than 25% of the criteria given at 4.1 (a), (b) & (c) above.

5.0 The Bidder shall furnish documentary evidence in support of the qualifying requirement stipulated as above.
CONSENT LETTER FROM ERECTOR
(To be submitted on the letterhead of the Company)

To
Delhi Transco Ltd.
Shakti Sadan, Kotla Road
New Delhi-110002.

In respect of Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories against Tender No: T18P080211.

Dear Sir,

The undersigned on behalf of M/s……….having its registered office at…………… wish to confirm as under:

1. That, we shall carry out Stringing, testing and commissioning of HTLS conductor for M/s ……….. meeting the technical specification as specified in Delhi Transco Limited said Tender No. ……………..

2. That, we as a Erector meet the qualifying criteria as specified in Clause 2.2 of Annexure A, Section ITB, Volume-I of the said Tender No. ……………...

3. That, we shall carry out Stringing, testing and commissioning of HTLS conductor in line with the agreed Time Schedule between Delhi Transco Limited and M/s…………..

4. That, documentation in respect of our qualification and experience is enclosed with this consent letter as per the requirement of Tender Specifications.

That, Undersigned is authorized to submit this consent/confirmation letter on behalf of M/s……..(Authorization letter enclosed).

For and on behalf of M/s……...

Signature:………
Name:…………
Designation:……
Seal:………..
CONSENT LETTER FROM HTLS CONDUCTOR MANUFACTURER
(To be submitted on the letterhead of the Company)

To  
Delhi Transco Ltd.
Shakti Sadan, Kotla Road
New Delhi-110002.

In respect of Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories against Tender No: T18P080211

Dear Sir,

The undersigned on behalf of M/s…………….having its manufacturing units at ……………… and registered office at……………. wish to confirm as under:

1. That, we shall supply HTLS Conductor to M/s …………… meeting the technical specification as specified in Delhi Transco Limited said Tender No. ……………….

2. That, we as a HTLS Conductor Manufacturer meet the qualifying criteria as specified in Clause 2.1 of Annexure A, Section ITB, Volume-I of the said Tender No. …………

3. That, we shall supply the HTLS Conductor in line with the agreed Time Schedule between Delhi Transco Limited and M/s…………..

4. That, we shall undertake supervision of HTLS conductor stringing and commissioning in case of award of Contract to M/s……………

5. That, documentation in respect of our qualification and experience is enclosed with this consent letter as per the requirement of Tender Specifications.

That, Undersigned is authorized to submit this consent/confirmation letter on behalf of M/s……….(Authorization letter enclosed).

For and on behalf of M/s………

Signature:………
Name:…………
Designation:……
Seal:…………
ANNEXURE-1

FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES

BANK CERTIFICATE

This is to certify that M/s ......................................... (Full Name & Address) ........................................................................................................................................................................... Who are submitting their bid to Delhi Transco Ltd. as sole bidder*/partner of JV*# against their tender specification vide Ref. No.________________ & date ___________ is our Customer for the past _________________ years.

Their financial transactions with our bank have been satisfactory. They enjoy the following fund based and non-fund based limits including for guarantees, L/C and other credit facilities with us against which the extent of utilization as on date is also indicated below :

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Type of Facility</th>
<th>Sanctioned Limit as on Date</th>
<th>Utilization as on Date</th>
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<td></td>
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<td></td>
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</tr>
</tbody>
</table>

This letter is issued at the request of M/s. _________________________________

Sd/-
Name of Bank
Name of Authorized Signatory
Designation
Phone No.
Fax No.
Address

SEAL OF THE BANK :

Note:
* Strike out whichever is not applicable.
# Separate details to be furnished by different partners of JV.
SECTION-III

CONDITIONS OF CONTRACT
(CC)
SECTION - III

Condition of Contract (CC)

A. Contract and Interpretation:

1 Definitions:

1.1 The following words and expressions shall have the meanings hereby assigned to them:

"Contract" means the Contract Agreement entered into between the Employer and the Contractor, 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.


"CC" means the Conditions of Contract hereof.

"Day" means calendar day of the Gregorian Calendar.

"Month" means calendar month of the Gregorian Calendar.

"Employer/Owner" means the person named as below and includes the legal successors or permitted assigns of the Employer/Owner.

Delhi Transco Ltd.
Shakti Sadan
New Delhi-110002
Fax No. – 011-23234640
Tel. No. -011-23230026

"Project Manager" means the person appointed by the Employer in the manner provided in CC Sub-Clause 17.1 (Project Manager) hereof and named as such in the CC to perform the duties delegated by the Employer.

The Project Manager is: [Name, address, telephone, cable, email-id and facsimile numbers]

"Contractor" means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as such in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

The Contractor is: [Name, address, telephone, cable and facsimile numbers]

"Contractor's Representative" means any person nominated by the Contractor and named as such in the CC and approved by the Employer in the manner provided in CC Sub-Clause 17.2 (Contractor's Representative and Construction Manager) hereof to perform the duties delegated by the Contractor.

The Contractor’s Representative is: [Name, address, telephone, cable and facsimile numbers]

"Subcontractor," including vendors, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant and Equipment, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

"Arbitrator" means the person or persons appointed by agreement between the Employer and the Contractor to make a decision on or to settle any dispute or difference between the Employer and the Contractor referred to him or her by the parties pursuant to CC Sub-Clause 6.2 (Arbitrator) hereof.

"Contract Price" means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

"Facilities" means the Plant and Equipment to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.
"Plant and Equipment" means permanent plant, equipment, machinery, apparatus, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under CC Sub-Clause 7.3 hereof), but does not include Contractor's Equipment.

"Installation Services" means all those services ancillary to the supply of the Plant and Equipment for the Facilities, to be provided by the Contractor under the Contract; e.g., transportation and provision of marine or other similar insurance, inspection, expediting, Site preparation works (including the provision and use of Contractor's Equipment and the supply of all construction materials required), installation, testing, Pre-commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc.

"Contractor's Equipment" means all plant, facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant and Equipment, or other things intended to form or forming part of the Facilities.

"Site" means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date from which the Time for Completion shall be determined as stated in Article 3 (Effective Date for Determining Time for Completion) of the form of Contract Agreement.

“Taking Over” means the Employer’s written acceptance of the Facilities under the Contract, after successful Trial – Operation for the specified period in accordance with the Contract.

"Time of completion" means the time within which completion of the Facilities as whole (or of a part of the Facilities where a separate Time for completion of such part has been prescribed) and Taking Over by the employer is to be attained in accordance with the stipulations in the CC and the relevant provisions of the Contract.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activities</th>
<th>Duration in months from the effective date of contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Taking Over by the Employer upon successful Completion of:</td>
<td>09 Months</td>
</tr>
</tbody>
</table>

The successful Bidder shall be required to prepare detailed Network(s) and project implementation plans & programmes and finalize the same with the Employer as per requirement specified in Technical Specifications, which shall form a part of the Contract.

Note: No credit will be given for the earlier delivery/ completion and offers with delivery/completion beyond the completion period will be treated as unresponsive.

"Completion" means that the Facilities (or a specific part thereof where specific parts are specified in the CC) have been completed operationally and structurally and put in a tight and clean condition, and that all work in respect of Pre-commissioning of the Facilities or such specific part thereof has been completed and Commissioning has been attained as per Technical Specifications followed by successful Trial – Operation, as provided in CC Sub-Clause 24.0 (Completion of Facilities) & 25.0 (Commissioning and Operational Acceptance) hereof.

"Pre-commissioning" means the testing, checking and other requirements specified in the Technical Specifications that are to be carried out by the Contractor in preparation for Commissioning as provided in CC Clause 24 (Completion) hereof.

“Commissioning” means operations of the facilities or any part thereof to be carried out by the Contractor as provided in CC Sub-Clause 25.1 (commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

"Guarantee Test(s)" means the test(s) specified in the Technical Specifications to be carried out to
ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Technical Specifications in accordance with the provisions of CC Sub-Clause 25.2 (Guarantee Test) hereof.

"Operational Acceptance" means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor's fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of CC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with CC Clause 25 (Commissioning and Operational Acceptance) hereof.

"Defect Liability Period" means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in CC Clause 27 (Defect Liability) hereof.

2 Contract Documents
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.

3 Interpretation
3.1 Language
3.1.1 All Contract Documents, all correspondence and communications to be given, and all other documentation to be prepared and supplied under the Contract shall be written in English, and the Contract shall be construed and interpreted in accordance with that language.

3.1.2 If any of the Contract Documents, correspondence or communications are prepared in any language other than the governing language under CC Sub Clause 3.1.1 above, the English translation of such documents, correspondence or communications shall prevail in matters of interpretation.

3.2 Singular and Plural
The singular shall include the plural and the plural the singular, except where the context otherwise requires.

3.3 Headings
The headings in the CC are included for ease of reference, and shall neither constitute a part of the Contract nor affect its interpretation.

3.4 Persons
Words importing persons or parties shall include firms, corporations and government entities.

3.5 Incoterms
Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties there under shall be as prescribed by Incoterms.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1er, 75008 Paris, France.

3.6 Entire Agreement
Subject to CC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.

3.7 Amendment
No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party hereto.

3.8 Independent Contractor
The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the parties hereto.

Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in
which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.9 Joint Venture or Consortium
If the Contractor is a joint venture or consortium of two or more firms, all such firms shall be jointly and severally bound to the employer for the fulfillment of the provisions of the Contract and shall designate one of such firms to act as a leader with authority to bind the joint venture or consortium. The composition or the constitution of the joint venture or consortium shall not be altered without the prior consent of the Employer.

3.10 Non-Waiver
3.10.1 Subject to CC Sub-Clause 3.10.2 below, no relaxation, forbearance, delay or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect or restrict the rights of that party under the Contract, nor shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.10.2 Any waiver of a party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

3.11 Severability
If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.12 Country of Origin
"Origin" means the place where the materials, equipment and other supplies for the Facilities are mined, grown, produced or manufactured, and from which the services are provided.

4 Notices
4.1 Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing, and shall be sent by personal delivery, airmail post, special courier, cable, telegraph, telex, facsimile, email id or Electronic Data Interchange (EDI) to the address of the relevant party set out in the Special Conditions of Contract, with the following provisions.

Employer’s address for notice purposes: [Name, address and telephone, cable, email-id and facsimile numbers]

Contractor’s address for notice purposes: [Name, address and telephone, cable, email-id and facsimile numbers]

4.1.1 Any notice sent by cable, telegraph, telex, facsimile, email id or EDI shall be confirmed within two (2) days after despatch by notice sent by airmail post or special courier, except as otherwise specified in the Contract.

4.1.2 Any notice sent by airmail post or special courier shall be deemed (in the absence of evidence of earlier receipt) to have been delivered ten (10) days after dispatch. In proving the fact of despatch, it shall be sufficient to show that the envelope containing such notice was properly addressed, stamped and conveyed to the postal authorities or courier service for transmission by airmail or special courier.

4.1.3 Any notice delivered personally or sent by cable, telegraph, telex, facsimile, email id or EDI shall be deemed to have been delivered on date of its despatch.

4.1.4 Either party may change its postal, cable, telex, facsimile or EDI address or addressee for receipt of such notices by ten (10) days' notice to the other party in writing.

4.2 Notices shall be deemed to include any approvals, consents, instructions, orders and certificates to be given under the Contract.

5 Governing Law
5.1 The courts at Delhi shall have the exclusive jurisdiction on all matters. The contract shall be governed and
6 Settlement of Disputes

6.1 Adjudicator

Not applicable.

6.2 Arbitration

6.2.1 If at any time any question, dispute or difference shall arise between the Employer and the Contractor in connection with or arising out of the Contract or the carrying out of the Works either party shall be entitled to refer the matter to be finally settled by arbitration in accordance with the following provisions:

6.2.2 The arbitration shall be conducted by three arbitrators. One each to be nominated by the Contractor and the Employer and the third to be appointed as an umpire by both the arbitrators in accordance with the Indian Arbitration Act. If either of the parties fails to appoint its arbitrator within sixty (60) days after receipt of a notice from the other party invoking the Arbitration clause, the arbitrator appointed by the party invoking the arbitration clause shall become the sole arbitrator to conduct the arbitration.

6.2.3 The arbitration shall be conducted in accordance with the provisions of the Indian Arbitration & Conciliation Act, 1996 or any statutory modification thereof. The venue of arbitration shall be New Delhi, India.

6.2.4 The arbitration shall be conducted at New Delhi, India. The language of arbitration shall be English.

6.2.5 The Arbitrator(s) shall have full power to open up review and revise:

a) Any decision of the Employer referred to arbitration, and
b) Any certificate of the Employer related to the dispute.

6.2.6 The award given by the Arbitrator(s) under the Sub-clauses 6.2.1 & 6.2.3 shall be a speaking award.

6.2.7 Works to Continue

Performance of the Contract shall continue during arbitration proceedings unless the Employer shall order suspension. If any such suspension is ordered the reasonable costs incurred by the Contractor and occasioned thereby shall be added to the Contract Price. No payments due or payable by the Employer shall be withheld on account of pending reference to arbitration.

6.2.8 Time Limit for Arbitration

Formal notice of arbitration must be given to the other party, and where required to the appropriate arbitration body no later than 90 days after the issue of the Final Certificate of Payment.

6.2.9 Law and Procedure

6.2.9.1 Applicable Law

The law, which is to apply to the Contract and under which the Contract is to be construed, shall be Indian law.

6.2.9.2 Procedural Law

The law governing the procedure and administration of any arbitration instituted pursuant to Clause 6.0 shall be Indian law.

B. Subject Matter of Contract

7 Scope of Facilities

7.1 Unless otherwise expressly limited in the Technical Specifications, the Contractor’s obligation cover the provision of all Plant and Equipment and the performance of all Installation Services required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the Plant and Equipment and the installation, completion, commissioning and performance testing of the facilities in accordance with the plans, procedures, specifications drawings, codes and any other documents as specified in the Technical specifications. Such
specifications include, but are not limited to, the provision of supervision and engineering services the supply of labour, materials, equipment, spare parts (as specified in CC sub-clause 7.3 below) and accessories, Contractor’s Equipment; construction utilities and supplies, temporary materials, structures and facilities, transportation (including without limitation, unloading and hauling to, from and at the Site); and storage except for those supplies, works and services that will be provided or performed by the Employer, as set forth in Appendix-6 (Scope of Works and Supply by the Employer) to the Contract Agreement.

7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.

7.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the CC. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedules, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price thereof and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

The Contractor shall ensure the availability of spare parts for the supplied items for a minimum period of fifteen (15) years from operational acceptance by the Employer.

7.4 The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the plant and equipment. Other spare parts and components shall be supplied as promptly as possible, but at the most within six (6) months of placing the order and opening the letter of credit.

7.5 In the event of termination of production of spare parts:

(i) The Contractor shall send advance notification to the Employer of the pending termination, with 2(two) years time to permit the Employer to procure needed requirements, and
(ii) Following such termination, the contractor shall furnish at no cost to the Employer the blueprints, drawings and specifications of the spare parts, if requested.

8 Time for Commencement and Completion

8.1 The Contractor shall commence work on the Facilities within the period specified in the CC and without prejudice to CC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in Appendix 4 (Time Schedule) to the Contract Agreement.

The contractor shall commence work on the facilities from the Effective Date of Contract for determining Time for completion as specified in the contract.

8.2 The Contractor shall attain Completion of the Facilities (or of a part where a separate time for Completion of such part is specified in the Contract) within the time stated in the CC or within such extended time to which the Contractor shall be entitled under CC Clause 40 (Extension of Time for Completion) hereof.

9 Contractor's Responsibilities

9.1 The Contractor shall design, manufacture (including associated purchases and/or subcontracting), install and complete the Facilities with due care and diligence in accordance with the Contract.

9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities (including any data as to boring tests) provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site (if access thereto was available) and of other data readily available to it relating to the Facilities as at the date twenty-eight (28) days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.

9.3 The Contractor shall acquire in its name all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located that are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor
shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under CC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.

9.4 The Contractor shall comply with all laws in force in the country where the Facilities are installed and where the Installation Services are carried out. The laws will include all national, provincial, municipal or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to CC Sub-Clause 10.1 hereof.

10 Employer’s Responsibilities

10.1 The Employer shall ensure the accuracy of all information and/or data to be supplied by the Employer as described in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract, except when otherwise expressly stated in the Contract.

10.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in Appendix 6.

10.3 The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the site is located which such authorities or undertakings require the Employer to obtain them in the Employer’s name, are necessary for the execution of the Contract (they include those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract), including those specified in Appendix 6 (Scope of works and supply by the Employer) to the Contract Agreement.

10.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.

10.5 Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel, shall supply and make available all raw materials utilities, lubricants, chemicals, catalysts, other materials and facilities, and shall perform all works and services of whatsoever nature, to enable the Contractor to properly carry out Pre-commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of Appendix 6 (Scope of works and supply by the Employer) to the Contract Agreement at or before the time specified in the program furnished by the Contractor under CC Sub-Clause 18.2 (Program of Performance) hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.

10.6 The Employer shall be responsible for the continued operation of the facilities after Operational Acceptance, in accordance with CC 25.3

10.7 All costs and expenses involved in the performance of the obligations under this CC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with CC Sub-Clause 25.2.

C. Payment

11 Contract Price

11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Form of Contract Agreement.

11.2 The Contract Price shall be on lump sum basis. The Contract price shall be adjusted on account of variation in quantity in accordance with clause 39 CC. Further the CIF/Ex-works price component and installation price component shall also be subject to price adjustment in line with the provisions of Appendix 2 to Form of Contract Agreement.
Subject to CC Sub-Clauses 9.2, 10.1 and 35 (Unforeseen Conditions) hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

12 Terms of Payment

12.1 The Contract Price shall be paid as specified in Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement. The procedures to be followed in making application for and processing payments shall be those outlined in the same Appendix 1.

12.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.

12.3 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.

12.4 All payments shall be made in currency or currencies specified in the corresponding Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, pursuant to CC 12.3.

13 Securities

13.1 Issuance of Securities
The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

13.2 Advance Payment Security
13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, and in the same currency or currencies with a validity of up to the date of completion of Facilities in accordance with CC clause 24.0 and it shall be kept alive till the recovery of the full amount of the advance with interest portion.

13.2.2 The Security shall be in the form provided in the bidding documents or in another form acceptable to the Employer. The security shall be discharged after completion of the facilities or relevant party thereof.

Procedure for effective reduction in the Advance Payment Security:
Recovery of the advance amount shall be made from each running bill proportionately. It should be clearly understood that reduction in the value of security for advance shall not in any way dilute the Contractor’s responsibility and liabilities under the Contract including in respect of the Facilities for which reduction in the value of security is allowed.

13.3 Performance Security
13.3.1 The Bidder shall submit performance guarantee of 10% of the contract value within twenty eight (28) days of the notifications of award, valid for 12 Months from operational acceptance. Then this performance guarantee shall be renewed periodically every year for next four years. Every renewal of performance guarantee shall be done by the contractor one month prior to the expiry date.

The bidder will submit an undertaking to the owner with a copy to the banker issuing the performance bank guarantee that the bidder will renew and submit the bank guarantee within thirty days before the expiry of bank guarantee failing which it shall be encashed and credited in favour of DTL automatically by the banker without waiting for any instructions from DTL.

13.3.2 The performance security shall be in the form of unconditional Bank Guarantee attached hereto in the Section IV - Sample Forms and Procedures.

13.3.3 Reduction in the security pro rata to the Contract Price of any part of the Facilities is not admissible since separate time for Completion of part of the facilities is not applicable. However, if the Defects Liability Period has been extended on any part of the Facilities pursuant to CC sub-clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The Security shall be returned to the Contractor immediately after its expiration, provided, however, that if
the Contractor pursuant to CC Sub-Clause 27.10, is liable for an extended warranty obligation, the performance security shall be extended for the period and up to the amount specified in the CC clause 27.

13.3.4 In case of award of the contract to a Joint Venture, the performance security and the Bank Guarantee for advance payment shall be submitted in the name of the Joint Venture and not in the name of the Lead Partner or any Partner(s) of the Joint Venture alone.

13.4 Issuing Banks
The Advance Payment Security and Performance Security are to be provided by the Contractor in the form of ‘Bank Guarantee’ which should be issued either:

(a) by a reputed bank located in the country of Employer and acceptable to the Employer, or

(b) by a foreign bank confirmed by either its correspondence bank located in the country of Employer which should be reputed and acceptable to the Employer, or

(c) by a Public Sector Bank in the country of Employer.

All banks shall be nationalized and scheduled banks operating in India.

14 Taxes and Duties

14.1 For CIF Contract, the Contractor shall be entirely responsible for payment of all taxes, stamp duties, license fees and other such levies imposed outside the employer’s country.

14.2 In case of Contract for domestic supplies and services, the Contractor shall be entirely responsible for payment of all taxes, duties, license fees and other such levies legally payable/incurred until delivery of the contracted supplies to the Employer.

If it is statutory requirement to make deductions towards such taxes and duties or any other applicable taxes and duties, the same shall be made by the employer and a certificate for the same shall be issued to the Contractor.

14.3 The Contractor shall be solely responsible for its Income Tax liabilities and for taxes that may be levied on the Contractor's persons or on earnings of any of his employees and shall hold the employer indemnified and harmless against any claims that may be made against the Employer. The Employer does not take any responsibility whatsoever regarding taxes under Income Tax Act, for the Contractor or his personnel. If it is obligatory under the provisions of the Income Tax Act, deduction of Income Tax at source shall be made by the employer.

14.4 In case of CIF Contracts, any Indian Customs duties or Taxes, duties and levies including GST the Stamp Duty and Import License Fee levied by the Government of India or any State Government in India on the equipment and materials covered in the Contract to be imported in to India against employer’s Import License and which will become the property of the Employer under the Contract, shall be to the Employer’s account and shall be paid directly by the Employer to Government of India or concerned authorities. In the event a contractor is required by law to pay such levies in India, the same shall be reimbursed by the Employer to the Contractor in Indian Rupees, upon presentation of satisfactory documentary evidence for having made such payments. The successful bidder shall submit a comprehensive list of all the goods to be imported in to India under the Contract to enable the Employer to obtain the Import License endorsement of Project Imports for availing concessional rate of customs and other import duties. However, the successful bidder shall arrange to get equipment assessed under ‘Project Rate’ or ‘merit rate’ of custom duty whichever is less as permitted under relevant notification for the type of Project. Any additional liabilities of customs and import duties or penalty thereon, due to discrepancy in the said list of goods or any other lapse of the Contract, shall be to the account of the Contractor.

Further, if any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the Country where the site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from such tax savings to the maximum allowable extent. The contractor is ultimately liable to pass on the benefit so availed to the employer.

14.5 In respect of transactions between the Employer and the Contractor, the base price is inclusive of all cost as well as duties and tax (custom duties & levies, Taxes and duties as per GST Rules) paid or payable on components, raw materials and any other items used /incorporated or to be incorporated in the Plants & Equipments and other final goods & services to be supplied by the contractor under the proposed contract. No separate claim shall be paid by the Employer for taxes and duties included in respect of these items stated herein.
14.6 The Input Tax Credit (ITC) available, if any, under GST as per the relevant Government laws wherever applicable has been taken into account by the Contractor.

Reimbursement of GST by the Employer shall be at the rate applicable on the HSN/SAC of the goods/services supplied by the Contractor to the Employer as mutually agreed upon. The payment of GST on advance payment shall be against Invoice/Debit Note containing particulars specified under the GST Act and related Rules, Notifications, etc as notified by the Government in this regard. In the event that the Contractor fails to provide the invoice in the form and manner prescribed under the GST Act and Rules, the Employer shall not be liable to make any payment against such invoice. GST payment against Advance payment shall be against a proforma invoice. Further, the Contractor shall, within 7 days from the date of receipt of Advance, furnish an Advance Receipt Voucher to the Employer, as prescribed under the GST Law.

The Contractor shall comply with all tax laws in force in India. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, interest, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such tax laws by the Contractor or its personnel, including the Subcontractors and their personnel.

14.7 Taxes, duties and levies as per GST Rules for the Goods & Services under transactions’ between contractor & Employer for destination site/state shall not be included in the base price. These amounts will be payable (along with subsequent statutory variation if any) on the supplies made by the Contractor, subject to submission of the documentary evidence indicating the said taxes paid by the contractor and GST credit is transferred to the Employer. But the amount of said taxes shall be limited to the tax liability on the transaction between the employer and the Contractor only. However, Employer will not bear any upward variation in GST rate due to change/disputes in classification relating to HSN/SAC code as quoted by the bidder at a later stage. Employer shall, however, deduct such taxes at source as per the rules and issue Tax Deduction at Source (TDS) Certificate to the Contractor as per the said rules.

14.8 For payment in respect of dispatches made directly from Contractor's works, Tax invoices raised by the Contractor shall be accepted as documentary evidence and for payment of GST. The amount of GST as stated in Tax invoice will be paid only after the GST credit is transferred to the Employer.

However, the employer from time to time may also verify the payment / deposit of various taxes by the contractor, which the later has already claimed and charged in the previous invoices from the employer against the aforesaid transactions between employer and the contractor.

14.9 For the purpose of the Contract, it is agreed that the Contract Price specified in Article-2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes inclusive of duties, levies and charges prevailing at the date seven (07) days prior to the last date of bid submission. If any rates of Tax are increased or decreased or, a new Tax is introduced, or an existing Tax is abolished in the course of the performance of the Contract, which was or will be assessed on the Contractor in connection with performance of the Contract, an equitable adjustment of the Contract price shall be made to take into account any such change by addition to the Contract price or deduction therefrom, as the case may be (changes in law & regulations) hereof. However, these adjustments would be applicable to all transactions between the employer and the Contractor for which the taxes and duties are reimbursable by the Employer as per the Contract. These adjustments shall not be applicable on procurement of raw materials, intermediary components etc by the Contractor.

In respect of raw materials, intermediary components etc, forming part of base price of goods & services supplied under the contract, neither the employer nor the Contractor shall be entitled to any claim arising due to increase or decrease in the rate of Tax, introduction of a new Tax or abolition of an existing Tax in the course of the performance of the Contract.

However, Employer will not bear any upward variation in GST rate due to change/disputes in classification relating to HSN/SAC code as quoted by the bidder at a later stage.

D. Intellectual Property

15 Copyright

15.1 The copy right in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third party, including supplies of materials, the copyright in such materials shall remain vested in such third party.

The Employer shall however be free to reproduce all drawings, document and other material furnished to the Employer for all purpose of the Contract including, if required, for operation and maintenance.
16 Confidential Information

16.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this CC Clause 16.

16.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant and Equipment, construction or such other work and services as are required for the performance of the Contract.

16.3 The obligation of a party under CC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which

(a) now or hereafter enters the public domain through no fault of that party

(b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party hereto

(c) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality

16.4 The above provisions of this CC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.

16.5 The provisions of this CC Clause 16 shall survive termination, for whatever reason, of the Contract.

E. Execution of the Facilities

17 Representatives

17.1 If the Project Manager is not named in the Contract, then within fourteen (14 days) of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of Project manager. The Employer may from time to time appoint some other person as the Project manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. The Employer shall take all reasonable care to see that no such appointment is made at such a time or in such a manner as to impede the progress of work on the Facilities. The Project Manager shall represent and act for the employer at all times during the currency of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

17.2 Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14 days) of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen (14) days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this CC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the currency of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.
All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in CC Sub-Clause 17.2.1.

17.2.3 The Contractor's Representative may, subject to the approval of the Employer (which shall not be unreasonably withheld), at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this CC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

17.2.3.1 Notwithstanding anything stated in CC sub-Clause 17.1 and 17.2.1 above, for the purpose of execution of Contract, the Employer and the Contractor shall finalize and agree to a Contract Co-ordination Procedure and all the communication under the Contract shall be in accordance with such Contract Coordination Procedure.

17.2.4 From the commencement of installation of the Facilities at the site until Operational Acceptance, the Contractor's Representative shall appoint a suitable person as the construction manager, (hereinafter referred to as “the Construction Manager”). The Construction Manager shall supervise all work done at the site by the Contractor and shall be present at the site through-out normal working, hours, except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as his or her deputy.

17.2.5 The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under CC Sub-Clause 22.3. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

17.2.6 If any representative or person employed by the Contractor is removed in accordance with CC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

18 Work Program

18.1 Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities. The chart shall include the identities of the key personnel together with the curricula vitae of such key personnel to be employed within twenty-one (21) days of the Effective Date. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

18.2 Program of Performance

The form of the program of performance of the Contract shall be in the form of the Critical Path Method (CPM), the PERT network, or other internationally used programs.

Within twenty-eight (28) days after the date of Notification of Award, the Contractor shall prepare and submit to the Project Manager a detailed program of performance of the Contract, made in the form specified in the CC and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and pre-commission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve completion, commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in appendix-4 (Time Schedule) to the Contract Agreement and any other dates and periods specified in the Contract. The Contractor shall
update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion given in the CC and any extension granted in accordance with CC Clause 40, and shall submit all such revisions to the Project Manager.

18.3 Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in CC Sub-Clause 18.2 (Program of Performance) above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

18.4 Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in CC Sub-Clause 18.2 (Program of Performance), or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under CC Sub Clause 8.2 (Time for Commencement and Completion), any extension thereof entitled under CC Sub-Clause 40.1 (Extension of Time for Completion), or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

18.5 Work Procedures

The Contract shall be executed in accordance with the Contract Documents and the procedures given in the section on Sample Forms and Procedures of the Contract Documents.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19 Subcontracting

19.1 Appendix 5 (List of Approved Subcontractors) to the Contract Agreement specifies major items of supply or services and a list of approved Subcontractors against each item, including vendors. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.

19.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in CC Sub-Clause 19.1.

19.3 For items or parts of the Facilities not specified in Appendix 5 (List of Approved Subcontractors) to the Contract Agreement, the Contractor may employ such Subcontractors as it may select, at its discretion.

20 Design and Engineering

20.1 Specifications and Drawings

20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by
20.2 **Codes and Standards**
Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied after approval by the Employer and shall be treated in accordance with CC Clause 39.3 (Changes Originating from Contractor).

20.3 **Approval/Review of Technical Documents by Project Manager**

20.3.1 The Contractor shall prepare (or cause its subcontractors to prepare) and furnish to the Project Manager the documents listed in Appendix-7(List of Documents for Approval or Review) to the Contract Agreement for its approval or review as specified and as in accordance with the requirements of CC sub-Clause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager’s approval thereof.

CC sub-Clause 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager’s approval, but not to those furnished to the Project Manager for its review only.

20.3.2 Within twenty one (21) days after receipt by the Project Manager of any document requiring the Project Manager’s approval in accordance with CC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefore and the modifications that the Project Manager proposes.

20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with some specified provision of the Contract or that it is contrary to good engineering practice.

20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager’s approval in accordance with CC sub-Clauses 20.3.2. If the Project Manager approves the documents subject to modification(s), the Contractor shall make the required modifications and the document shall be deemed to have been approved.

The procedure, for submission of the documents by the Contractor and their approval by the Project Manager shall be discussed and finalized with the Contractor.

20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the parties within a reasonable period, then such dispute or difference may be referred to an Arbitration for determination in accordance with CC Sub Clause 6.2 (Arbitration) hereof. If such dispute or difference is referred to Arbitration, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Arbitration upholds the Contractor's view on the dispute and if the Employer has not given notice under CC Sub Clause 6.2 (arbitration), then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Arbitration shall decide, and the Time for Completion shall be extended accordingly.

20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this CC Sub-Clause 20.3. If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of CC Clause 39 (Change in the Facilities) shall apply to such request.
21 Procurement

21.1 Plant and Equipment

Subject to CC Sub-Clause 14.2, the Contractor shall manufacture or procure and transport all the Plant and Equipment in an expeditious and orderly manner to the Site.

21.2 Employer-Supplied Plant, Equipment, and Materials

If Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement provides that the Employer shall furnish any specific items of machinery, equipment or materials to the Contractor, the following provisions shall apply:

21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to CC Sub-Clause 18.2 (Program of Performance), unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this CC Sub-21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under CC Clause 27 (Defect Liability) or under any other provision of Contract.

21.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the Plant and Equipment and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the Plant and Equipment.

21.3.3 Upon dispatch of each shipment of the Plant and Equipment and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or Electronic Data Interchange (EDI) of the description of the Plant and Equipment and of the Contractor's Equipment, the point and means of despatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the Plant and Equipment and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the Plant and Equipment.

21.4 Customs Clearance

The Contractor shall, at its own expense, handle all imported Plant and Equipment and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance including liabilities for port charges if any, subject to the Employer's obligations under CC sub-Clause 14.4, provided that if applicable laws or regulations require any application or act to be made by or in the name of the employer, the employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance due to the fault of the employer, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to CC Clause 40.
21.5 Delivery and Documents

21.5.1 For Imported Goods
Upon shipment, the Contractor shall notify the Employer and the Insurance company by cable or telex of the full details of the shipment including Contract number, description of goods, quantity, the vessel, the bill of lading/Airway Bill number and date, port of loading, date of shipment, port of discharge, etc. The Contractor shall mail the following documents to the Employer, with a copy to the Insurance Company:

1) Copies of the Contractor’s invoice showing Contract Agreement reference, goods description, quantity, unit price, total amount;
2) Original (3/3) and six copies of the negotiable, clean on-board bill of lading/Airway Bill marked freight prepaid and six copies of non negotiable bill of lading / Airway Bill;
3) Copies of packing list identifying contents of each package(6 copies);
4) Original insurance policy certification (3 copies);
5) Manufacture’s / Contractor’s guarantee certificate of Quality;
6) Material Inspection & Clearance Certificate (MICC) for dispatch, issued by the Employer’s representative and the Contractor’s factory inspection report, test certificates( 3 copies); and
7) Certificate of origin.

The above documents shall be air mailed/faxed by the Contractor to reach the Employer within one week from date of shipment to enable the Employer to make progressive payment to the Contractor and also make necessary arrangement for payment of custom duties etc. The Contractor will be responsible for any consequent expenses due to delay in furnishing the above documentation.

21.5.2 For Domestic Goods
Upon shipment, the Contractor shall notify the employer and the Insurance Company by cable or telex of the full details of the dispatch including Contract number, description of goods, quantity, R/R or L/R number and date, place of loading, date of dispatch etc. The Contractor shall mail the following documents to the Employer, with a copy to the Insurance Company:

1) Copies of the Contractor’s invoice showing Contract Agreement reference, goods description, quantity, unit price, total amount(6 copies);
2) Copies of packing list identifying contents of each package(6 Copies);
3) Railway receipt / Receipted LR ;
4) Manufacturer’s / Contractor’s guarantee certificate of Quality.
5) Material Inspection & Clearance Certificate (MICC) for dispatch issued by the Employer’s representative and the Contractor’s factory inspection report & test certificate (3 copies) and insurance certificate (3 copies); and
6) Certificate of origin.

21.6 Packing

21.6.1 The Contractor shall provide such packing of the Goods as it is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods final destination and the absence of heavy handling facilities at all points in transit.

21.6.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and, subject to any subsequent instruction ordered by the Employer consistent with the requirements of the Contract.
21.7 Indemnity Bond
For the equipment/material to be provided by the Contractor, it will be the responsibility of the Contractor to take delivery, unload and store the material at Site and execute an Indemnity Bond in favour of the Employer against loss, damage and any risks involved for the full value of the material and obtain authorization letter from Employer as per proforma given at Section-IV. This Indemnity Bond shall be furnished by the Contractor before commencement of the supplies and shall be valid till the scheduled date of Operational Acceptance of the equipment by the Employer.

22 Installation

22.1 Setting Out/Supervision/Labour

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor's Supervision:
The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.1.3 Labour:
(a) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labour that has the necessary skills.

(b) Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation, accommodation and catering of all labour, local or expatriate, required for the execution of the Contract and for all payments in connection therewith.

(c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labour and personnel to be employed on the Site into the country where the Site is located.

(d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to their various home countries. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

(e) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labour of its Subcontractors.

(f) The Contractor shall, in all dealings with its labour and the labour of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labour.

22.2 Contractor's Equipment

22.2.1 All Contractors’ Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.
22.2.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.2.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

22.3 Site Regulations and Safety

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

22.3.1 Compliance with Labour Regulations

22.3.1.1 During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all applicable existing labour enactments and rules made there under, regulations notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The employees of the Contractor and the Sub-contractor in no case shall be treated as the employees of the Employer at any point of time.

22.3.1.2 The Contractor shall keep the employer indemnified against any action by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments.

22.3.1.3 If the Employer is caused to pay under any law as principal employer such amounts as may be necessary to cause or as observe, or for non observance of the provisions stipulated in the notifications / byelaws / Acts / Rules / regulations including amendments, if any, on the part of the Contractor, the Employer shall have the right to deduct any money due to the Contractor under this contract or any other contract with employer including his amount of performance security for adjusting the aforesaid payment. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

22.3.1.4 Some major laws along with their latest amendments applicable to establishments engaged in building and other construction works:

a) Workmen Compensation Act 1923: The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

c) Employee P.F. and Miscellaneous Provision Act 1952: The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits under the Act are:

1) Pension or family pension on retirement or death, as the case may be.
2) Deposit linked insurance on death in harness of the worker.
3) Payment of P.F. accumulation on retirement/death etc.

d) Maternity Benefit Act 1951: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

e) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certification of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more labour contract labour.
f) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provision of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.

g) Payment of Wages Act 1936: It lays down as to by what date the wages are to paid, when it will be paid and what deductions can be made from the wages of the workers.

h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.

i) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/- per month or less. The bonus is to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

j) Industrial Dispute Act 1947: The Act lays down the machinery the procedure for resolution of Industrial disputes, in what situations a strike or lock out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

k) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.


n) Inter-State Migrant workmen’s (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.

o) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the government.

p) Factories Act 1948: The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

22.3.2 **Protection of Environment**

The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution noise or other causes arising as consequence of his methods of operation.
During continuance of the Contract, the Contractor and his Sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or Notification that may be issued in this respect in future by the State or Central Government or the local authority.

Salient features of some of the major laws that are applicable are given below:

The Water (Prevention and Control of Pollution) Act, 1974, This provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. ‘Pollution’ means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The Air (Prevention and Control of Pollution) Act, 1981, This provides for prevention, control and abatement of air pollution. ‘Air Pollution’ means the presence in the atmosphere of any ‘air pollutant’, which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

The Environment (Protection) Act, 1986, This provides for the protection and improvement of environment and for matters connected therewith and the prevention of hazards to human beings, other living creatures, plants and property. ‘Environment’ includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.

The Public Liability Insurance Act, 1991: This provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and or matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under Environment (Protection) Act, 1986, and exceeding such quantity as be specified by notification by the Central Government.

22.4 Opportunities for Other Contractors

22.4.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.

22.4.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.4.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.

22.4.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

22.5 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify
the Contractor in writing of such emergency, the work done and the reasons therefore. If the work done or
caused to be done by the Employer is work that the Contractor was liable to do at its own expense under
the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the
Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.

22.6 Site Clearance

22.6.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall
keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear
away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no
longer required for execution of the Contract.

22.6.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall
clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site
and Facilities clean and safe.

22.7 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and
where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners
and occupiers of adjacent property and for the safety of the public.

22.8 Work at Night and on Holidays

22.8.1 Unless otherwise provided in the Contract, no work shall be carried out during the night and on public
holidays of the country where the Site is located without prior written consent of the Employer, except
where work is necessary or required to ensure safety of the Facilities or for the protection of life, or to
prevent loss or damage to property, when the Contractor shall immediately advise the Project Manager,
provided that provisions of this CC Sub-Clause 22.8.1 shall not apply to any work which is customarily
carried out by rotary or double-shifts.

22.8.2 Notwithstanding CC Sub-Clauses 22.8.1 or 22.1.3, if and when the Contractor considers it necessary to
carry out work at night or on public holidays so as to meet the Time for Completion and requests the
Employer's consent thereto, the Employer shall not unreasonably withhold such consent.

23 Test and Inspection

23.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such
tests and/or inspections of the Plant and Equipment and any part of the Facilities as are specified in the
Contract.

23.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the
aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in
connection with such attendance including, but not limited to, all traveling and board and lodging
expenses.

23.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a
reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project
Manager. The Contractor shall obtain from any relevant third party or manufacturer any necessary
permission or consent to enable the Employer and the Project Manager (or their designated
representatives) to attend the test and/or inspection. For notification of testing, four weeks shall be deemed
as reasonable advance notice.

23.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test
and/or inspection.

If the Employer or Project Manager (or their designated representatives) fails to attend the test and/or
inspection, or if it is agreed between the parties that such persons shall not do so, then the Contractor may
proceed with the test and/or inspection in the absence of such persons, and may provide the Project
Manager with a certified report of the results thereof.

23.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the
Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such
test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes
the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the
Contract, due allowance will be made in respect of the Time for Completion and the other obligations so
affected.
23.6 If any Plant and Equipment or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant and Equipment or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under CC Sub-Clause 23.3. If the inspection is not materialized due to the reasons attributable to contractor then all the expenses including to & fro airfare and TA, DA shall be to the account of the contractor.

23.7 If any dispute or difference of opinion shall arise between the parties in connection with or arising out of the test and/or inspection of the Plant and Equipment or part of the Facilities that cannot be settled between the parties within a reasonable period of time, it may be referred to an Arbitration for determination in accordance with CC Sub-Clause 6.2

23.8 The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant and Equipment are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.

23.9 The Contractor agrees that neither the execution of a test and/or inspection of Plant and Equipment or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to CC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.

23.10 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such part of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

23.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any part of the Facilities or foundations have been covered up at the Site after compliance with the requirement of CC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24 Completion of the Facilities

24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Technical Specifications, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.

24.2 Within seven (7) days after receipt of the notice from the Contractor under CC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel specified in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement for Pre-commissioning of the Facilities or any part thereof.

Pursuant to Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement, the Employer shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Pre-commissioning of the Facilities or any part thereof.

24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters if so specified in Appendix-6 (scope of works and supply by the Employer) have been provided by the Employer in accordance with CC Sub-Clause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part there of in preparation for Commissioning.

24.4 As soon as all works in respect of Pre-commissioning are completed and in the opinion of the Contractor, the facilities or any part thereof is ready for commissioning, the contractor shall commence
Commissioning as per procedures stipulated in Technical Specification and as soon as Commissioning is satisfactorily completed, the Contractor shall so notify the Project Manager in writing. (Also refer CC 25.2.3)

24.5 The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under CC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Forms and Procedures section in the bidding documents, stating that the Facilities or that part thereof have reached Completion as at the date of the Contractor's notice under CC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in CC Sub-Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as at the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

24.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under CC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under CC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.

24.7 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.

25 Commissioning and Operational Acceptance

25.1 Commissioning

25.1.1 Commissioning of the Facilities or any part thereof shall be completed by the Contractor as per procedures detailed in Technical Specifications.

If any Plant and Equipment or any part of the Facilities fails during Commissioning, the Contractor shall either rectify (if fault is minor) or replace such Plant and Equipment or part of the Facilities.

25.1.2 The Employer shall unless otherwise specified in Technical Specifications supply the operating and maintenance personnel and all raw material, utilities, lubricants, chemicals, catalysts, facilities, service and other matters required for Commissioning.

25.1.3 Trial – Operation

25.1.3.1 Trial – Operation of the Facilities or any part thereof shall be commenced by the Contractor immediately after the Commissioning is completed pursuant to CC Sub-Clause 25.1.1

25.1.3.2 Trial – Operation of the Facilities or any part thereof shall be completed by the Contractor for the period specified in Technical Specification (or for a continuous period of 24 hours where such period in not specified in Technical Specification) and as per procedures detailed in Technical Specifications.

25.1.3.3 At any time after the events set out in CC Sub-Clause 25.1.3.2 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Taking Over Certificate in the form provided in the Bidding Documents or in another form acceptable to the Employer in respect of the Facilities or the part thereof specified in such notice as on the date of such notice.

25.1.3.4 The Project Manager shall within twenty-one (21) days after receipt of the Contractor's notice, issue an Taking Over Certificate.
25.1.4 Taking Over

25.1.4.1 Upon successful Trial – Operation of the Facilities or any part thereof, pursuant to CC Sub-Clause 25.1.3, the Project Manager shall issue to the Contractor a Taking Over Certificate as a proof of the acceptance of the Facilities or any part thereof. Such certificate shall not relieve the Contractor of any of his obligations which otherwise survive, by the terms and conditions of Contract after issue of such certificate.

25.1.4.2 If within twenty one (21) days after receipt of the Contractor's notice, the Project Manager fails to issue the Taking Over Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Taking Over Certificate, the Facilities or the relevant part thereof shall be deemed to have been Taken Over as at the date of the Contractor's said notice.

25.1.4.3 Upon Taking Over of the Facilities or any part thereof, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

25.2 Guarantee Test

25.2.1 The Guarantee Test (and repeats thereof) shall be conducted by the Contractor after successful trial-operation of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Contract Documents. The Contractor’s and Project Manager’s advisory personnel shall attend the Guarantee Test. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test (and any repeats thereof).

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the CC or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and CC Sub-Clauses 28.2 and 28.3 shall not apply.

The Guarantee Test of the Facilities shall be successfully completed within twenty-six weeks from the date of Completion.

25.2.3 Completion- Guarantee test- acceptance

In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to the Employer either on account of non-availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Employer’s control, the provisions leading to “deemed” completion of activities such as Completion of the Facilities, pursuant to CC Sub-Clause 24.6, Operational Acceptance, pursuant to CC Sub-Clause 25.3.4, Contractor’s obligations regarding Defect Liability Period, pursuant to CC Sub Clause 27.2, Functional Guarantee, pursuant to CC Clause 28, Care of Facilities, pursuant to CC Clause 32, and Suspension, pursuant to CC Sub-Clause 41.1, shall not apply. In this case, the following provisions shall apply.

25.2.3.1 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause CC 25.2.3, the Contractor shall be entitled to the following:

a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to CC Sub-Clause 26.2.

b) payments due to the Contractor in accordance with the provisions specified in Appendix I (terms and Procedures of Payment) to the Contract Agreement, which would have not been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding these payments, subject to the provisions of Sub-Clause CC 25.2.3.2 below.

c) the expenses toward the above security and extension of other securities under the Contract, of which validity need to be extended, shall be reimbursed to the Contractor by the Employer.

d) the additional charges toward the care of the Facilities pursuant to CC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Sub-Clause CC 25.2.3.3 below. The provisions of CC sub-Clause 33.2 shall apply to the Facilities during the same period.
25.2.3.2 In the event that the period of suspension under Sub-Clause CC 25.2.3 actually exceeds one hundred eighty (180) days, the Employer and the Contractor shall mutually agree to any additional compensation payable to the Contractor.

25.2.3.3 When the Contractor is notified by the Project Manager that the Facilities are ready for Pre-commissioning, the Contractor shall proceed without delay in performing all activities and obligations under the Contract.

25.3 Operational Acceptance

25.3.1 Subject to CC Sub-Clause 25.4 (Partial Acceptance) below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

(a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or

(b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the CC or any other agreed upon period as specified in CC Sub-Clause 25.2.2 above but successful completion of the facilities has been achieved; or

(c) the Contractor has paid the liquidated damages specified in CC Sub-Clause 28.3 hereof; and

(d) any minor items mentioned in CC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

(e) as built drawings, and operating and maintenance manuals and CD’s etc. as per Technical Specifications of the Bidding Documents are furnished.

25.3.2 At any time after any of the events set out in CC Sub-Clause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Bidding Documents or in another form acceptable to the Employer in respect of the Facilities or the part thereof specified in such notice as at the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within twenty-one (21) days after receipt of the Contractor’s notice, issue an Operational Acceptance Certificate.

25.3.4 If within twenty one (21) days after receipt of the Contractor’s notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as at the date of the Contractor’s said notice.

25.4 Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

F. Guarantees and Liabilities

26 Completion Time Guarantee

26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified in the CC) within the Time for Completion specified in the CC pursuant to CC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under CC Clause 40 (Extension of Time for Completion) hereof.

26.2 If the Contractor fails to comply with the Time for Completion in accordance with Clause CC 26 for the whole of the facilities, (or a part for which a separate time for completion is agreed) then the Contractor shall pay to the Employer a sum equivalent to half percent (0.5%) of the Contract Price as liquidated
damages for such default and not as a penalty, without prejudice to the Employer's other remedies under the Contract, for each week or part thereof which shall elapse between the relevant Time for Completion pursuant to Clause 26.1 above and the date stated in Taking Over Certificate of the whole of the Works (or a part for which a separate time for completion is agreed) subject to the limit of five percent (5%) of Contract Price. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

For the application of liquidated damages, the schedule date for Taking Over of the entire system shall be the basis, and not intermediate schedule milestone.

26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.

27 Defect Liability

27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant and Equipment supplied and of the work executed.

27.2 The Defect Liability Period shall be five years from the date of Operational Acceptance of the facilities (or any part thereof).

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Contractor, the Contractor shall promptly in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

(a) improper operation or maintenance of the Facilities by the Employer
(b) operation of the Facilities outside specifications provided in the Contract
(c) normal wear and tear.

27.3 The Contractor's obligations under this CC Clause 27 shall not apply to

(a) any materials that are supplied by the Employer under CC Sub-Clause 21.2 (Employer-Supplied Plant, Equipment and Materials), are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein.

(b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein.

(c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under CC Sub-Clause 27.7.

27.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.

27.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this CC Clause 27. The Contractor may, with the consent of the Employer, remove from the Site any Plant and Equipment or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.

If such part fails the tests, the Contractor shall carry out further repair, replacement or making good (as the case may be) until that part of the Facilities passes such tests.
The tests in character shall in any case be not less than what has already been agreed by the employer and the Contractor for the original equipment/part of the Facilities.

27.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any amount due the Contractor or claimed under the Performance Security.

27.8 If the facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.

Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period of Sixty (60) months from the time such replacement/repair of the facilities or any part thereof.

27.8.1 At the end of Defect Liability Period, the Contractor’s liability ceases except for latent defects. The Contractor’s liability for latent defects warranty shall be limited to period of five (5) years from the end of Defect Liability Period. For the purpose of this clause, the latent defects shall be the defects inherently lying within the material or arising out of design deficiency, which do not manifest themselves during the Defect Liability Period defined in this CC Clause 27, but later.

27.9 Except as provided in CC Clauses 27 and 33 (Loss of or Damage to Property/ Accident or Injury to Workers/Indemnification), the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant and Equipment, design or engineering or work executed that appear after operational acceptance or any part thereof, except where such defects are the result of the gross negligence, fraud, criminal or willful action of the Contractor.

27.10 In addition, the Contractor shall also provide an extended warranty for any such component of the Facilities and during the period of time as may be specified in the CC. Such obligation shall be in addition to the defect liability specified under CC Sub-Clause 27.2.

28 Functional Guarantee

28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement, subject to and upon the conditions therein specified.

28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract pursuant to CC Sub-Clause 42.2 and recover the payments already made to the Contractor.

28.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in Appendix 8 (Functional Guarantees) to the Contract Agreement is met, the Contractor shall, at the Employer's option, either

(a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense within a mutually agreed time and shall request the Employer to repeat the Guarantee Test, or

(b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in Appendix 8 (Functional Guarantees) to the Contract Agreement.

28.4 In case the Employer exercises its option to accept the equipment after levy of liquidated damages, the payment of liquidated damages under CC sub clause 28.3, upto the limitation of liability specified in the Appendix-8 (Functional Guarantees) to the Contract Agreement, shall completely satisfy the Contractor’s
guarantees under CC Sub clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

28.5 Functional Guarantees, Liquidated Damages for Non-Performance

28.5.1 The bidder shall guarantee that the equipment offered shall meet the rating and performance requirements stipulated for various equipment covered in this specification. The bidder shall also furnish a declaration in the manner prescribed and included in the relevant schedule of Bid Form & Price Schedules for guarantees, which shall attract levy of liquidated damages for non-performance.

28.5.2 If the guarantees are not established at factory tests in case of HTLS Conductor then the Employer at his discretion may reject or accept the equipment after assessing the liquidated damages as per table below in Clause 28.5.4 against the Contract and such amounts shall be deducted from the Contract Price or otherwise recovered from the Contractor.

28.5.3 Deleted

28.5.4 Differential Price Factors for Evaluation and Liquidated Damages

a) The factors and the respective Indian Rupees value of differential loss (Average Ohmic Loss in KW )

\[ = 1.698 \times 10^4 \times R_{ac}, \]

where \( R_{ac} \) = AC resistance per km guaranteed by the bidder at temperature corresponding to the continuous operating current of 500A under normal condition) for purpose of calculation of differential price for the bid evaluation as specified in 24.6 (e) of ITB and liquidated damages shall be as stipulated below:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Parameter to be taken for applying differential Price factor (F)</th>
<th>Value of F in Indian Rupees (applicable for Average Ohmic Loss) of parameter differential per KW</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTLS Conductor</td>
<td>Differential losses (kW) (i.e. Average Ohmic Loss)</td>
<td>Rs. 1,52,600 /- (Rupees One Lakh Fifty Two Thousand Six Hundred only)</td>
</tr>
</tbody>
</table>

The amount of liquidated damages so recoverable shall be as per the aforesaid ceiling and shall not prejudice the Contractor's other liabilities under the Contract in any manner. The liquidated damages for shortfall in guaranteed parameters and for delay in completion are independent of each other and shall be levied separately and concurrently.

(b) For bid evaluation, The best parameter of loss (lowest ohmic loss for conductor) corresponding to lowest AC resistance quoted among bidders by any technically responsive and qualified bidder shall be taken as basis and that quoted by the particular bidder shall be used to arrive at differential price to be applied for each bid.

29 Patent Indemnity

29.1 The Contractor shall, subject to the Employer's compliance with CC Sub Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

29.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in CC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that
it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

29.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

30 Limitation of Liability

30.1 Except in cases of criminal negligence or willful misconduct,

(a) the Contractor shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer and

(b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

G Risk Distribution

31 Transfer of Ownership

31.1 Ownership of the plant and equipment (including spare parts) to be imported into the country where the site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant and Equipment from the country of origin to that country and upon endorsement of the dispatch documents in favour of Employer.

31.2 Ownership of the Plant and Equipment (including spare parts) procured in the country where the site is located, shall be transferred to the Employer upon loading on to the mode of transport to be used to carry the Plant and Equipment from the works to the site and upon endorsement of the dispatch documents in favour of Employer.

31.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.

31.4 Ownership of any Plant and Equipment in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant and Equipment in question are no longer required for the Facilities provided quantity of any Plant and Equipment specifically stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities.

31.5 Notwithstanding the transfer of ownership of the Plant and Equipment, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to CC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant and Equipment are incorporated.

32 Care of Facilities

32.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to CC Clause 24 (Completion of the Facilities) or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant
part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to CC Clause 27 (Defect Liability). Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of CC Sub Clauses 32.2 and 38.1.

32.2 If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of

(a) (insofar as they relate to the country where the Site is located) nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under CC Clause 34 (Insurance) hereof

(b) any use or occupation by the Employer or any third party (other than a Subcontractor) authorized by the Employer of any part of the Facilities

(c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein, The Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with CC Clause 39 (Change in the Facilities). If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with CC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to CC Sub-Clause 42.1 (Termination for Employer's Convenience) hereof, except that the Contractor shall have no entitlement to profit under paragraph (e) of CC Sub Clause 42.1.3 in respect of any unexecuted Facilities as at the date of termination.

32.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in CC Sub-Clause 32.2 (with respect to the Contractor's temporary facilities), and (ii) where such loss or damage arises by reason of any of the matters specified in CC Sub-Claus 32.2 (b) and (c) and 38.1.

32.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in CC Sub-Clause 38.1, the provisions of CC Sub-Clause 38.3 shall apply.

33 Loss of or Damage to Property; Accident or Injury to Workers; Indemnification

33.1 Subject to CC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property (other than the Facilities whether accepted or not), arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.

33.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under CC Sub-Clause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same
on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

33.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under CC Clause 34 (Insurance), provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.

33.4 The party entitled to the benefit of an indemnity under this CC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the party fails to take such measures, the other party's liabilities shall be correspondingly reduced.

34 Insurance

34.1 To the extent specified in Appendix 3 (Insurance Requirements) to the Contract Agreement, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant and Equipment (including spare parts thereof) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances
Such other insurances as may be specifically agreed upon by the parties hereto as listed in the said Appendix 3.

34.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to CC Sub-Clause 34.1, except for the Third Party Liability, Workers’ Compensation and Employer’s Liability Insurances, and the Contractor's Subcontractors shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to CC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.

34.3 The Contractor shall, in accordance with the provisions of Appendix 3 (Insurance Requirements) to the Contract Agreement, deliver to the Employer certificates of insurance (or copies of the insurance policies) as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.

34.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

34.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in Appendix 3 (Insurance Requirements) to the Contract Agreement, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers’ rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this CC Sub-Clause 34.5.

34.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in CC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due to the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in CC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due to the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this CC Clause 34, and the monies payable by any insurers under all the insurance except Third Party Liability Insurance, Workers’ Compensation, and Employer’s Liability, shall be paid to the joint account of the Employer and the Contractor and such monies payable by any insurer without the prior written consent of the Employer. With respect to insurance claims in which the Employer’s interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor’s interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

35 **Unforeseen Conditions**

35.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions (other than climatic conditions) or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities (including any data as to boring tests) provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site (if access thereto was available) or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and
before performing additional work or using additional Plant and Equipment or Contractor's Equipment, notify the Project Manager in writing of

(a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen
(b) the additional work and/or Plant and Equipment and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions
(c) the extent of the anticipated delay
(d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this CC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

35.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in CC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

35.3 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in CC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with CC Clause 40 (Extension of Time for Completion).

36 Change in Laws and Regulations

36.1 If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. However, these adjustments would be restricted to direct transactions between the Employer and the Contractor and not on procurement of raw materials, intermediary components etc. by the Contractor. Further, no adjustment of the Contract Price shall be made on account of variation in deemed export benefits. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the Appendix 2 to the Contract Agreement.

37 Force Majeure

37.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:

(a) war, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war

(b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts

(c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority

(d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague

(e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster

(f) shortage of labour, materials or utilities where caused by circumstances that are themselves Force Majeure.

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

37.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with CC Clause 40 (Extension of Time for Completion).

37.4 The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under CC Sub Clauses 37.6 and 38.5.

37.5 No delay or nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall

(a) constitute a default or breach of the Contract

(a) (subject to CC Sub-Clauses 32.2, 38.3 and 38.4) give rise to any claim for damages or additional cost or expense occasioned thereby if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

37.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which the dispute will be resolved in accordance with CC Clause.6.

37.7 Notwithstanding CC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

38 War Risks

38.1 "War Risks" shall mean any event specified in paragraphs (a) and (b) of CC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.

38.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to

(a) destruction of or damage to Facilities, Plant & Equipment, or any part thereof

(b) destruction of or damage to property of the Employer or any third party

(c) injury or loss of life if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.

38.3 If the Facilities or any Plant and Equipment or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for

(a) any part of the Facilities or the Plant and Equipment so destroyed or damaged (to the extent not already paid for by the Employer)

(b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged,

(c) replacing or making good any such destruction or damage to the Facilities or the Plant and Equipment or any part thereof so far as may be required by the Employer, and as may be necessary for completion of the facilities.

If the Employer does not require the Contractor to replace or make good any such destruction or damage to
the Facilities, the Employer shall either request a change in accordance with CC Clause 39 (Change in the Facilities), excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to CC Sub-Clause 42.1 (Termination for Employer's Convenience).

38.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.

38.5 If during the performance of the Contract any war risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor with due and proper consideration given to the safety of its and its Subcontractors personal engaged in the work on the facilities, provided, however, that if the execution of the work on the facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more the one hundred and twenty (120) days on account of any war Risks, the parties will attempt to develop a mutually satisfactory solution, failing which the dispatch will be resolved in accordance with CC Clause 6.

38.6 In the event of termination pursuant to CC Sub Clause 38.3, the rights and obligation of the employer and the Contractor shall be as specified in CC Sub-Clauses 42.1.2 and 42.1.3, except that the Contractor shall have no entitlement to profit under paragraph (e) of CC Sub Clause 42.13 in respect of any unexecuted facilities as of the date of termination.

H. Change in Contract Elements

39 Change in the Facilities

39.1 Introducing a Change

39.1.1 Subject to CC Sub-Clauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities (hereinafter called "Change"), provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer (with a copy to the Project Manager) any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.

39.1.3 Notwithstanding CC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in CC Sub-Clauses 39.2 and 39.3, and further details and sample forms are provided in the Sample Forms and Procedures section in the bidding documents.

39.2 Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to CC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

(a) brief description of the Change
(b) effect on the Time for Completion
(c) estimated cost of the Change
(d) effect on Functional Guarantees (if any)
(e) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and
submitting the Change Proposal. Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

(a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal

(b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate

(c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under CC Sub-Clause 39.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with CC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the change proposal it becomes apparent that the aggregate effect of compliance therewith and with all other change orders that have already become binding upon the contractor under this CC Clause 39 would be to increase or decrease the contractor price as originally set forth in Article-2 (Contract price and Terms of payment) of the contract agreement by more than fifteen (15) percent, the Contractor may give a written notice of objection there to prior to furnish the change proposal aforesaid. If the employer accept the contractors objection, the employer and the contractor shall agree on specific rates for valuation of the change.

The Contractor failure to so object shall neither affect its right to object to any subsequent requested change or change orders herein, nor affect its right to taken into account, when making such subsequent objection, the percentage increase or decrease in the contract price that any change not objected to by the contractor represents.

39.2.6 If rates and prices of any change are not available in the contract, the parties thereto shall agree on specific rates for the valuation of the change. Upon receipt of the change proposal, the employer and the contractor shall mutually agree upon all matters therein contained. With in fourteen (14) days after such agreement, the employer shall, if it intends to proceed with change, issue the contractor with a change order.

If the employer is unable to reach a decision with in fourteen (14) days, it shall notify the contractor with details of when the contractor can expect a decision.

If the employer decides not to proceed with the change for whatever reason, it shall, with in the said period of fourteen (14) days, notify the contractor accordingly. Under such circumstances, the contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the change proposal, provided that these do not exceed the amount given by the Contractor in its estimate for change proposal submitted in accordance with CC Sub – Clause 39.2.2.

39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Arbitration in accordance with the provisions of CC Sub-Clause 6.2 (Arbitration).

39.3 Changes Originating from Contractor

39.3.1 If the Contractor proposes a Change pursuant to CC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in CC Sub-Clause 39.2.1.

Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in
39.4 The scope of work under the package(s) shall be as per the Technical Specification, Vol- II of bidding Documents. The quantity variation applicable for the existing scope shall be generally as per the following.

a) The employer reserves the right to increase or decrease the quantity of different items of the specified good and services to the extent of fifteen percent (15%) of the contract prices, by way of suitable amendment to the contract, without any change in unit rate/price and/ or other terms and conditions of the contract. However, the quantities of individual items of goods and services may vary up to any extent.

b) The contract price for (i) items for which quantities have been indicated as lumpsum / lot/ set (ii) items for which quantities were to be estimated by the bidder, including additional items (falling under (i) and /or (ii) considered necessary by the bidder for successful completion of the works as per TS and indicated by him in his bid, shall remain constant unless there is change made in the scope of work by the employer. The quantities and unit prices (a) subsequently arrived while approving the bill of quantities (BOQ)/ billing breakup of lumpsum/lot/set quantities and/ or (b) quantities estimated by the bidder /contractor shall be for on account payment purpose only. In case additional quantities, over and above the quantities in BOQ/ billing break up and/or estimated by the bidder/contractor are required for the successful completion of the scope of work as per technical specification, the contractor shall execute additional quantities of these items for which no additional payments shall be made over and above the lumpsum contract price.

In case quantities of these items supplied at site are in excess of that required for successful completion of scope of work, such additional quantities shall be property of the contractor and contractor shall be allowed to take back the same from the site for which no deduction from the lumpsum contract price shall be made. Further in case actual requirement of quantities for successful completion of scope of work is less than the quantities identified in the approved BOQ/ billing break up and/or estimated by the bidder/ contractor, the lumpsum contract price shall remain unchanged and no deduction shall be made from the lumpsum price due to such reduction of quantities. It shall be the responsibility of the bidder to pay all statutory taxes, duties and levies to the concerned authority’s surplus material which would otherwise have been, lawfully payable. The bidder shall submit an indemnity bond to keep the employer harmless from any liability, before release to such martial to the bidder by the employer.

c) The quantity variation from the existing scope shall be notified to the contractor within the validity of contract.

40 Extension of Time for Completion

40.1 The Time(s) for Completion specified in the CC shall be extended if the Contractor 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 Facilities as provided in CC Clause 39 (Change in the Facilities)

(b) any occurrence of Force Majeure as provided in CC Clause 37 (Force Majeure), unforeseen conditions as provided in CC Clause 35 (Unforeseen Conditions), or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of CC Sub-Clause 32.2

(c) any suspension order given by the Employer under CC Clause 41 (Suspension) hereof or reduction in the rate of progress pursuant to CC Sub-Clause 41.2 or

(d) any changes in laws and regulations as provided in CC Clause 36 (Change in Laws and Regulations) or

(e) any default or breach of the Contract by the Employer, specifically including failure to supply the items listed in Appendix 6 (Scope of Works and Supply by the Employer) to the Contract Agreement, or any activity, act or omission of any other contractors employed by the Employer or

(f) any other matter specifically mentioned in the Contract;

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager 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 Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to an Arbitration, pursuant to CC Sub-Claus 6.2 (Arbitration).

40.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

41 **Suspension**

41.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons thereof. The Contractor shall thereupon suspend performance of such obligation (except those obligations necessary for the care or preservation of the Facilities) until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with CC Clause 39 (Change in the Facilities), excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with CC Clause 39 (Change in the Facilities) or, where it affects the whole of the Facilities, as termination of the Contract under CC Sub-Clause 42.1 (Termination for Employer's Convenience).

41.2 In case,

(a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in CC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or

(b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with CC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities; then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

41.3 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this CC Clause 41, then the Time for Completion shall be extended in accordance with CC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

41.4 During the period of suspension, the Contractor shall not remove from the Site any Plant and Equipment, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.
42 Termination

42.1 Termination for Employer's Convenience

42.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this CC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under CC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

(a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

(b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d)(ii) below

(c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition

(d) In addition, the Contractor, subject to the payment specified in CC SubClause 42.1.3, shall

(i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination.

(ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant and Equipment as at the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors

(iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under CC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts:

a. The Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as on the date of termination

b. The costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel

c. The amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges

d. Costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of CC Sub-Clause 42.1.2

e. The cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

42.2 Termination for Contractor's Default

42.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefore to the Contractor, referring to this CC Sub-Clause 42.2:

(a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any
other analogous action in consequence of debt.

(b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of CC Clause 43 (Assignment).

(c) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this sub-clause:

"corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contact execution.

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

42.2.2 If the Contractor

(a) has abandoned or repudiated the Contract

(b) has without valid reason failed to commence work on the Facilities promptly or has suspended (other than pursuant to CC Sub-Clause 41.2) the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed

(c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause

(d) refuses or is unable to provide sufficient materials, services or labour to execute and complete the Facilities in the manner specified in the program furnished under CC Clause 18.2 (Program of Performance) at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended.

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this CC SubClause 42.2

42.2.3 Upon receipt of the notice of termination under CC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,

(a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

(b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below

(c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination

(d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Works and to the Plant and Equipment at the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors

(e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability
including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to CC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as at the date of termination, the value of any unused or partially used Plant and Equipment on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of CC Sub-Clause 42.2.3. Any sums due to the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

42.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined. If the sum that the Contractor is entitled to be paid, pursuant to CC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due to the Contractor under CC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due to the Contractor under CC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

42.3 Termination by Contractor
42.3.1 If

(a) The Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to Appendix 1 (Terms and Procedures of Payment) of the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in CC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or

(b) The contractor is unable to carry out any of its obligations under the contract for any reason attributable to the employer, including but not limited to the employer's failure to provide possession of or access to the site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities, which the employer is required to obtain as per provision of the contract as per relevant applicable laws of the country.

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this CC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this CC Sub-Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under CC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately
(a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

(b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d)(ii) below

(c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractor's personnel from the Site

(d) In addition, the Contractor, subject to the payment specified in CC Sub-Clause 42.3.4, shall

   (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination

   (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant and Equipment as on the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors

   (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as on the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under CC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in CC Sub-Clause 42.1.3, and reasonable compensation for all loss or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this CC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by CC Sub-Clause 42.3.

42.4 In this CC Clause 42, the expression "Facilities executed" shall include all work executed, Installation Services provided, and Plant and Equipment acquired (or subject to a legally binding obligation to purchase) by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

42.5 In this CC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to Appendix 1 (Terms and Procedures of Payment) to the Contract Agreement.

43 Assignment

43.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other (which consent shall not be unreasonably withheld), assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

44 Construction of the contract

44.1 The contracts to be entered into with the successful bidder shall be as under.

For Foreign bidder :

--- “First contract” for CIF supply of all equipment and materials including mandatory spares:

--- “Second Contract” for Ex-works supply of all equipment and materials including mandatory spares:

--- “Third contract” for providing all services i.e. port handling and custom clearance for the imported goods, further loading and inland transportation for delivery at site, unloading, storage handling at site, installation, testing and commissioning including performance testing in respect of all the equipments supplied under both “First contract” and “Second Contract” and any other services specified in the contract documents.
For Domestic Bidder:

--- “First contract” for Ex-works supply and CIF supply, if any of all equipment and materials including mandatory spares identifying separately the CIF and Ex-works components of the supply.

--- “Second Contract” for providing all services i.e. inland transportation for delivery at site, unloading, storage handling at site, installation, testing and commissioning including performance testing in respect of all the equipments supplied under “First contract” and any other services specified in the contract documents.

44.2 The award of 2/3 separate contract (in case of foreign bidder) /two separate contracts (in case of domestic bidder) shall not in any way dilute the responsibility of the contractor for the successful completion if the facility as per specification and breach in one contract shall automatically be construed as a breach of the other contracts which will confer a right on the employer to terminate the other contracts also at the risk and the cost of the contractor.

44.3 If the foreign bidder has proposed an Indian Associate in his bid to execute the second and / or Third contact and has also furnished written unequivocal consent of the proposed Indian Associate to work as independent contractor on the terms offered by the bidder and the employer is satisfied with experience/qualification of the proposed Indian Associate, the employer will enter into the Second Contractor and/or “Third Contract” with the said Indian Associate. Further, the said Indian Associate, in addition to the contract performance security to be provided by the contractor for ten percent (10%) of the value of all three contract i.e. first contract, second contract and third contract, shall provide with in twenty-eight (28) days of the notification of Contract award, Contract performance security equivalent to ten (10%) of the value of the second contract and/or Third Contract for the due performance of Contract with a validity up to sixty (60) days beyond the defect liability period. It is expressly understood and agreed that all the three Contracts shall contain the aforesaid cross fall breach clause.

44.4 It is further expressly understood and agreed that in case the option is not exercised by the bidder or the Indian Associate fails to enter into the second Contract and/or third contract with the employer or if the employer in its judgment does not find acceptance of the proposed Indian Associate as its Contractor, then the bidder shall be obliged to enter into and execute all the three contracts with the employer and all the three Contracts shall contain the aforesaid cross fall breach clause.

44.5 In case of two/three contracts entered into as above or where the employer hands over his equipment to the contractor for executing the contract then the contractor shall at the time of taking delivery of equipment through bill of lading or other dispatch documents, furnish trust receipt for plant, equipment and materials and also execute an Indemnity bond in favour of the employer in the form acceptable to the employer for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract. Samples of Performa for the Trust receipt and Indemnity bond are enclosed under Section IV (Sample forms and procedures). The employer shall also issue separate authorization letter to the Contractor to enable him to take physical delivery of plant, equipment and materials from the employer as per Performa enclosed under Section IV (sample forms and procedures).

44.6 The Contract will be signed in two original and the contractor shall be provided with one signed original and the other signed original will be retained by the employer.

44.7 The contractor shall provide free of cost to the employer all the engineering data, drawing and descriptive materials submitted with the bid, in at least two (2) copies to form a part of the contract immediately after notification of Award.

44.8 Subsequent to signing of the contract, the contractor at his own cost shall provide the employer with at least fifteen (15) true copies of contract agreement within thirty (30) days after signing of the contract.

45 Specific Requirement

The bidder shall be responsible for safety of human and equipment during the working. It will be the responsibility of the Contractor to co-ordinate and obtain clearance from Electrical Inspector (Govt. of NCT of Delhi) before commissioning. Any additional items, modification due to observation of such statutory authorities shall be provided by the Contractor at no extra cost to the Employer. However the necessary fee of the Inspector shall be reimbursed by DTL.

46 DTL not to be made a party in case of any dispute between contractor and sub-contractor/vendor.
SECTION-IV

FORMS AND PROCEDURES
(F&P)
1. BID FORM

Please Refer Volume III
2. BID SECURITY FORM

Date: ............

IFB No.: ..........

Name of Contract:....................

To: (Name and Address of Employer)

WHEREAS .................(name of Bidder) (hereinafter called "the Bidder") has submitted its Bid dated .......................(date of bid) for the performance of the above-named Contract (hereinafter called "the Bid")

KNOW ALL PERSONS by these present that WE.............................(name of bank) of............. (address of bank) (hereinafter called "the Bank"), are bound unto.................................(name of Employer) (hereinafter called "the Employer") in the sum of: ................................................. for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents.

Sealed with the Common Seal of the said Bank this ..........day of .......... 20 .......

THE CONDITIONS of this obligation are:

(1) If the Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form: or

(2) In case the Bidder does not withdraw the deviations proposed by him, if any, at the cost of withdrawal stated by him in the bid; or

(3) If the bidder does not accept the correction of its Bid Price pursuant to ITB Sub Clause 21.2; or

(4) If, as per the Qualifying Requirements the Bidder has to submit a Deed of Joint Undertaking and he fails to submit the same, duly attested by Notary Public of the place(s) of the respective executant(s) or registered with the Indian Embassy/ High Commission in that country, before opening of price bid; or

(5) In the case of a successful Bidder, if the Bidder fails within the specified time limit

(i) to sign the Contract Agreement, in accordance with ITB Clause 31, or
(ii) to furnish the required performance security, in accordance with ITB Clause 32.

WE undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will note that the amount claimed by it is due to it, owing to the occurrence of any of the above-named CONDITIONS or their combination, and specifying the occurred condition or conditions.

This guarantee will remain in full force up to and including (the date 45 days after the period of bid validity), and any demand in respect thereof must reach the Bank not later than the above date.
For and on behalf of the Bank
……………………..
(Signature)

in the capacity of
……………………………

Common Seal of the Bank______________________

Name & Designation of issuing Person

POA Number_______________________
Contact Number(s): Tel.______________ Mobile______________
Fax Number_______________________
Domain email ____________________________

Address of issuing branch.

Note: In case the bid is submitted by a Joint venture/Consortium, the bid security shall be in the name of the Joint venture/Consortium and not in the name of the Lead Partner or any other Partner(s) of the Joint venture/Consortium.
3a. FORM OF NOTIFICATION BY THE EMPLOYER TO THE BIDDER FOR FORFEITURE OF BID GUARANTEE AMOUNT

M/s................

Ref.: Your proposal against our IFB
No.................................................................
    Forfeiture of Bid Guarantee amount.

Dear Sirs,

Whereas you have furnished as a part of your proposal the Bid Guarantee in the form of irrevocable and confirmed Letter of Credit No..........................................................dated.......................... opened by ..........................................................for a sum of ..........................................................
(Bank's name)
........................................................................................................payable to ..........................................................(Name of the Employer) on demand without any reservation, demur or protest, contest and recourse at..............................................(Name and place of Bank).

In terms of the aforesaid Bid Guarantee, we do hereby forfeit the Guarantee amount.

For............... (Name of the Employer)

(AUTHORISED SIGNATORY)

N.B. The Letter of Credit should not stipulate any other proforma of notification different from this format. No change whatsoever in the said proforma is acceptable to the Employer.
3b. FORM OF SIGHT DRAFT

Drawn under L.C.
No.......................................................dated......................................................of......................................................
...........................................................................................................................................................................
(Name of Bank that opened the L.C.)

At sight promptly pay to..................................................................................................................................
(Name of the Bank at which L.C. is negotiable)
or order sum of..............................................................................................................................................
for payment to the Employer) for value received. (Amount of L.C.)

For...................(Name of the Employer)

(AUTHORISED SIGNATORY)

To,

(Name and Address of the Bank which opened L.C.)
4a. FORM OF NOTIFICATION OF AWARD OF CONTRACT' FOR 
SUPPLY OF PLANT AND EQUIPMENT

NOTE: INSTRUCTIONS INDICATED IN ITALICS IN THIS NOTIFICATION OF AWARD ARE TO BE 
TAKEN CARE OF BY THE ISSUING AUTHORITY.

Ref. No. :
Date :

…..(Contractor's Name & Address)…..

Attn : Mr..............

Sub : Notification of Award of Contract for Supply of....................................................... (Package Name) 
........................................ as per Specification No........................

Dear Sir,

1.0 This has reference to the following:

(i) Our Invitation for Bids (IFB) No. ........................................ dated .................

(ii) Bidding Documents for the subject package issued to you vide our letter no. .......... 
dated...............................comprising the following :

.......................... (List out all the Sections/Volumes of the Bidding Documents along with 
Tender Drawings etc. as issued to the bidder) ......................................................

Errata/Amendment No........................ to............................ (Name of Section/Volume of the Bidding 
Documents to which Errata/Amendment pertains)..................... issued to you vide our letter 
no.................................. dated............................

(Applicable only if any Errata/Amendment to the Bidding Documents has been issued 
subsequently)

(iii) Clarifications furnished to you on the Bidding Documents vide our letter no.................dated 
......based on the query raised by you/one of the prospective bidders. (Use as applicable)

(Applicable only if any clarification to the Bidding Documents has been issued subsequently)

(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE 
TO THE BIDDER AFTER ISSUANCE OF BIDDING DOCUMENTS UP TO BID OPENING)

(iv) Your Proposal for the subject package submitted vide your letter No. ............................ 
dated.............................and its modification vide letter no.....................dated ............... 
(Delete if not applicable).

(v) Our Fax message/letter No. ...........................................dated...................... regarding extension of 

(Applicable only if any extension has been sought subsequently)

(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE TO 
OR BY THE BIDDER AFTER BID OPENING)
(vi) Our Fax message/letter No.……………………dated……………………………….. inviting you for post bid discussions.

(vii) Post bid discussions and meetings we had with you from……………………………to……………………….. resulting into the following Minutes of Meeting enclosed herein with this Notification of award:

(a) Minutes of Meeting regarding Commercial issues (APPENDIX - ....)
(b) Minutes of Meeting on Technical issues (APPENDIX - ....)
(c) Minutes of Meeting regarding Work Schedule (APPENDIX - ....)
(d) Minutes of Meeting regarding Quality Assurance Aspects (APPENDIX- ……)

2.0 We confirm having accepted your proposal submitted vide letter no. ………………. dated ...............and its modification vide letter no.……………..dated (Delete if not applicable) read in conjunction with all the specifications, terms & conditions of the Bidding Documents, Your subsequent letters (Use if relevant) and agreed Minutes of Meeting referred to in para 1.0 above and award on you the Contract for the work of .........................……...(Indicate brief Scope of Work)…………………………………………………………of …………………..of ………………………..(Name of Project)………........... as per Specification No. : …………………..(hereinafter referred to as the ‘First Contract’).

3.0 We have also notified you vide our Notification of Award No……………….. dated ............... for award of another Contract on you for the work of ......................... (Indicate brief scope of work of the Second Contract) …………… of the equipment/materials to be supplied by you under this ‘First Contract’ including Performance and Guarantee test for complete …………………..for …………………..for ………………..(Name of Package)………………………….. for …………………..(Name of Project)………………………….. as per Specification No………………..(hereinafter referred to as the ‘Second Contract’).

You shall also be fully responsible for the works to be executed under the 'Second Contract' and it is expressly understood and agreed by you that any breach under the 'Second Contract' shall automatically be deemed as a breach of this 'First Contract' and vice-versa and any such breach or occurrence or default giving us a right to terminate the 'Second Contract' and/or recover damages thereunder, shall give us an absolute right to terminate this Contract and/or recover damages under this 'First Contract' as well and vice-versa. However, such breach or default or occurrence in the 'Second Contract' shall not automatically relieve you of any of your responsibility/obligations under this 'First Contract'. It is also expressly understood and agreed by you that the equipment/materials to be supplied by you under this 'First Contract' when installed and commissioned under the 'Second Contract' shall give satisfactory performance in accordance with the provisions of the Contract.

4.0 The total Contract Price for the entire scope of work under the Contract shall be ……….(Specify the amount and currency)……………………………………. as per the following break up:

(i) Ex-manufacturing works/place ……………………………………………………………
of despatch price (both in India)/ CIF/CIP port of entry price (Use as Applicable)
for Main Equipment

(ii) Ex-manufacturing works/place ……………………………………………………………
of despatch price (both in India)/ CIF/CIP port of entry price
(Use as Applicable)
for Mandatory Spares

(iii) Type test charges …………………………………………………………………………
5.0 You shall prepare and finalise the Contract Documents for signing of the formal Contract Agreement and shall enter into the Contract Agreement with us, as per the proforma enclosed with the Bidding Documents, on non-judicial stamp paper of appropriate value within...............(Specify).............days from the date of this Notification of Award.

6.0 This Notification of Award is being issued to you in duplicate. We request you to return its duplicate copy duly signed and stamped on each page including all the enclosed Appendices, by the authorised signatory of your company as a proof of your acknowledgement and confirmation.

Please take the necessary action to commence the work and confirm action.

Yours faithfully,
for and on behalf of
...(Name of the Employer)...

(Authorised Signatory)

Encl. : As above.
4b. FORM OF ‘NOTIFICATION OF AWARD OF CONTRACT’ FOR INSTALLATION OF PLANT AND EQUIPMENT

NOTE: INSTRUCTIONS INDICATED IN ITALICS IN THIS NOTIFICATION OF AWARD ARE TO BE TAKEN CARE OF BY THE ISSUING AUTHORITY.

Ref. No. :
Date :

...(Contractor's Name & Address)...

Attn : Mr. .................

Sub : Notification of Award of Contract for Installation, testing and commissioning of ........... (Package Name) ............... as per Specification No. ..................

Dear Sir,

1.0 This has reference to the following:

(i) Our Invitation for Bids (IFB) No. ................................... dated ................

(ii) Bidding Documents for the subject package issued to you vide our letter no. ............ dated .................. comprising the following:

...........................................(List out all the Sections/Volumes of the Bidding Documents along with Tender Drawings etc. as issued to the bidder)................................................................. Errata/Amendment No. ........... to ..................................(Name of Section/Volume of the Bidding Documents to which Errata/Amendment pertains) ........... issued to you vide our letter no. ........... dated ...........

(Applicable only if any Errata/Amendment to the Bidding Documents has been issued subsequently)

(iii) Clarifications furnished to you on the Bidding Documents vide our letter no. ............ dated ................ based on the query raised by you/one of the prospective bidders (Use as applicable).

(Applicable only if any clarification to the Bidding Documents has been issued subsequently)

(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE TO THE BIDDER AFTER ISSUANCE OF BIDDING DOCUMENTS UP TO BID OPENING)

(iv) Your Proposal for the subject package submitted vide your letter No. ............ dated ............ and its modification vide letter no. ...................................... dated ............ (Delete if not applicable).


(Applicable only if any extension has been sought subsequently)

(INCLUDE AS FURTHER SUB-PARAGRAPHS ANY OTHER CORRESPONDENCE MADE TO OR BY THE BIDDER AFTER BID OPENING)

(vi) Our Fax message/letter No. ............... dated ................ inviting you for post bid discussions.
(vii) Post bid discussions and meetings we had with you from ..............to ........ result into the following Minutes of Meeting enclosed herein with this Notification of Award:

(a) Minutes of Meeting regarding Commercial issues (APPENDIX - ....)
(b) Minutes of Meeting on Technical issues (APPENDIX - ....)
(c) Minutes of Meeting regarding Work Schedule (APPENDIX - ....)
(d) Minutes of Meeting regarding Quality Assurance Aspects (APPENDIX - ....)

2.0 We confirm having accepted your proposal submitted vide letter no. ..............dated.............. and its modification vide letter no. ..............dated ..............(Delete if not applicable) read in conjunction with all the specifications, terms & conditions of the Bidding Documents, Your subsequent letters (Use if relevant) and agreed Minutes of Meeting referred to in para 1.0 above and award on you the Contract for the work of ..............(Indicate brief Scope of Work) .............. of ..............(Name of Package) .............. for ..............(Name of project) .............. as per Specification No.: ..............(hereinafter referred to as the 'Second Contract')

3.0 We have also notified you vide our Notification of Award No. ..............dated .............. for award of another Contract on you for the work of ..............(Indicate brief scope of work of the First Contract) .............. of the equipment/ materials to be supplied by you under the 'First Contract' including Performance and Guarantee Test for complete ..............(Name of Package) .............. for ..............(Name of Project) ..............as per Specification No..............(hereinafter referred to as the 'First Contract'). You shall also be fully responsible for the works to be executed under the 'First Contract' and it is expressly understood and agreed by you that any breach under the 'First Contract' shall automatically be deemed as a breach of this 'Second Contract' and vice-versa and any such breach or occurrence or default giving us a right to terminate the 'First Contract' and/or recover damages there-under, shall give us an absolute right to terminate this Contract and/or recover damages under this 'Second Contract' as well and vice-versa. However, such breach or default or occurrence in the 'First Contract' shall not automatically relieve you of any of your responsibility/obligations under this 'Second Contract'. It is also expressly understood and agreed by you that the equipment/materials to be supplied by you under the 'First Contract' when erected and commissioned under this 'Second Contract' shall give satisfactory performance in accordance with the provisions of the Contract.

4.0 The total Contract Price for the entire scope of work under the Contract shall be ..............(Specify the amount and currency) .............. as per the following break up:

(i) Inland transportation and inland transit insurance charges including port clearance, port handling and port charges (Delete if not applicable) for Main Equipment:

(ii) Inland transportation and inland transit insurance charges including port clearance, port handling and port charges (Delete if not applicable) for Mandatory Spares:

(iii) Unloading and handling at site, storage, erection, testing and commissioning including performance testing and insurance covering all the activities:

TOTAL (i + ii + iii)

.....................................................................................................(Specify the total amount in words)
5.0 You shall prepare and finalize the Contract Documents for signing of the formal Contract Agreement and shall enter into the Contract Agreement with us, as per the proforma enclosed with the Bidding Documents, on non-judicial stamp paper of appropriate value within ................. ...(Specify)........ ...days from the date of this Notification of Award.

6.0 This Notification of Award is being issued to you in duplicate. We request you to return its duplicate copy duly signed and stamped on each page including all the enclosed Appendices, by the authorized signatory of your company as a proof of your acknowledgement and confirmation.

Please take the necessary action to commence the work and confirm action.

Yours faithfully,
for and on behalf of

..(Name of the Employer)...

(Authorised Signatory)
5. FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT is made the ......................... day of ..........., 20........ BETWEEN

(1) .................................................................a corporation incorporated under the laws
    (Name of Employer)
of ..............................................................and having its principal place of business
    (law of country of Employer)
at...........................................................(Address of Employer) (hereinafter called "the Employer")

and

(2) .............................................................., a corporation incorporated under the laws of
    (Name of Contractor)
…………………………………………….. and having its principal place of business
    (Country of Contractor)
at ............................................. (Address of Contractor) (hereinafter called "the Contractor")

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, install,
    complete and commission certain Facilities, viz.

……………………………………………………..("the Facilities") and the
    (List of Facilities)
Contractor 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 CC Clause 2)

    The following documents shall constitute the Contract between the Employer and the Contractor,
    and each shall be read and construed as an integral part of the Contract:

    (1) This Contract Agreement and the Appendices hereto

    (2) Notification of Award.

    (3) Conditions of Contract

    (4) Technical Specifications and Drawings

    (5) The Bid and Price Schedules submitted by the Contractor

    (6) Procedures (as listed)

    (7) Any other documents shall be added here

1.2 Order of Precedence (Reference CC Clause 2)

    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 CC Clause 1)

1.3.1 Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the Conditions of Contract.

Article 2. Contract Price and Terms of Payment

2.1 Contract Price (Reference CC Clause 11)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of:

- ........................................................................................................
- ........................................................................................................

(amount in words)

- ........................................................................................................

(amount in figures in INR)

or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference CC Clause 12)

The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in Appendix 1 (Terms and Procedures of Payment) hereto.

Article 3. Effective Date for Determining Time for Completion

3.1 Effective Date (Reference CC Clause 1)

The Time of Completion of Facilities shall be determined from the date of the Notification of Award provided all of the following conditions have been fulfilled within a period of two (2) months from the date of said Notification of Award:

(a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor;

(b) The Contractor has submitted to the Employer the Performance Security and the Advance Payment Guarantee;

(c) The Employer has paid the Contractor the Advance Payment.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

3.2 If the Conditions listed under 3.1 are not fulfilled within two (2) months from date of Notification of Award because of reasons attributable to the Employer, the contract would become effective only from the date of fulfillment of the above conditions and, the parties shall discuss and agree on an equitable adjustment to the Contract Price and the time for completion and/or other relevant conditions of the Contract. The Contractor shall not however, benefit (in reckoning the Time for Completion) on account of its delay in providing the Performance Security or the Bank Guarantee for advance payment beyond the period provided in the Contract.
Article 4. It is expressly understood and agreed by and between the Contractor and the Employer that the Employer is entering into this Agreement solely on its own behalf and not on behalf of any other person or entity. In particular it is expressly understood and agreed that the Government of India (GoI) is not a party to this Agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that the Employer is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable laws of India and the general principals of Contract Law.

The Contractor expressly agrees, acknowledges and understands that the Employer is not an Agent, Representative or Delegate of the GoI. It is further understood and agreed that the GoI is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Contract. Accordingly, the Contractor expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the GoI arising out of this Contract and covenants not to sue the GoI as to any manner, claim, cause of action or thing whatsoever arising of or under this Agreement.

Article 5. Appendices

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

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

Article 6. Deleted

Article 7. Notwithstanding the award of contract under two/three separate contracts, any breach under one contract shall be deemed to be a breach of the other contract(s).

IN WITNESS WHEREOF the Employer and the Contractor 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 Employer

Signed by for and
on behalf of the Contractor

Signature

Title

in the presence of
in the presence of

CONTRACT AGREEMENT
dated the ................................................. day of .................................. 20....

BETWEEN

("the Employer")

and

("the Contractor")
(Separate Contract Agreements shall be executed by the Employer and the Contractor in accordance with the Construction of the Contract stipulated at clause 28.4 of ITB. The forms of Contract would be similar except for necessary changes required to suit the individual Contracts).

APPENDICES

Appendix 1 Terms and Procedures of Payment
Appendix 2 Price Adjustment
Appendix 3 Insurance Requirements
Appendix 4 Time Schedule
Appendix 5 List of Approved Subcontractors
Appendix 6 Scope of Works and Supply by the Employer
Appendix 7 List of Document for Approval or Review
Appendix 8 Functional Guarantees
Appendix 9 Integrity Pact (to be appended at the Stage of Contract Award.)
TERMS AND PROCEDURES OF PAYMENT

In accordance with the provisions of CC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Break-up given in the section on price schedules. Payments will be made in the currency of the Employer’s country i.e. in INR only. The Contractor may make applications for payment in respect of part deliveries as work proceeds.

1. TERMS OF PAYMENT

1.1 In addition to the Conditions stipulated under CC Clause 12, the following terms & Conditions will apply.

Supply Portion

1.2 Advance Payment: 10% (Ten percent) of the CIF / Ex-works price component (inclusive of mandatory spares) of the Contract price shall be paid as * interest bearing advance after signing the Contract Agreement and on submission of:
   i) unconditional acknowledgement of LOA by the contractor
   ii) Contractor’s detailed invoice
   iii) Unconditional and irrevocable Advance Bank Guarantee** for 110% of the advance amount.
   iv) Performance Security
   v) Detailed BAR CHART and its approval by DTL.

Note:
* This payment is an optional payment. The Contractor has the option of taking the interest bearing initial advance or otherwise. In case, the Contractor opts for this interest bearing initial advance, the same shall be paid to the Contractor on fulfillment of above conditions and an interest on monthly outstanding amount will be charged at the rate of SBI PLR +1% per annum at the time of disbursement of advance. The monthly outstanding amount for the purpose of calculating the interest shall be worked out at the end of each calendar month considering proportionate adjustment of advance against dispatch payment. In case, the Contractor opts not to take interest bearing advance as above, it would be mandatory for him to submit the documents listed at Sl. No.(i), (iv) and (v) above within thirty (30)days of issuance of LOA.

** In case the Contract is awarded to a Joint venture/ Consortium, the Advance Bank Guarantee shall be in the name of the Joint venture/ Consortium covering all partners of the Joint Venture/Consortium and not in the name of the lead partner or any partner(s) of the Joint Venture/Consortium alone.

The bank guarantee(s) for advance shall be kept valid upto the date of completion and be kept alive till the recovery of the full amount of the advance with interest portion.

1.3 Progressive Payment

1.3.1 Fifty percent (50%) ## of the CIF / Ex-works price component (inclusive of mandatory spares) of each item (as identified in the price schedule) shipped shall be paid through irrevocable Letter of Credit (L/C) established in favour of the Contractor and on submission of documents specified in CC Clause 21.0 (shipping Documents).

## In case, the Contractor opts not to take interest bearing initial advance then this payment shall be 60% instead of 50%.
Further Twenty five percent (25%) of the CIF / Ex-Works price (exclusive of mandatory spares) of each item shipped shall be paid after receipt and storage of material at site and on physical verification by the Employer. For mandatory spares, balance Forty percent (40%) of the CIF / Ex-Works Price of each item shipped shall be paid after receipt and storage of material at site and on physical verification by the Employer.

1.4 Final Payment

The final fifteen percent (15%) of the CIF / Ex-Works price component (exclusive of mandatory spares) of the equipment shall be paid on successful completion of erection, testing and commissioning, issuance of Operational Acceptance Certificate and proof of submission of the required no. of reproducible, O&M manuals, approved drawings, data sheets, test reports, pamphlets and manual of spares, maintenance & testing equipment etc.

1.5 Price Component for Installation (including Civil Works) and Services

(a) Advance

Ten percent (10%) of the total Contract Price for services viz. installation (including civil works) component except inland transportation (including port handling) & inland insurance shall be paid as a interest bearing initial advance on establishment of Contractor's Site office and submission of a bank guarantee* of 110% of the advance amount valid upto the date of completion and be kept alive till the recovery of the full amount of the advance with interest portion.

*This payment is an optional payment. The Contractor has the option of taking the interest bearing advance or otherwise.

In case, the Contractor opts for this interest bearing advance, the same shall be paid to the Contractor on fulfillment of above conditions and an interest on monthly outstanding amount will be charged at the rate of SBI PLR +1% per annum at the time of disbursement of advance. The monthly outstanding amount for the purpose of calculating the interest shall be worked out at the end of each calendar month against the progressive payment for the work done.

In case the Contractor opts not to take interest bearing advance as above, it would be mandatory for him to submit the document listed at Cl. 1.2 (i),(iv) and (v) above within 30 days of issuance of LOA.

**In case the Contract is awarded to a Joint Venture/Consortium, the Advance Bank Guarantee shall be in the name of the Joint Venture/Consortium covering all partners of the Joint Venture/Consortium and not in the name of the lead partner or any partner(s) of the Joint Venture/Consortium alone.

(b) Progressive Payment

(i) Ninety percent (90%) of the total installation (including civil works) component of the Contract price (In case the contractor opts not to take interest bearing advance as above) or Eighty percent (80%) of the total installation (including civil works) component of the Contract price (In case the contractor opts to take interest bearing advance as above) shall be paid progressively monthly on pro-rata basis on certification by Employer’s representative, on certificate for the quantum of work done and on the successful completion of quality check point involved in erection.

(ii) The balance ten percent (10%) of the total installation (including civil works) price components of contracts price shall be paid on commissioning and issuance of Operational Acceptance Certificate.
(iii) Hundred percent (100%) of inland transportation (including port handling) and inland insurance charges shall be paid to the Contractor pro-rata to the value of the equipment received at site and on production of invoices by the Contractor. The aggregate of all such pro-rata payments shall, however, not exceed the total amount quoted by the bidder in his proposal and incorporated in the Contract.

c) **Payment towards work of De-Stringing / Dismantling**
Hundred percent (100%) of total De-Stringing / Dismantling price components of contracts price shall be paid on successful completion of De-Stringing / Dismantling work including safe transportation of dismantled material from site to DTL store or other site store as per the direction of the Engineer In charge and on certification of the same by the Engineer incharge of DTL.

### 1.6 Taxes & Duties

Taxes & Duties in respect of transaction between Employer and the Contractor as applicable for destination site/state 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 Employer’s site will be paid after each shipment against documentary evidence. This payment shall be released by Employer directly to the Contractor against invoices to be submitted by the Contractor.

### 1.7 Type Test Charges (If applicable): (Not Applicable)

### 1.8 Training Charges: (Not Applicable)

#### 2. PAYMENT PROCEDURES

##### 2.1 Method of Payment

The Employer shall make payments promptly within thirty (30) days of submission of an invoice/claim by the Contractor. All the payment shall be released to the Contractor directly except the payment due on shipment, which shall be paid through irrevocable confirmed Letter of Credit. The Letter of Credit shall be established by the Employer in time for shipments to be made as scheduled.

*Note: Pro-rata shall refer to functionally complete part(s) of the facilities, for which unit rates are identified in the contract.*
APPENDIX 2

PRICE ADJUSTMENT

The prices are to remain FIRM and FIXED for the duration of the Contract.
APPENDIX 3

INSURANCE REQUIREMENTS

Insurances to be taken out by the Contractor

In accordance with the provisions of CC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

(a) Cargo Insurance

covering loss or damage occurring, whilst in transit from the Contractor's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the Construction Equipment to be provided by the Contractor or its Subcontractors.

<table>
<thead>
<tr>
<th>Amount</th>
<th>Deductible limits</th>
<th>Parties Insured</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>165% of the (CIF</td>
<td>NIL</td>
<td>Contractor &amp;</td>
<td>Warehouse</td>
<td>Warehouse + 60 days</td>
</tr>
<tr>
<td>value)</td>
<td></td>
<td>Employer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Installation All Risks Insurance

covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

<table>
<thead>
<tr>
<th>Amount</th>
<th>Deductible limits</th>
<th>Parties Insured</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>165% of the (Contract Price)</td>
<td>NIL</td>
<td>Contractor/ &amp; Employer</td>
<td>Receipt at site</td>
<td>Upto Liability period</td>
</tr>
</tbody>
</table>

(c) Third Party Liability Insurance

covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities which have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

<table>
<thead>
<tr>
<th>Amount</th>
<th>Deductible limits</th>
<th>Parties Insured</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs. 0.5 million</td>
<td>NIL</td>
<td>Contractor/ Sub-contractor</td>
<td>Commencement of work</td>
<td>Upto Liability period</td>
</tr>
<tr>
<td>per person per occasion</td>
<td></td>
<td>&amp; Employer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(d) Automobile Liability Insurance

covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.
(e) **Worker's Compensation**

in accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) **Employer's Liability**

in accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(g) **Other Insurances**

The Contractor is also required to take out and maintain at its own cost the following insurances:

<table>
<thead>
<tr>
<th>Amount</th>
<th>Deductible limits</th>
<th>Parties Insured</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIL</td>
<td></td>
<td>Contractor/Receipt</td>
<td>Upto</td>
<td>Defect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sub-contractor at site</td>
<td>Liability</td>
<td>period</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&amp; Employer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to CC Sub-Clause 34.1 above except for the Third Party Liability, Worker's Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to CC Sub Clause 34.1 above except for the Cargo, Worker's Compensation and Employer's Liability Insurances, and all insurer's rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.

**Insurances to be taken out by the Employer**

The Employer shall at its expense take out and maintain in effect during the performance of the Contract the following insurances.

Details:....

<table>
<thead>
<tr>
<th>Amount</th>
<th>Deductible limits</th>
<th>Parties Insured</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-------------- NIL--------------------------
TIME SCHEDULE

1. The Project Completion Schedule shall be as follows:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activities</th>
<th>Duration in months from the effective date of Contract</th>
</tr>
</thead>
</table>

1.1 The bidder shall include in his proposal his programme for furnishing and installation of the equipment including related civil work covered under this package. The programme shall be in the form of a master network plan (MNW) and shall identify the various activities like design, engineering, manufacturing, supply, installation, factory testing, transportation to site, site testing and commissioning guarantee test and operational acceptance etc. of the entire project work. The network plan shall confirm to the above completion schedule. No credit will be given for earlier completion.

This master network will be discussed and agreed before Award in line with above, engineering drawing and data submission schedule shall also be discussed and finalized before Award. Liquidated damages for delay in successful completion of taking over at rates specified in Clause 26.2 of CC shall be applicable beyond the date specified above.

1.2 The employer reserves the right to request minor changes in the work schedule at the time of Award of Contracts to the successful Bidder.

1.3 The successful Bidder shall be required to prepare detailed Network(s) and project implementation plans & programmes and finalize the same with the Employer as per the requirement specified in Technical Specifications, which shall from a part of the Contract.
LIST OF APPROVED SUBCONTRACTORS

Prior to award of Contract, the following details shall be completed indicating those sub-contractors proposed by the Bidder by Attachment to its bid that are approved by the Employer for engagement by the Contractor during the performance of the contract.

The following Subcontractors are approved for carrying out the item of the facilities indicated. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice in good time prior to appointing any selected Subcontractor. In accordance with CC Sub-Clause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontractors shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors.

<table>
<thead>
<tr>
<th>Item of Facilities</th>
<th>Approved Subcontractors</th>
<th>Nationality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SCOPE OF WORKS AND SUPPLY BY THE EMPLOYER

The following personnel, facilities, works and supplies will be provided/ supplied by the Employer, and the provisions of CC 10, 20, 21 and 24 as well as Employer responsibilities stated in technical specifications shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor in accordance with the approved Time Schedule and Program of Performance pursuant to CC Sub-Clause 18.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

**Personnel**

Charge to Contractor - None

NIL

**Facilities**

Charge to Contractor - None except as noted

1. Permission will be arranged by the Employer for full site and facilities access as required for site surveys and for the installation, connection and testing of complete equipment and systems. Such permission shall be requested by the Contractor one month prior to the Scheduled need for such access, consistent with the Contractors "Project Implementation Plan", Subsequent to approval of such "Plan" by Employer.

**Electricity and Water**

Charge to Contractor - as noted

The Contractor shall be entitled to use for the purposes of the facilities such supplies of electricity and water as may be available on the Site and shall provide any apparatus necessary for such use. The Contractor shall pay the Employer at the applicable tariff plus Employer's overheads, if any, for such use. Where such supplies are not available, the Contractor shall make his own arrangement for provision of any supplies he may require.

**Data and Information**

Charge to Contractor - None

Employer will provide all the information and the engineering drawings, schematic diagrams and interface data for all Employer specified equipment to the available with the Employer.

**Works**

Charge to Contractor - None

-----------------------------------------------------NIL---------------------------------------------------

**Supplies**

Charge to Contractor - None

-----------------------------------------------------NIL---------------------------------------------------
LIST OF DOCUMENTS FOR APPROVAL OR REVIEW

Pursuant to CC Sub-Clause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of CC Sub-Clause 18.2 (Program of Performance), the following documents for:

A. Approval
   1.
   2.
   3.

B. Review
   1.
   2.
   3.

Note:

Bidder shall furnish the exhaustive list, which shall be discussed and finalized for incorporation into the Contract Agreement.
FUNCTIONAL GUARANTEES

GUARANTEES, LIQUIDATED DAMAGES FOR NON PERFORMANCE

1.0 The equipment offered shall meet the rating and performance requirements stipulated in Technical Specification for various equipment or indicated in Data requirement.

2.0 The ratings and performance figures of the below mentioned equipment are guaranteed by you.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Guaranteed AC Resistance ($R_{AC}$) in Ohm per km at temperature corresponding to the continuous operating current of 500 A under normal condition</th>
<th>Rate of Liquidated Damages in Indian Rupees (applicable for Average Ohmic Loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>HTLS Conductor</td>
<td>Rs. 152,600/- (Rupees One Lakh Fifty Two Thousand Six Hundred only)</td>
<td></td>
</tr>
</tbody>
</table>

3.0 If the aforementioned guarantees are not established at factory tests, then the Employer at his discretion may reject or accept the equipment after assessing the liquidated damages as per table above against the Contract and such amounts shall be deducted from the Contract Price or otherwise recovered from the Contractor.
6. PERFORMANCE SECURITY FORM
(For Bidder)
Bank Guarantee – Unconditional

Bank Guarantee No.………………….. Date………………..

Contract No.………………….. [Name of Contract]………………

To: [Name and address of the Employer]

Dear Ladies and / or Gentlemen,

We refer to the Contract (“the Contract”) signed on…………………………….………. (insert date of contract).………………….between DELHI TRANSCO LIMITED and M/s…………………………….(Name of Contractor)………………. a Company incorporated under …………………. having its Registered Office at ..................................(hereinafter referred to as “the Contractor”), concerning ………………. (indicate brief scope of work) for the complete execution of the ………………… (insert name of the package along with name of the Project).

By this letter we, the undersigned, ……………… (insert address of issuing bank) …………………..a Bank (or Company) organized under the laws of …………………………..and having its registered/ Head office at …………………..(insert address of registered office of the bank) ……………………..do hereby jointly and Severally with the Contractor Price irrevocably guarantee payment to you up to ten percent(10%) of the Contract Price including all taxes and duties until sixty (60) days beyond the Defect Liability Period.

We undertake to make payment under this Letter of Guarantee upon receipt by us of your first written demand signed by your duly authorized officer declaring the Contractor to be in default under the Contract and without cavil or argument any sum or sums within the above named limits, without your need to prove or show grounds or reasons for demand and without the right of the Contractor to dispute or question such demand.

Our liability under this Letter of Guarantee shall be to pay to you whichever is the lesser of the sum so requested or the amount then guaranteed hereunder in respect of any demand duly made hereunder prior to expiry of the Letter of Guarantee, without being entitled to inquire whether or not this payment is lawfully demanded.

This letter of Guarantee shall be valid from the date of issue until sixty (60) days beyond the Defect Liability Period of the Facilities i.e. up to and inclusive of ………………………………..(year, month and date.)

Except for the documents herein specified, no other documents or other action shall be required, notwithstanding any applicable law or regulation.

If the Defect Liability Period is extended with respect to any part of the Facilities in accordance with the Contract, the validity of this letter or Guarantee shall be extended with respect to ten percent (10%) of the Contract Price including all taxes and duties of that part until expiry of 60 days beyond such extended Defect Liability Period.

Our liability under this letter of Guarantee shall become null and void immediately upon its expiry, whether it is returned or not, and no claim may be made hereunder after such expiry or after the aggregate of the sums paid by us to you shall equal the sums guaranteed hereunder, whichever is the earlier.

All notice to be given under shall be given by registered (airmail) posts to the addressee at the address herein set out or as otherwise advised by and between the parties hereto.

We hereby agree that any part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our liabilities hereunder without notices to us and without the necessity for any additional endorsement, consent or guarantee by us, provided, however, that the sum guaranteed shall not be in increased or deceased.
No action, event or condition which by any applicable law should operate to discharge us from liability hereunder shall have any effect and we hereby waive any right we may have to apply such law so that in all respects our liability hereunder shall be irrevocable and, except as stated herein, unconditional in all respects.

For and on behalf of the Bank

[Signature of the authorised signatory(ies)]
Signature_______________________
Name_______________________
Designation_______________________
POA Number_______________________
Contact Number(s): Tel.______________ Mobile______________
Fax Number_______________________
email ____________________________
Common Seal of the Bank______________________
Witness:
Signature_______________________
Name_______________________
Address______________________________
Contact Number(s): Tel.______________ Mobile______________
email ____________________________

Note:

1. The non-judicial stamp papers of appropriate value shall be purchased in the name of Bank who issues the 'Bank Guarantee'.

2. The Bank Guarantee shall be signed on all the pages by the Bank Authorities indicating their POA nos. and should invariably be witnessed.

3. Performance Security is to be provided by the successful bidder in the form of a bank guarantee which should be issued either:

   (a) by a reputed bank located in the country of Employer and acceptable to the Employer, or

   (b) by a foreign bank confirmed by either its correspondent bank located in the country of Employer which should be reputed and acceptable to the Employer, or

   (c) by a Public Sector Bank in the country of Employer.

   All banks shall be nationalized and scheduled banks operating in India.
6A. PERFORMANCE SECURITY FORM
(Form For bidder in case of Collaborator/Parent Company/Principals)

Bank Guarantee – Unconditional

Bank Guarantee No.…………………………………… Date………………
Contract No.…………………………………….………….[Name of Contract]………………

To: [Name and address of the Employer]

Dear Ladies and / or Gentlemen,

We refer to the Contract (“the Contract”) signed on…………………………….………..…..……  (insert date of contract)…………..….b etween DELHI TRANSCO LIMITED and M/s………………………….………………………….(Name of Contractor)………., a Company incorporated under …………………. having its Registered Office at …………………………… (hereinafter referred to as the “Contractor”), concerning ………………… (indicate brief scope of work) for the complete execution of the ………………… (insert name of the package along with name of the Project).

Whereas, the Contractor has agreed to supply the ____@____ in collaboration with M/s .................. (Name of Parent Company / Collaborator / Principal) .................., having its Principal place of business at ………………… (Address of Parent Company / Collaborator / Principal) .................. and Registered Office at ………………….(Registered address of Parent Company / Collaborator / Principal) .................. (hereinafter referred to as the “Parent Company” / “Collaborator” / “Principal”), as a pre-requisite for qualification of the Bidder/Contractor and have submitted a Deed of Joint Undertaking declaring that they are jointly and severally bound and responsible for ensuring a valid technology transfer agreement including license to manufacture in India, between the Parent Company / Collaborator / Principal (the technology provider) and the Contractor for the successful performance of the said equipment in accordance with the Contract Specifications and that the Bidder/Contractor and /or manufacturer having agreed to furnish a Contract Performance Guarantee for the faithful performance/compliance of the Deed of Undertaking equivalent to (10%) ten per cent of the cost of ____@____ to be supplied by the Contractor under the Contract, in addition to Contract Performance Guarantee equivalent to 10% (ten per cent) of the value of the Contract to be provided by the Contractor for the faithful performance of the entire Contract.

By this letter we, the undersigned, ………………  (insert name and address of issuing bank) ………………., a Bank (or Company) organized under the laws of …………………………..and having its registered/ Head office at ……………….(insert address of registered office of the bank) ………………., do hereby jointly and Severally with the Contractor Price irrevocably guarantee payment to you up to ……(amount) ……. i.e. ten percent (10%) of the ……@…… price including taxes and duties until sixty (60) days beyond the Defect Liability Period.

We undertake to make payment under this Letter of Guarantee upon receipt by us of your first written demand signed by your duly authorized officer declaring the Contractor to be in default under the Contract and without cavil or argument any sum or sums within the above named limits, without your need to prove or show grounds or reasons for your demand and without the right of the Contractor to dispute or question such demand.

Our liability under this Letter of Guarantee shall be to pay to you whichever is the lesser of the sum so requested or the amount then guaranteed hereunder in respect of any demand duly made hereunder prior to expiry of the Letter of Guarantee, without being entitled to inquire whether or not this payment is lawfully demanded.

This letter of Guarantee shall remain in full force and shall be valid from the date of issue until sixty (60) days beyond the Defect Liability Period of the said equipment i.e. upto and inclusive of ……………………………….. (year, month and date).

Except for the documents herein specified, no other documents or other action shall be required, notwithstanding any applicable law or regulation.
If the Defect Liability Period is extended with respect to any part of the said equipment(s) in accordance with the Contract, the validity of this letter of Guarantee shall be extended with respect to ten percent (10%) of the ......@...... price including taxes and duties of that part until expiry of 60 days beyond such extended Defect Liability Period.

Our liability under this letter of Guarantee shall become null and void immediately upon its expiry, whether it is returned or not, and no claim may be made hereunder after such expiry or after the aggregate of the sums paid by us to you shall equal the sums guaranteed hereunder, whichever is the earlier.

All notice to be given under shall be given by registered (airmail) posts to the addressee at the address herein set out or as otherwise advised by and between the parties hereto.

We hereby agree that any part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our liabilities hereunder without notices to us and without the necessity for any additional endorsement, consent or guarantee by us, provided, however, that the sum guaranteed shall not be increased or decreased.

No action, event or condition which by any applicable law should operate to discharge us from liability hereunder shall have any effect and we hereby waive any right we may have to apply such law so that in all respects our liability hereunder shall be irrevocable and, except as stated herein, unconditional in all respects.

For and on behalf of the Bank

[Signature of the authorised signatory(ies)]
Signature_______________________
Name_______________________
Designation_______________________
POA Number_______________________
Contact Number(s): Tel.__________Mobile_Mobile
Fax Number_______________________
email_______________________
Common Seal of the Bank______________________
Witness:
Signature_______________________
Name_______________________
Address_______________________
Contact Number(s): Tel.__________Mobile_Mobile
email_______________________

Note:
1. The non-judicial stamp papers of appropriate value shall be purchased in the name of Bank who issues the ‘Bank Guarantee’.
2. The Bank Guarantee shall be signed on all the pages by the Bank Authorities indicating their POA nos. and should invariably be witnessed.
3. @ Insert name of the Equipment viz., 220 kV HTLS Conductor.
4. This additional performance security is to be provided by the successful bidder, in the form of a bank guarantee which should be issued either:
   (a) by a reputed bank located in the country of Employer and acceptable to the Employer, or
   (b) by a foreign bank confirmed by either its correspondent bank located in the country of Employer which should be reputed and acceptable to the Employer, or
   (c) by a Public Sector Bank in the country of Employer.

All banks shall be nationalized and scheduled banks operating in India.
7. **BANK GUARANTEE FORM FOR ADVANCE PAYMENT**

Date………………
Contract No……...

**[Name of Contract]**

To: **[Name and address of the Employer]**

Dear Ladies and/or Gentlemen,

We refer to the Contract ("the Contract") signed on……………………………………………………….. between you and………………………… (“the Contractor”) concerning design, execution and completion of (Brief description of the Facilities) …………………………….

Whereas, in accordance with the terms of the said Contract, the Employer has agreed to pay or cause to be paid to the Contractor an Advance Payment in the amount of Indian Rupees (INR)…………………………...

(Amount in words)

………………………………………………………………………..(……………)

(Amount in figures in INR)

By this letter we, the undersigned, …………………….., a Bank (or company) organized under the laws of ................................................................... and having its registered/principal office at…………………………………………... do hereby jointly and severally with the Contractor irrevocably guarantee repayment of the said amounts upon the first demand of the Employer without cavil or argument in the event that the Contractor fails to commence or fulfill its obligations under the terms of the said Contract, and in the event of such failure, refuses to repay all or part (as the case may be) of the said advance payment to the Employer.

Provided always that the Bank's obligation shall be limited to an amount equal to the outstanding balance of the advance payment, taking into account such amounts, which have been repaid by the Contractor from time to time in accordance with the terms of payment of the said Contract as evidenced by appropriate payment certificates.

This Guarantee shall remain in full force from the date upon which the said advance payment is received by the Contractor until the date upon which the Contractor has fully repaid the amount so advanced to the Employer in accordance with the terms of the Contract. At the time at which the outstanding amount is NIL, this Guarantee shall become null and void, whether the original is returned to us or not.

Any claims to be made under this Guarantee must be received by the Bank during its period of validity, i.e. upto 90 (ninety) days after the date of operational acceptance by the Employer i.e. on or before………………………………………………(year, month, date).

Yours truly,
For and on behalf of the Bank

[Signature of the authorised signatory(ies)]
Signature_______________________
Name_______________________
Designation_______________________
POA Number_______________________
Contact Number(s): Tel.______________Mobile______________
Fax Number_______________________
email ____________________________
Common Seal of the Bank______________________
Witness:
Signature_______________________
Name_______________________
Address______________________________
Contact Number(s): Tel.______________Mobile______________
email ____________________________

Note :

1. The non-judicial stamp papers of appropriate value shall be purchased in the name of bank who issues the 'Bank Guarantee'.

2. Advance Bank Guarantee is to be provided by the successful bidder in the form of a bank guarantee which should be issued either:

   (a) by a reputed bank located in the country of Employer and acceptable to the Employer, or

   (b) by a foreign bank confirmed by either its correspondent bank located in the country of Employer which should be reputed and acceptable to the Employer, or

   (c) by a Public Sector Bank in the country of Employer.

All banks shall be nationalized and scheduled banks operating in India.
8. FORM OF COMPLETION CERTIFICATE

Date…………………………

Name of Contract………
Contract No………………

To:

(Name and address of the Contractor)

Dear Ladies and/or Gentlemen,

Pursuant to CC 24 (Completion of the Facilities) of the Conditions of the Contract entered into between yourselves and the Employer dated ……………………. relating to the …………………………………...

(Brief description of the Facilities)

we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below :

1. Description of the Facilities or part thereof ………………………………………

2. Date of Completion :……………………………………………………………..

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defects Liability Period.

Very truly yours,

Title
(Project Manager)
9. **FORM OF OPERATIONAL ACCEPTANCE CERTIFICATE**

Date…………………….

Name of Contract………
Contract No………………

To:

(Name and address of the Contractor)

Dear Ladies and/or Gentlemen,

Pursuant to CC 25.3 (Operational Acceptance) of the Conditions of the Contract entered into between yourselves and the Employer dated…………………
relating to the ………………………………………
(Brief description of the facilities)

we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof ………………………………………

2. Date of Operational Acceptance : ………………………………………

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defects Liability Period.

Very truly yours,

Title
(Project Manager)
10. CHANGE ORDER PROCEDURE

Contract No. .........................

CONTENTS

1. GENERAL

2. CHANGE ORDER LOG

3. REFERENCE FOR CHANGES

4. ANNEXURES

  ANNEX 1  Request for Change Proposal
  ANNEX 2  Estimates for Change Proposal
  ANNEX 3  Acceptance of Estimates
  ANNEX 4  Change Proposal
  ANNEX 5  Change Order
  ANNEX 6  Pending Agreement Change Order
  ANNEX 7  Application for Change Proposal
  ANNEX 8  Change Order Log
CHANGE ORDER PROCEDURE

1. **General**

   This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with CC 39 (Change in Facilities) of the Conditions of Contract.

2. **Change Order Log**

   The Contractor shall keep an up-to-date change Order Log to show the current status of Requests for Change and Changes authorized or pending as Annex-8 Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Employer.

3. **References for Changes**

   (i) Request for Changes as referred to in CC Clause 39 shall be serially numbered CR-X-nnn.

   (ii) Estimate for Change Proposal as referred to in CC Clause 39 shall be serially numbered CN-X-nnn.

   (iii) Acceptance of Estimate as referred to in CC Clause 39 shall be serially numbered CA-X-nnn.

   (iv) Change Proposal as referred to in CC Clause 39 shall be serially numbered CP-X-nnn.

   (v) Change Order as referred to in CC Clause 39 shall be serially numbered CO-X-nnn.

   **Notes:**

   (a) Requests for Change issued from the Employer’s Home Office and the site representatives of the Employer shall have the following respective references:

      | Home Office | Site |
      |-------------|------|
      | CR-H-nnn    | CR-S-nnn |

   (b) The above number “nnn” is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal Change Order.
REQUEST FOR CHANGE PROPOSAL

To: (Contractor’s Name and Address)  Date: …………………

Attention: (Name and Title)

(Contract Name)…………………  (Contract No.)…………………..

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within ……………… days of the date of this letter. (or on before[date])

1. Title of Change: …………………………………………………………………………………

2. Change Request No………………   (Rev……………… ………….)

3. Originator of Change:
   Employer (Name)…………………………………………………..
   Contractor (by Application for Change Proposal No……….*)
   * Refer to ANNEX 7.

4. Brief Description of Change:

5. Facilities and/or Item No. of equipment related to the requested Change:

6. Reference drawings and/or technical documents for the request of Change:

   Drawings No. / Document No.   Description
   ……………………………………   ………………………………
   ……………………………………   ………………………………
   ……………………………………   ………………………………

7. Detailed conditions or special requirements on the requested Change:

   ………………………………
   ………………………………
   ………………………………
8. **General Terms and Conditions:**

(1) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.

(2) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.

(3) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract on the safety of the Plant or Facilities, please inform us of your opinion in your proposal of revised provisions.

(4) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.

(5) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

........................................
(Employer's Name)

(Signature)

........................................
(Name of signatory)

........................................
(Title of signatory)
ESTIMATE FOR CHANGE PROPOSAL

To : (Employer’s Name and Address) Date : …………………

Attention : (Name and Title)

Contract Name…………………………….

Contract Number…………………………….

Dear Ladies and /or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with CC Sub-Clause 39.2.1 of the Conditions of Contract. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with CC Sub-Clause 39.2.2, is required before estimating the Cost for Change work.

1. Title of Change …………………………………………………………………

2. Change Request No……………………………….. (Rev………………………)

3. Brief Description of Change :
   ……………………………………………………………………………………
   ……………………………………………………………………………………
   ……………………………………………………………………………………

4. Scheduled Impact of Change :
   ……………………………………………………………………………………
   ……………………………………………………………………………………
   ……………………………………………………………………………………

5. Cost for Preparation of Change Proposal (in the currencies of the Contract)
   ……………………………………………………………………………………

   (a) Engineering (Amount)
   (i) Engineer _____hrs x ______rate/hr = _______
   (ii) Draftsperson _____hrs x ______rate/hr = ______
       Sub-total _____hrs ______
       Total Engineering Cost ______

   (b) Other Cost ______
       Total Cost (a) + (b) ______

   ……………………………………….
   (Contractor’s Name)
   ……………………………………….
   (Signature)
   ……………………………………….
   (Name of Signatory)
   ……………………………………….
   (Title of signatory)
ACCEPTANCE OF ESTIMATES

To: (Contractor’s Name and Address) Date: .................

Attention: (Name and Title)...........................................................

Contract Name: .........................
Contract Number.........................

Dear Ladies and /or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change : .................................................................

2. Change Request No. ....................... (Rev .................)

3. Estimate for Change Proposal No. ......... (Rev .................)

4. Acceptance of Estimate No............. (Rev .................)

5. Brief Description of Change:

..........................................................................................
..........................................................................................

6. Other Terms and Conditions In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your estimate for Change Proposal mentioned in para. 3 above in accordance with CC Clause 39.0 of the Conditions of Contract.

................................................................................. (Employer’s Name)
................................................................................. (Signature)
................................................................................. (Name and Title of signatory)
CHANGE PROPOSAL

(Contractor's Letterhead)

To: (Employer's Name and Address)        Date:  .................

Attention: (Name and Title)

(Contract Name) .......................      (Contract No.) .................

Dear Ladies and / or Gentlemen

In response to your Request for Change Proposal No. .......we hereby submit our proposal as follows:

1. Title of Change: (Name) ...........................................

2. Change Request No. ....................(Rev ......................)

3. Originator of Change:        Employer (Name) .........................  
                                  Contractor (Name) ......................

4. Brief Description of Change:
   ........................................................................

5. Reasons for Change:
   ........................................................................

6. Facilities and/ or Item No. of equipment related to the requested Change:
   ........................................................................

7. Reference drawings and/ or technical documents for the requested Change:

<table>
<thead>
<tr>
<th>Drawing No. / Document No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Estimate of increase / decease / (in the currencies of the contract to the Contract Price resulting from Change Proposal

   (Amount)

   (a) Direct Material ..............................................

   (b) Major construction equipment ............................

   (c) Direct field labour (Total hrs) .........................

   (d) Subcontracts .................................................

   (e) Indirect material and labour ...............................

   (f) Site supervision .............................
(g) Head office technical staff salaries

<table>
<thead>
<tr>
<th></th>
<th>hrs @  rate/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process engineer</td>
<td>____________</td>
</tr>
<tr>
<td>Project engineer</td>
<td>____________</td>
</tr>
<tr>
<td>Equipment engineer</td>
<td>____________</td>
</tr>
<tr>
<td>Procurement</td>
<td>____________</td>
</tr>
<tr>
<td>Draftsperson</td>
<td>____________</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>____________</td>
</tr>
</tbody>
</table>

(h) Extraordinary costs (computer, travel, etc.)

(i) Fee for general administration % of Items

(j) Taxes and customs duties

Total lump sum cost of Change Proposal

[sum of Items (a) to (j)]

Cost to prepare Estimate for Change Proposal
(amount payable if Change is not accepted)

9. Additional time for Completion required due to Change Proposal:

10. Effect on the other Functional Guarantees.

11. Effect on the other terms and Conditions of the Contract.

12. Validity of this Proposal: Within …………………….days after receipt of this Proposal by the Employer.

13. Other Terms and Conditions of this Change Proposal:

(a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within……………… .days from your receipt of this Proposal.

(b) The amount of any increase and/ or decrease shall be taken into account in the adjustment of the Contract Price.

(c) Contractor's cost for preparation of this Change Proposal:

(Note) This cost shall be reimbursed by the Employer in case of Employer's withdrawal or rejection of this Change Proposal without default of the Contractor in accordance with CC Clause 39.0 of the Conditions of Contract.

...........................................
(Contractor’s Name)

...........................................
(Signature)

...........................................
(Name of signatory)

...........................................
(Title of signatory)
CHANGE ORDER

...................................................................................
(Contractor’s Letterhead)
...................................................................................

To: (Employer’s Name and Address) Date: ....................
...................................................................................
...................................................................................
...................................................................................

Attention: (Name and Title)
...................................................................................
...................................................................................

(Contract Name) ......................... (Contract No.) .................
...................................................................................

Dear Ladies and / or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal No...... and agree to adjust the Contract Price, Time for Completion and/ or other conditions of the Contract in accordance with CC Clause 39.0 of General Conditions of Contract.

1. Title of Change: (Name) ................................................................

2. Change Request No. .........................(Rev .........................)

3. Change Order No .........................(Rev .........................)

4. Originator of Change: Employer (Name) .........................
Contractor (Name) .........................

5. Authorized Price:
Ref. No. ......................... (Number)
Date: ..............................
Foreign currency portion .........plus Local currency portion..............

6. Adjustment of Time for Completion
None Increase ........................days Decrease ........................days

7. Other effects, if any
Authorized by: ..........................Date: ..........................(Employer)

Accepted by: ..........................Date: ..........................
(Contractor)

...................................................................................
(Contractor’s Name)

...................................................................................
(Signature)

...................................................................................
(Name of signatory)

...................................................................................
(Title of signatory)
PENDING AGREEMENT CHANGE ORDER

To: (Employer's Name and Address)   Date: ..................

Attention: (Name and Title)

(Contract Name) .....................    (Contract No.) .................

Dear Ladies and / or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with CC 39.0 of the Conditions of Contract.

1. Title of Change: (Name) ...........................................
2. Employer Request for Change Proposal No..............(Rev .......)  Dated...........
3. Contractor’s Change Proposal No...................(Rev........)  Dated...........
4. Brief Description of Change:

5. Facilities and/ or Item No. of equipment related to the requested Change:

6. Reference drawings and/ or technical documents for the requested Change

   Drawing No. / Document No.        Description
   ..................................................        ..................................................

7. Adjustment of time for completion:

8. Other change in the Contract terms:

9. Other terms and Conditions:

   (Contractor’s Name)

   (Signature)

   ..................................................

   (Name of signatory)

   ..................................................

   (Title of signatory)
APPLICATION FOR CHANGE PROPOSAL

To: (Employer’s Name and Address)  Date: ......................

Attention: (Name and Title)

(Contract Name) .........................  (Contract No.) .................

Dear Ladies and / or Gentlemen:

We hereby propose that the below mentioned work be treated as a Change in the Facilities.

1. Title of Change:
   (Name) .................................................................

2. Application for Change Proposal No..................(Rev ............)
   Dated .............

3. Brief Description of Change:
   ................................................................................
   ................................................................................

4. Reasons for Change:
   ................................................................................
   ................................................................................

5. Order of Magnitude Estimation (in the currencies of the Contract).
   ................................................................................
   ................................................................................

6. Scheduled Impact of Change:
   ................................................................................
   ................................................................................

7. Effect on Functional Guarantee. If any:
   ................................................................................
   ................................................................................

8. Appendix
   ................................................................................
   ................................................................................

   ...................................................
   (Contractor’s Name)

   ...................................................
   (Signature)

   ...................................................
   (Name of signatory)

   ...................................................
   (Title of signatory)
# CHANGE ORDER LOG

To: (Employer's Name and Address)  
Date: .................  

Attention:  (Name and Title)  

(Contract Name) ..................  (Contract No.) .................  

Dear Ladies and / or Gentlemen:

We hereby furnish the up-to-date change order log to show the current status of request for changes and authorized or pending.

<table>
<thead>
<tr>
<th>S1. No.</th>
<th>Employer's Request for change proposal</th>
<th>Contractor application for change proposal including revision</th>
<th>Contractor's Change order proposal including revision</th>
<th>Change order No. proposal No. including revision</th>
<th>Pending</th>
<th>Remarks*</th>
</tr>
</thead>
</table>

(Contractor's Name)  
(Signature)  

(Name of signatory)  

Title of Signatory  

Note:

(i) *In case Employer has authorized to carryout the work pending agreement change order, the details of such authorization shall be furnished.

(ii) The contractor shall attach a copy of the current change order log in the monthly progress report to be submitted to the Employer every month.
11. FORM OF INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE
EQUIPMENT HANDED OVER IN ONE LOT BY DELHI TRANSCO LTD. FOR PERFORMANCE
OF ITS CONTRACT

INDEMNITY BOND

THIS INDEMNITY BOND is made this ........ day of................. 200..... by................ a
Company registered under the Companies Act, 1956/ Partnership firm/ proprietary concern having its
Registered Office at..............(hereinafter called as ‘Contractor’ or “Obligor” which expression shall include
its successors and permitted assigns) in favour of DELHI TRANSCO LTD, a Company incorporated under
the Companies Act, 1956 having its Registered Office at Shakti Sadan, Kotla Road, New Delhi-110002.

WHEREAS DELHI TRANSCO LTD. has awarded to the Contractor a contract for .........................vide its
Notification of Award/ Contract No................. ............ dated ............and its Amendment
No.........................(applicable when amendments have been issued) (hereinafter called the “Contract”) in
terms of which DTL is required to hand over various Equipments to the Contractor for execution of the
Contract.

And WHEREAS by virtue of Clause No..........of the said Contract, the Contractor is required to execute
an Indemnity Bond in favour of DTL for the Equipment handed over to it by DTL for the purpose of
performance of the Contract/ Erection portion of the contract (hereinafter called the “Equipment”)

AND THEREFORE, This Indemnity Bond witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (amount in
words………………………………) handed over to the Contractor for the purpose of performance of the
Contract, the Contractor hereby undertakes to indemnify and shall keep DTL indemnified, for
the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipments as
per dispatch title documents handed over to the Contractor duly endorsed in their favour and
detailed in the Schedule appended hereto. It is expressly understood by the Contractor that
handing over of the dispatch title documents in respect of the said equipments duly endorsed by
DTL in favour of the contractor shall be construed as handing over of the equipment purported to
be covered by such title documents and the contractor shall hold such equipment in trust as a
Trustee for and on behalf of DTL.

2. That the contractor is obliged and shall remain absolutely responsible for the safe transit/protection
and custody of the equipment of DTL project Site against all risks whatsoever till the equipm ent
are duly used/erected in accordance with the terms of the contract and the plant/package duly
erected and commissioned in accordance with the terms of the contract, is taken over by DTL.
The contractor undertakes to keep DTL harmless against any loss or damage that may be caused
to the equipments.

3. The contractor undertakes that the equipment shall be used exclusively for the
performance/execution of the contract strictly in accordance with its terms and conditions and no
part of the equipment shall be utilized for any other work or purpose whatsoever. It is clearly
understood by the contractor that non observance of the obligations under this indemnity bond by
the contractor shall inter-alia constitute a criminal breach of trust on the part of the contractor for all
intents and purpose including legal/penal consequences.

4. That DTL is and shall remain the exclusive owner of the equipment free from all encumbrances,
charges or liens of any kind, whatsoever. The equipment shall be all times be open to inspection
and checking by the employer or employer’s representative in this regard. Further DTL shall
always be free at all times to take possession of the equipment in whatever form the equipment
may be, if in its opinion, the equipments are likely to be endangered, mis-utilised or intended for
use other than those specified in the contract, by any acts of omission or commission on the part
of the contractor or any other person or on account of any reason whatsoever and the contractor
binds himself and undertakes to comply with the directions of demand of DTL to return the
equipment without any demur or reservation.

5. That this indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipment
or the same or any part thereof is mis-utilised in any manner whatsoever, then the Contractor
hereby agrees that the decision of the Employer’s Representative as to assessment of loss or
damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself
and undertakes to replace the lost and /or damaged Equipment at its own cost and/or shall pay the amount of loss to DTL without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to DTL against the Contractor under the Contract and under this Indemnity Bond.

6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of DTL, THEN. The above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

SCHEDULE

<table>
<thead>
<tr>
<th>Particulars of the Equipment</th>
<th>Quantity</th>
<th>Particulars of Despatch title Documents</th>
<th>Value of the Equipment</th>
<th>Signature of Attorney in Handed token of receipt</th>
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<tbody>
<tr>
<td>RR/ GR No.</td>
<td></td>
<td>Date of lading &amp; Carrier</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For and on behalf of

M/s………………………………..

WITNESS

1. 1. Signature…………………… Signature……………………………
    2. Name………………………… Name………………………………
    3. Address……………………… Address……………………………

Authorized representative

2. 1. Signature……………………
    2. Name………………………… (Common Seal)
    3. Address……………………… (In case of Company)

Indemnity Bonds are to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) in case of (ii), the original Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.
12. FORM OF INDEMNITY BOND TO BE EXECUTED BY THE CONTRACTOR FOR THE EQUIPMENT HANDED OVER IN INSTALLMENTS BY DELHI TRANSCO LTD FOR PERFORMANCE OF ITS CONTRACT

INDEMNITY BOND

THIS INDEMNITY BOND is made this .............day of ........200.........by.............. 

........................................................................a Company registered under the Companies Act, 1956/ Partnership firm/ proprietary concern having its Registered Office at .........................(hereinafter called as ‘Contractor’ or ‘Obligor’ which expression shall include its successors and permitted assigns) in favor of DELHI TRANSCO LTD a Company incorporated under the Companies Act, 1956 having its Registered Office at Shakti Sadan, Kotla Marg, New Delhi-110002

WHEREAS DTL has awarded to the Contractor a Contractor for .....................vide Its Notification of Award/Contract No. .....................dated .............and Amendment No. ......................... (applicable when amendments have been issued ) (hereinafter called the “Contract”) in terms of which DTL is required to handover various Equipments to the Contractor for execution of the Contract.

AND WHEREAS by virtue of Clause No..........of the said Contract, the Contractor is Required to execute an Indemnity Bond in favour of DTL for the Equipment handed over to it by DTL for the purpose of performance of the contract/ Erection portion of the Contract (hereinafter called the “Equipment”.)

NOW THEREFORE, This Indemnity Bond witnessed as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (amount in words......................) to be handed over to the Contractor in installments from time to time for the purpose of performance of the contract, the Contractor hereby undertakes to indemnify and shall keep DTL indemnified, for the full value of Equipment. The Contractor hereby acknowledges receipt of the initial installment of the equipment per details in the schedule appended hereto. Further, the Contractor agrees to acknowledge receipt of the subsequent installments of the Equipment as required by DTL in the form of Schedules consecutively numbered which shall be attached to this Indemnity bond so as to form integral parts of this Bond It is expressly understood by the Contractor shall be construed as handing over the Equipment purported to be covered by such title documents and the Contractor shall hold Equipments in trust as a Trustee for and on behalf of DTL

2. That the contractor is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the equipment of DTL project Site against all risks whatsoever till the equipment are duly used/erected in accordance with the terms of the contract and the plant/package duly erected and commissioned in accordance with the terms of the contract, is taken over by DTL. The contractor undertakes to keep DTL harmless against any loss or damage that may be caused to the equipments.

3. The contractor undertakes that the equipment shall be used exclusively for the performance/execution of the contract strictly in accordance with its terms and conditions and no part of the equipment shall be utilized for any other work or purpose whatsoever. It is clearly understood by the contractor that non observance of the obligations under this indemnity bond by the contractor shall inter-alia constitute a criminal breach of trust on the part of the contractor for all intents and purpose including legal/penal consequences.

4. That DTL is and shall remain the exclusive owner of the equipment free from all encumbrances, charges or liens of any kind, whatsoever. The equipment shall be all times be open to inspection and checking by the employer or employer’s representative in this regard. Further DTL shall always be free at all times to take possession of the equipment in whatever form the equipment may be, if in its opinion, the equipments are likely to be endangered, mis-utilised or intended for use other than those specified in the contract, by any acts of omission or commission on the part of the contractor or any other person or on account of any reason whatsoever and the contractor binds himself and undertakes to comply with the directions of demand of DTL to return the equipment without any demur or reservation.

5. That this indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipment or the same or any part thereof is mis-utilised in any manner whatsoever, then the Contractor hereby agrees that the decision of the Employer’s Representative as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself
and undertakes to replace the lost and /or damaged Equipment at its own cost and/ or shall pay the amount of loss to DTL without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to DTL against the Contractor under the Contract and under this Indemnity Bond.

6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of DTL, then, the above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

SCHEDULE No. 1

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</tr>
</tbody>
</table>

For and on behalf of

M/s.____________________________

WITNESS

1. 1. Signature____________________ Signature____________________
    2. Name________________________ Name________________________
    3. Address_______________________ Address_______________________
       Authorized representative

2. 1. Signature____________________
    2. Name_______________________ (Common Seal) (In case of Company)
    3. Address____________________

Indemnity Bonds are to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) in case of (ii), the original Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.
13. FORM OF AUTHORIZATION LETTER: DELHI TRANSCO LIMITED.

REF. No.

DATE:

TO,

M/s……………………….
…………………………
…………………………
…………………………

REF: Contract No……………….. dated …………. for……………………… awarded by Delhi Transco limited.

Dear Sir,

Kindly refer to Contract No. …………………….. Dated …………… for …………… You are hereby authorized on behalf of Delhi Transco Limited, having its registered office at Delhi Transco Limited, Shakti Sadan, Kotia Road New Delhi-110002 and its project at ……………to take physical delivery of materials/equipments covered under Dispatch Document/Consignment Note No…………………dated……………………… and as detailed in the enclosed schedule for the sole purpose of successful performance of the aforesaid contract and for no other purpose, whatsoever.

(Signature of project AUTHORITY)**

Designation ……………………..
Date …………………………….

Encl: As above

** To be signed not below the rank of Manager.

- Mention LR/RR No.
14. FORM OF TRUST RECEIPT FOR PLANT, EQUIPMENT AND MATERIALS RECEIVED

We M/s (Contractor’s Name)____________________________________________ having our Principal
place of business at _____________________________having been awarded a Contract No.
_________________ dated ______________ for (Contract Name) by (Name of Employer)
____________________________________________.

We do hereby acknowledge the receipt of the Plant, Equipment and Materials as are fully described and
mentioned under Documents of Title/RR/LR etc and in the schedule annexed here to, which shall form an
integral part of this receipt as “Trustee” of __________________________ (Name of Employer). The
aforesaid materials etc. so received by us shall be exclusively used in the successful performance of the
aforesaid contract and for no other purpose whatsoever. We undertake not to create any charge, lien or
encumbrance over the aforesaid materials etc, in favour of any other person /institution (s) / Banks.

For M/s ______________________________
(Contractor’s Name)

Dated:_____________

Place: _____________

(AUTHORISED SIGNATORY)

SEAL OF COMPANY
15. **FORM OF EXTENSION OF BANK GUARANTEE**

Ref. No……………………… Dated………………………….

Delhi Transco Limited,  
Shakti Sadan, Kotla Road  
New Delhi 110002,  
India  

Dear Sirs,  


At the request of M/s ……………………. We ………………….. Bank branch office at……………. Having its Head Office at …………………… do hereby extend our liability under the above mentioned Guarantee No……………………… dated ………….. for a further period of ………………. Years/Month from ……………….. Expire on ……………….. Except as provided above, all other terms and conditions of the original Bank Guarantee No……………………… dated……………… shall remain unaltered and binding.

Please treat this as an integral part of the original Guarantee to which it would be attached.

Yours Faithfully,  

For……………………………  
Manager, Agent/Accountant  

Power of attorney No………….  
Dated …………………………….

**SEAL OF BANK**

**Note**: The non. Judicial stamp paper of appropriate value shall be purchased in the name of the bank who has issued the bank Guarantee.
16. FORM OF POWER OF ATTORNEY FOR JOINT VENTURE/CONSORTIUM.

(On Non-judicial Stamp paper of Appropriate Value to be purchased in the name of joint venture/Consortium)

KNOW ALL MEN BY THESE PRESENTS THAT WE, the partners whose details are given hereunder ……………………………….. have formed a Joint venture/Consortium under the laws of …………………….. And having our Registered Office(S) / Head Office(s) at ……………………………….. (hereinafter called the Joint venture/Consortium which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ……………………………….. being the partner in-charge do hereby constitute, nominate and appoint M/s ………………………………… a Company incorporated under the laws of ……………………………….. and having its registered / Head Office at ……………….. as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorized Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the joint venture/Consortium in regard to Specification No………………… Package ……………………… the bids for which have been invited by Delhi Transco Limited, Shakti Sadan Building, Kotla Road, New Delhi, India (hereinafter called the "Employer") to undertaking the following acts:

i) To submit proposal and participate in the aforesaid Bid Specification of the Employer on behalf of the "Joint venture/Consortium".

ii) To negotiate with the employer the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the Employer for and on behalf of the 'JOINT VENTURE/CONSORTIUM'.

iii) To do any other act or submit any document related to the above.

iv) To receive, accept and execute the Contract for and on behalf of the "Joint venture/Consortium".

It is clearly understood that the partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more partner fail to perform their respective portions of the Contract(s), the same shall be deemed to be default by all the partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the Defect Liability Period in terms of the Contract.

The joint venture/Consortium hereby agrees and undertakes to ratify and confirm all and whatsoever the said Attorney/Authorized Representatives/Partner In-charge quotes in the bid, negotiates And signs the Contract with Employer and / or proposes to act on behalf of the Joint venture/Consortium by virtue of this Power of Attorney and the same shall bind the joint venture/Consortium as if done by itself.

In WITNESS THEREOF the partners Constituting the joint venture/Consortium as aforesaid have executed these present on this …………… day of …………………….. Under the Common Seal(s) of their Companies.

for and on behalf of the
Partners of joint venture/Consortium

…………………………..
…………………………..

The Common Seal of the above Partners of the Joint venture/Consortium:

The Common Seal has been affixed the unto in the presence of:

WITNESS

1. Signature…………………………..
   Name…………………………..
   Designation ……………………..
   Occupation ……………………..

2. Signature…………………………..
   Name…………………………..
   Designation ……………………..
   Occupation ……………………..
17. FORM OF JOINT VENTURE/ CONSORTIUM AGREEMENT

(On non-judicial stamp paper of appropriate value to be purchased in the name of joint venture/ Consortium)

PERFORMA OF JOINT VENTURE/ CONSORTIUM AGREEMENT BETWEEN .................................................................
AND ........................................ FOR BID SPECIFICATION NO........................................... OF DELHI TRANSCO LIMITED

THIS joint venture/ Consortium agreement executed on this ............... day of Two thousand................. between M/s .................................. a company incorporated under the laws of .................................. and having its registered office at...................................................... (hereinafter called the “Lead partner” which expression shall include its successors executors and permitted assigns), M/s .......................................................... a company incorporated under the laws of .................................. and having its registered office at...................................................... (hereinafter called “the partner” which expression shall include its successors executors and permitted assigns) and M/s .......................................................... a company incorporated under the laws of .................................. and having its registered office at...................................................... (hereinafter called “the partner” which expression shall include its successors executors and permitted assigns) for the purpose of making a bid and entering into a contract (in case of award) against the specification No........................................... for ..................................................... (Name of the Package) ...........................................under ..................................................... (Name of the project) of Delhi Transco limited, a company incorporated under the Companies Act of 1956 having its registered Shakti Sadan, Kotla Road New Delhi-110002, India (hereinafter caller the; “Employer”)

Whereas the employer invited bids as per the above mentioned Specification for the design, engineering, manufacture, supply, installation, testing and commissioning of equipment/materials stipulated in the bidding documents for..................................(Name of the Package) ...........................................under .....................................................(Name the project)

AND WHEREAS Annexure-A, section-ITB (qualification of the bidder) forming part of the bidding documents, stipulates that a joint venture/ Consortium of two or more qualified firms as partners, meeting the joint venture/ Consortium fulfills all other requirements under Annexure-A, Section ITB (qualification of the bidder) and in such a case, the BID FROM shall be signed by all the partners so as to legally bind all the partners of the Joint venture/ Consortium, who will be jointly and severally liable to perform the contract and all obligations hereunder.

The above clause further states that the joint venture/ Consortium agreement shall be attached to the bid and the contract performance guarantee will be as per the format enclosed with the bidding document without any restriction or liability for either party.

AND WHEREAS the bid has been submitted to the Employer vide proposal No........................................... dated.........................by Lead partner based on the joint venture/ Consortium agreement between all the partners under these present and the bid in accordance with the requirements of Annexure-A, section ITB (Qualification of the Bidders), has been signed by all the partners.

NOW THIS INDENTURE WITNESS AS UNDER:

In consideration of the above premises and agreements all the partners to this joint venture/ Consortium do hereby now agree as follow:

1. In consideration of the award of the contract by the Employer to the joint venture/ Consortium partners, we, the partners to the joint venture/ Consortium agreement do hereby agree that M/s .................................. shall act as lead partner and further declare and confirm that we shall joint and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, engineering, manufacture, supply, and successful performance of the equipments in accordance with the Contract.

2. In case of any breach of the said Contract by the Lead Partner or other partner(s) of the joint venture/ Consortium agreement, the partner(s) do hereby agree to be fully responsible for the successful performance of the contract and carry out all the obligations and responsible under the Contract in accordance with the requirements of the Contract.

3. Further if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performance guaranteed as per the specification in terms if the Contract, the partner(s) of these present undertake to promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be
necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Partner(s).

4. The financial liability of the partner of this joint venture/ Consortium agreement to the Employer, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in the said joint venture/ Consortium agreement, read in conjunction with the relevant conditions of the Contract shall, however, not be limited in any way so as to restrict or limit the liabilities of any of the partners of the joint venture/ Consortium agreement.

5. It is expressly understood and agreed between the partners to the joint venture/ Consortium agreement that the responsibilities and obligations of each of the partners shall be as delineated in Appendix-I (* To be incorporated suitably by the partners) to this agreement. It is further agreed by the partners that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and servable responsibilities of the partners under this Contract.

6. This joint venture/ Consortium agreement shall be constructed and interpreted in accordance with the laws of India and the courts of Delhi shall have the exclusive jurisdiction in all matters arising there under.

7. In case of an award of a Contract, we the partners to the joint venture/ Consortium agreement do hereby agree that we shall be jointly and severally responsible for furnishing a contract performance security from a bank in favour of the Employer in the currency of the Contract.

8. It is further agreed that the venture agreement shall be irrevocable and shall form an integral part of the Contract, and shall continue to be enforceable till the Employer discharges the same. It shall be effective from the date first mentioned above for all purpose and intents.

IN WITNESS WHEREOF, the partners to the joint venture/ Consortium agreement have through their authorized representatives executed these present and affixed Common Seals of their companies, on the day, month and year first mentioned above.

1. Common Seal of ..................
   has been affixed in my/our presence pursuant to the Board of Director's resolution dated...
   Signature....................................
   Name..........................................
   Designation.............................

   For Lead partner
   (Signature of authorized representative)
   Name..........................................
   Designation.............................
   Common Seal of the company
   ............................................

   For partner
   (Signature of authorized representative)
   Name..........................................
   Designation.............................
   Common Seal of the company
   ............................................

WITNESSES:
1. .............................................
   (Signature)
   Name..........................................
   .............................................
   (Official address)

2. .............................................
   (Signature)
   Name..........................................
   .............................................
   (Official address)
18. PROFORMA OF JOINT UNDERTAKING BY THE COLLABORATOR/ PARENT COMPANY/PRINCIPAL ALONGWITH THE BIDDER/MANUFACTURER

(On non-judicial stamp paper of appropriate value)

THIS DEED OF UNDERTAKING executed this ………………… day of Two Thousand and……………… by M/s……………………… a company incorporated under the laws of …………………………….. and having its registered office at…………………………(hereinafter called the “Collaborator/Parent Company/Principal”) and M/s……………… a company incorporated under the laws of …………………………….. and having its registered office at……………………………(hereinafter called the “Bidder/Manufacturer”) in favour of Delhi Transco Limited, having its Registered office at Shakti Sadan, Kotla Marg, New Delhi.(herein after called the “Employer”)

WHEREAS the “Employer” invited Bid as per Specification No. ……………….. for the execution of ………………..(Insert name of the Project)…….

AND WHEREAS Clause No. …………., Section ………………..of ………………..forming part of the Bidding Documents inter-alia stipulates that the Bidder and/or Manufacturer alongwith its collaborator/parent company/principal must fulfill the Qualifying Requirements for the ……………….. and be jointly and severally bound and responsible for the successful performance of the ………………..offered in the event the bid submitted by the bidder is accepted by the Employer resulting in Contract.

AND WHEREAS the bidder has submitted its bid to the Employer vide Proposal No. ……………….. dated ………………..based on the collaboration /association of the collaborator/parent company/principal with the Bidder/Contractor.

NOW THEREFORE THIS UNDERTAKING WITNESSTH as under.

1.0 In consideration of the award of Contract by the Employer to the Bidder (herein after referred to as the “Contract”) we, the collaborator/parent company/principal and the Bidder/Contractor and/or manufacturer do hereby declare that we shall be jointly and severally bound unto the DELHI TRANSCO LIMITED, for the successful performance of the *……………….. and shall be fully responsible for the design, manufacturer, testing, supply on FOR destination delivery at site basis and supervision of unloading at site, storage, erection, testing & commissioning and successful performance of the *………………..in accordance with the Contract Specifications.

2.0 Without in any way affecting the generality and total responsibility in terms of deed of Undertaking, the collaborator/parent company/principal in particular hereby agrees to depute their technical experts from time to time to the Bidder/Contractor’s/Manufacture’s Works/ Employer’s project site as mutually considered necessary by the Employer, bidder/Contractor, Manufacturer and the collaborator/parent company/principal to ensure.

3.0 This deed of undertaking shall be construed and interpreted in accordance with the laws of India and the Courts in Delhi shall have exclusive jurisdiction in all matters arising under the undertaking.

4.0 As a security, the bidder shall apart from the contractor’s performance guarantee furnish a contract performance guarantee from its Bank in favour of the Employer on a form acceptable to the Employer. The value of such guarantee shall be equivalent to 10% of price of such equipments manufactured in India as identified in the contract awarded by the Employer to the bidder/contractor and it shall be part of guarantee towards the faithful performance/ compliance of this deed of undertaking in terms of the contract. The guarantee shall be unconditional, irrevocable and valid for the entire period of the contract, namely till the end of the defect liability period of 220kV HTLS Conductor under the contract. The bank guarantee amount shall be payable to the Employer on demand without any reservation or demur. This shall be in addition to the contract performance guarantee furnished by the contractor.

5.0 We the collaborator/parent company/principal and bidder/contractor and/or manufacturer agree that this undertaking shall be irrevocable and shall from an integral part of the contract and further agree that this undertaking shall continue to be enforceable till the Employer discharges it. It shall become operative from the effective date of contract.

IN WITNESS WHEREOF the collaborator/parent company/principal and bidder/contractor and/or manufacturer, have through their Authorized Representatives executed these present and affixed common seals of their respective Companies, on the day, month and year first above mentioned.
WITNESSES:

For Collaborator/parent company/principal

1.-----------------------
(Signature)
(Name in Block Letter) Name-------------------
(Office Address) Common seal of Company-------------------

2.-----------------------
(Signature)
(Name in Block Letter) Name-------------------
(Office Address) Common seal of Company-------------------

For Manufacturer

3.-----------------------
(Signature)
(Name in Block Letter) Name-------------------
(Office Address) Common seal of Company-------------------

Note:

(i) This deed of Joint undertaking duly certified by the Company Secretary shall be submitted along with the bid. Further, the deed of Joint Undertaking attested by Notary Public of the place(s) of the respective executants (s) or registered with the Indian Embassy/ High Commission in the country shall be submitted by the bidder before opening of price bid. In case the bidder fails to submit the deed of Joint Undertaking as mentioned above, the bidders bid guarantee may be forfeited.

(ii) In the event the bidder is a Manufacturer and the collaboration is between collaborator and the Bidder, then the Joint deed of Undertaking shall be continued accordingly.

(iii) *The name(s) of equipment for which Joint deed of undertaking is to be submitted is to be inserted.

(iv) The manufacturer may be having ongoing collaboration agreement or had collaboration agreement in the past with the collaborator.
19. FORM OF TAKING OVER CERTIFICATE

Date……………………..

Name of Contract………
Contract No……………

To:

(Name and address of the Contractor)

Dear Ladies and/or Gentlemen,

Pursuant to CC 24 & 25 of the Conditions of the Contract entered into between yourselves and the Employer dated ………………………………. relating to the ………………………………………

(Brief description of the Facilities)

we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below:

1. Description of the Facilities or part thereof... ……………………………………

2. Date of Completion…

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defects Liability Period.

Very truly yours,

Title
(Project Manager)
DELHI TRANSCO LTD
(A Government of NCT of Delhi Undertaking)

Bidding Documents

For


Volume – II

TECHNICAL SPECIFICATION

Tender No: T18P080211
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<th>CONTENTS</th>
<th>DESCRIPTION</th>
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<td>TECHNICAL SPECIFICATION : HTLS CONDUCTOR</td>
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<td>3.</td>
<td>SECTION III</td>
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<td>SECTION IV</td>
<td>TOWER</td>
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<td>5.</td>
<td>SECTION V</td>
<td>PRE-COMMISSIONING</td>
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<td>6.</td>
<td>SECTION VI</td>
<td>GENERAL TECHNICAL REQUIREMENT (GTR)</td>
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<td>7.</td>
<td>SECTION VII</td>
<td>GTP</td>
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<tr>
<td>8.</td>
<td>SECTION VIII</td>
<td>TOWER SCHEDULE</td>
</tr>
</tbody>
</table>
SECTION-I

PROJECT
SECTION-I
PROJECT

1.0 General Information & Scope

1.1 General Information

1.1.1 Delhi Transco Limited (hereinafter called ‘DTL’/ ‘Owner’) intends to carryout following work under the scope of following Re-conductoring package:-


1.2 Scope

1.2.1 The scope of work inter-alia includes:

i) Design, Engineering, Manufacturing, Testing & Supply (including local transportation and other incidental services) of High Temperature Low Sag (HTLS) conductor, hardware fittings& clamps for hardware fittings suitable for HTLS conductor, accessories for HTLS conductor and Petty items.

ii) Site Inspection.

iii) De-Stringing of ACSR Zebra Conductor, dismantling of hardware and accessories of existing line and transportation of these items from site to DTL store or other site store along with proper stacking etc

iv) Installation of necessary hardware, hoisting of insulator string, installing and stringing of each circuit with HTLS Conductor along with all necessary line accessories/ Petty items with the other circuit under live condition (including river/ railway crossing section), testing & commissioning.

1.2.2 The material to be supplied on final destination at site basis as covered in the bidding documents shall be designed, manufactured, tested, supplied and installed as per the requirements specified in this volume and the requirements, conditions, appendices etc. specified in other Sections of bidding documents.
1.2.3 The entire quantity of dismantled bay equipment as well as line materials viz. ACSR ZEBRA conductor, hardware fittings & conductor accessories etc. transported from site to DTL store or other site store along with proper stacking etc.

1.2.4 The Owner shall arrange shut down of one circuit at a time and the other circuit shall be kept under charged condition. The contractor shall de-string the existing conductor and restring the circuit with the new HTLS conductor section by section and restore the line in original conditions as per program finalized in co-ordination with site engineer.

Appropriate safety measures along with necessary safety tools and equipments to carry out destringing and stringing operations under the above conditions including mechanical/ structural safety of the towers, shall be the responsibility of the contractor. Necessary calculations shall be carried out by the contractor to ensure that by replacing the existing ACSR ZEBRA conductor with the offered HTLS conductor, the loadings on the towers due to conductor tensions as well as loads on account of the re-conductoring activities shall be within specified limits. These calculations shall be submitted by the contractor during detailed engineering.

1.2.5 In case of railway crossings, shutdown might not be available and therefore, contractor shall be required to carry out re-conductoring under such condition i.e. without any shutdown of railways.

1.2.6 The materials covered in this package shall be supplied complete in all respects, including all components, fittings and accessories which are necessary or are usual for their efficient performance and satisfactory maintenance under the various operating and atmospheric conditions. The supplier shall be responsible for ensuring compatibility with associated fittings and accessories and satisfactory performance of complete conductor system (along with associated fittings and accessories) for continuous operation at the designed continuous operating temperature of the offered HTLS conductor. Such parts shall be deemed to be within the scope of the Contract, whether specifically included or not in the Specification or in the Price Schedules. The contractor shall not be eligible for any extra charges for such fittings, etc.

1.2.7 The contractor shall inspect the entire stretch of transmission line and shall accordingly devise appropriate methodology/procedure of carrying out the re-conductoring works during detailed engineering. The contractor shall deploy appropriate tools / equipments / machinery to ensure that the stringing operation is
carried out without causing damage to conductor and conductor is installed at the
prescribed sag-tension as per the approved stringing charts. Further, the contractor
having requisite experience has freedom to use helicopter for stringing/ de-stringing.
The contractor intending to use helicopter shall furnish detailed description of the
procedure, type & number of helicopter & accessories etc., to be deployed for
stringing operation. The payment for stringing shall be done as per the payment
clauses under section F&P irrespective of the methodology adopted for stringing.

1.2.8 The scope of the package shall inter-alia include re-conductoring works at site as per
the approved procedure during the entire period of stringing. The stringing works
including installation of HTLS conductor & its fittings & accessories shall be
supervised by a team of supplier’s engineers / supervisory staff/ workmen already
experienced in stringing work associated with the type of HTLS conductor being
supplied. In case the stringing is carried out by sub contractor, the bidder shall co-
ordinate with the sub contractor and train its workers for carrying out re-conductoring
works.

Charges for supervision by core supplier (if required) shall be deemed to be included
in the charges for installation & stringing of the offered HTLS conductor as per the
Technical specification. Further, cost for supply of one set of all the special tools &
tackles required for stringing of the offered HTLS conductor shall be included in the
bid price.

1.2.9 Tee-taps required as per site condition for execution of work. Bidders are required to
supply and install these Tee-taps. Cost of the same has been included in tender cost.

2.0 Technical Description

The technical description of HTLS Conductor and its associated fittings &
accessories along with the tests and standards shall be as specified in Section –II
HTLS Conductor and Section –III Hardware fitting & accessories of this Volume.

3.0 Tests

The Type test, Acceptance test and Routine tests and tests during manufacturing shall
be in accordance with the Technical Specification, Volume-II.

4.0 Guaranteed Technical Particulars

4.1 The Guaranteed Technical Particulars of the various items shall be furnished by the
Bidders in the prescribed schedules of the specifications. The Bidder shall also furnish
any other schedule information as in their opinion is needed to give full description and details to judge the item(s) offered by them.

4.2 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 whatsoever shall be given to the bidder offering better/more stringent values than those required as per specification.

5.0 Details of Existing Transmission Line and Terrain

5.1 The tower schedule of the transmission lines prepared by the Owner is enclosed for reference in Section-Tower Schedule of this Volume.

5.2 Bidders are advised to visit the line route to acquaint themselves with terrain/topography etc and local conditions of the site and associated details of the existing transmission line to be re-conducted with HTLS conductor before bidding. For this purpose they are requested to contact the following address:

General Manager (O&M)-I / II
Delhi Transco Limited.
220kV Sub-Station Building, Park Street,
Opposite Talkatora Stadium
New Delhi-110001

5.3 Line Termination Details

220KV D/C Gopalpur-Mandola transmission line is emanating from Mandola 400kVSubstation (PGCIL) and terminating at Gopalpur 220kVSubstation of DTL, Delhi.

Address of Mandola 400kV Substation (PGCIL):-
Loni- Baghpat Road,
Mandola, Dist- Gaziabad
(UP)- 210102

Address of Gopalpur 220kV Substation:-
Vill.Gopalpur, Near Gandhi Vihar Colony,
Outer Ring Road, Delhi-110009
6.0 Line Data
Details of existing 220KV D/C Transmission line are as follows:-

6.1 Electrical System Data

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Nominal Voltage</th>
<th>kV</th>
<th>220</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Maximum system voltage</td>
<td>kV</td>
<td>245</td>
</tr>
<tr>
<td>3.</td>
<td>BIL (Impulse)</td>
<td>kV (Peak)</td>
<td>1050</td>
</tr>
<tr>
<td>4.</td>
<td>Power frequency withstand voltage (Wet)</td>
<td>kV (rms)</td>
<td>460</td>
</tr>
<tr>
<td>6.</td>
<td>Radio interference voltage at one MHz for phase to earth voltage of 154 KV under dry condition</td>
<td>Micro Volts</td>
<td>1000 (Max)</td>
</tr>
</tbody>
</table>

6.2 Details of Line Materials: Conductor

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Conductor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Type</td>
<td>ACSR ‘ZEBRA’ conductor</td>
</tr>
<tr>
<td>2.</td>
<td>Stranding and wire diameter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aluminium</td>
<td>54/3.18</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
<td>7/3.18</td>
</tr>
<tr>
<td>3.</td>
<td>Conductor per phase</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Spacing between conductor of same phase (sub conductor spacing)(mm)</td>
<td>NA</td>
</tr>
<tr>
<td>5.</td>
<td>Configuration</td>
<td>Vertical (for D/C with 5200 mm min. inter phase spacing)</td>
</tr>
<tr>
<td>6.</td>
<td>Overall Diameter (mm)</td>
<td>28.62</td>
</tr>
<tr>
<td>7.</td>
<td>Unit mass (kg/km)</td>
<td>1621</td>
</tr>
<tr>
<td>8.</td>
<td>Min. UTS (kN)</td>
<td>130.32</td>
</tr>
</tbody>
</table>

6.3 Ruling Design span for Narrow base tower is 225 meters and for Broad Base tower is 320 meters

6.4 Sag-Tensions of the transmission line:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Loading Condition</th>
<th>Tension (Kgs)</th>
<th>Sag (meter)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Narrow Base Towers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Every day condition (32 deg C &amp; no wind)</td>
<td>2715</td>
<td>3.783</td>
</tr>
<tr>
<td>ii)</td>
<td>Continuous operating condition (65 deg C &amp; no wind)</td>
<td>2136</td>
<td>4.808</td>
</tr>
<tr>
<td>iii)</td>
<td>32 deg C &amp; full wind (45kg/m2)</td>
<td>3181</td>
<td>3.229</td>
</tr>
<tr>
<td>iv)</td>
<td>0 deg. C, 2/3 wind pressure (30 Kg/m2)</td>
<td>3854</td>
<td>2.665</td>
</tr>
</tbody>
</table>
6.5 Right of Way for existing line: 35 meters

7.0 Clause Deleted

8.0 Reference Standards

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>IS:802 1977</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>IS: 5613</td>
<td>Code of practice for Design, installation and Maintenance of Overhead Power lines Section 1: Design Section 2: Installation and Maintenance</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>Indian Electricity Rules</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Guide to the installation of overhead transmission line conductors (IEEE STD524with latest revision) with additional instructions and precautions for live line working</td>
</tr>
</tbody>
</table>

9.0 The bidder should have assured access to supply Line Material from sub-vendor/contractor meeting the “Qualification Requirement for Contractor’s Supplying Line Material” as given below under clause 9.1.

9.1 Qualification Requirement for Contractor’s Supplying Line Material:

The Bidder should have assured access to supply the Composite long rod insulator, Hardware fitting and accessories for HTLS Conductor from Qualified Manufacturers meeting the following minimum requirements and must demonstrate that based on known commitments they will be available for use in the proposed contract.
9.1.1 Composite Long rod Insulators

The Qualified Manufacturer shall be a manufacturer of composite Insulators for the last five years. The manufacturer’s experience should include the following:-

(i) The Qualified Manufacturer should have designed, manufactured, tested and supplied 160 KN or above electro mechanical strength of Composite long rod insulators for 220 KV or above voltage transmission lines and minimum 25% of tender quantity of 160 KN or above rating should have been in satisfactory operation for a minimum period of two years as on originally scheduled date of bid opening.

(ii) The manufacturer should also have successfully completed at least the following tests on insulator units and insulator string (of Composite long rod insulators) as on originally scheduled date of bid opening.

a) Tests on individual units as per IEC 61109-1995 or IEC 61109-2008.

b) Following Type tests on insulator strings assembly for 220 KV or above voltage transmission lines with 160 KN or above electromechanical strength insulators:
   - Power Frequency Voltage withstand test (Wet)
   - Lightning Impulse Voltage Withstand test (Dry)
   - Radio Interference Voltage Test (Dry)

c) Accelerated ageing test of 5000 hrs as described in Appendix-C of IEC 61109 or Test at Multiple stresses of 5000 hrs as described in Annex-B of IEC-62217.

9.1.2 Hardware Fitting (except clamps)

The qualified manufacturer should have designed, manufactured, tested and supplied hardware fitting for at least 25% of tender quantity of tension string and 25% of tender quantity of suspension strings for 220 kV or above voltage transmission line and same should have been in satisfactory operation for a minimum period of two years as on date of bid opening.

9.1.3 Suspension& dead end Clamps and Accessories for HTLS Conductor

The qualified manufacturer (s) should have designed, manufactured, tested and supplied fittings for suspension & tension strings and accessories for conductor for 220 kV or above voltage transmission line for any conductor.

Further, the qualified manufacturer (s) for any individual item(s) of clamp fittings and accessories covered under the package should have designed, manufactured, tested and
supplied the item(s) of clamp fittings and accessories covered under the package or the
item(s) of similar nature/ comparable nature for application on 220 kV or above
voltage transmission line with type of HTLS conductor being supplied for the package
and the same should have been in satisfactory operation for a minimum period of two
(2) years as on date of bid opening.

9.1.4 The manufacturer(s) meeting the above requirement for any individual item or items
shall be considered qualified for the respective item or items only.

9.1.5 However, if the proposed manufacturer of Composite long rod insulators, Hardware
fittings and Clamps & Accessories for conductor is not meeting the above requirements
on its own, he should be qualified licensee of a qualified manufacturer meeting the
above specified requirements.

i) Manufacturer/ licensees shall have adequate design infrastructure and manufacturing
facility and capacity and procedures including quality control.

ii) A qualified Licensee of a qualified manufacturer shall mean all of the following:
   a) any design undertaken by the licensee shall be approved by the licenser

   b) Manufacture by the licensee shall be done with the approval of the licensor and
      Employer under a quality assurance programme approved and monitored by the
      licenser.

   c) Licensee must furnish back-up guarantee from the licenser for individual and
      overall performance of all equipments and material supplied under the contract
      and in such case Licensee should provide additional bank guarantee of 5% of
      material cost.

   d) Licenser must guarantee sequential and timely supply of equipments and materials
      and submission of technical information and data as desired by the Employer so as
      to meet the overall construction schedule and

   e) The agreement between licensee and licenser submitted along with the bid (as per
      format at Annexure-1, Section-Project, Vol-II) shall be valid for a period of five
(5) years after the guarantee period of equipment and materials under supply is over.

10.0 TRAINING OF PURCHASER’S ENGINEERS AND JOINTERS:

The contractor shall organize and conduct complete and thorough training programme (to be conducted in English language) providing necessary training material, at no extra cost to the Employer. However, To& fro air fare including boarding and lodging shall be borne by the owner/purchaser and no separate charges for training shall be paid. The training shall be arranged at the manufacturer's works/ facility from where the equipment is being supplied for 120 man days to cover design, manufacture and jointing techniques of HTLS Conductor being supplied and testing, operation & maintenance along with complete operational and maintenance aspects.
FORM OF JOINT UNDERTAKING BY THE LICENSOR
ALONGWITH THE LICENSEE

On Non-Judicial Stamp Paper of Appropriate Value

THIS DEED OF UNDERTAKING executed this .................. day of ................ Two
Thousand .................. by .................. a Company incorporated under the laws of
......................... and having its Registered Office at ......................... (hereinafter called the
"Licensor" which expression shall include its successors, executors and permitted assigns)
and .......................... a Company incorporated under the Companies Act, 1956 having its
Registered Office at ......................... (hereinafter called the "Licensee" which expression shall
include its successors, executors and permitted assigns) in favour of DELHI TRANSCO LTD
(hereinafter called the "Owner" which expression shall include its successors, executors and
permitted assigns).

WHEREAS the Owner invited Bids as per its Specification No. ..................... for the work
of .......(Name of the Package)........

AND WHEREAS Clause 9.1.5 (ii) (e) of Section-I, Vol-II, forming part of the Bidding
Document inter alia stipulates that the Licensee along with its Licensor must fulfil the
Qualifying Requirements and be jointly and severally bound and responsible for the
successful performance of the equipment and shall be fully responsible for the design,
manufacture, testing, supply and final destination delivery at site basis in the event the Bid is
accepted by the Employer resulting in a "Contract".

AND WHEREAS .......................... a company incorporated under Companies Act 2013,
having its Registered Office at ......................... (hereinafter called the
"Bidder"/"Contractor" which expression shall include its successors, executors and permitted
assigns) the Bidder has submitted its Bid for the owner for ............................
.......................... dated ..................... based on the License of the Licensor.

NOW THEREFORE THIS UNDERTAKING WITNESSETH AS UNDER:

1.0 In consideration of the award of Contract by the Employer to the Bidder (hereinafter
referred to as the "Contract") we, the Licensor and the Licensee do hereby declare that
we shall be jointly and severally bound unto the DELHI TRANSCO LTD (Employer)/the Bidder for the successful performance of the equipment and shall be fully responsible for the design, manufacture, testing, supply and final destination delivery at site basis and successful performance of equipment in accordance with the Contract specifications.

2.0 Without in any way affecting the generality and total responsibility in terms of this Deed of Undertaking the Licensor in particular hereby agrees to depute their technical experts to the Licensee's works as considered necessary by the Employer, Bidder and the Licensor to ensure proper design, manufacture, Quality Management, testing, supply on final destination delivery at site basis and successful performance of the equipment in accordance with Contract Specifications and if necessary the Licensor shall advise the Licensee suitable modifications of the designs and implement necessary corrective measures to discharge the obligations under the Contract.

3.0 As a security, the Licensor shall apart from the Contractor's performance guarantee, furnish a Performance Security from its Bank in favour of the Employer in a form acceptable to Employer. The value of such guarantee shall be equal to 5% of the Contract Price of equipment/material proposed to be manufactured and supplied by the Licensee under the contract awarded by the Employer to the Contractor and it shall be part of guarantee towards the faithful performance/compliance of this Deed of Undertaking in terms of the Contract. The Guarantee shall be unconditional, irrevocable and valid for the entire period of the contract, namely till the end of the warranty period of ...................... package under the Contract. The Bank Guarantee amount shall be payable to the Employer on demand without any reservation or demur.

4.0 We, the Licensor undertake to guarantee sequential and timely supply of equipments and materials and submission of technical information and data as desired by the Employer so as to meet the overall construction schedule.

5.0 We, the Licensor and the Licensee confirm that the License agreement shall be valid for a period of five (5) years after the guarantee period of the equipment and materials to be supplied under the Contract is over.

6.0 This Deed of Undertaking shall be constructed and interpreted in accordance with the Laws of India and the courts in Delhi shall have exclusive jurisdiction in all matters arising under the undertaking.
7.0 We the Licensor and the Licensee agree that this undertaking shall be irrevocable and shall form an integral part of the Contract and further agree that this undertaking shall continue to be enforceable till the Employer and the Bidder discharge it. It shall become operative from the effective date of Contract.

IN WITNESS WHEREOF the Licensor and the Licensee have through their authorised Representative executed these presents and affixed Common Seals of their respective Companies, on the day, month and year first above mentioned.

WITNESS FOR LICENSEE

1. ................................................. (Signatures) ......................................................... (Signature of Authorised Representative)
   (Name in Block Letter) (Name) Designation ...........................................
   (Office Address) Common Seal of Company

WITNESS FOR LICENSOR

1. ................................................. (Signatures) ......................................................... (Signature of Authorised Representative)
   (Name in Block Letter) (Name) Designation ...........................................
   (Office Address) Common Seal of Company

Note:
(i) This deed of joint undertaking should be attested by Notary Public of the place of the respective executants.
(ii) To be filled separately for each item.
SECTION-II

TECHNICAL SPECIFICATION

HTLS CONDUCTOR
TECHNICAL SPECIFICATIONS OF HTLS CONDUCTOR

1. Description of High Temperature Low Sag (HTLS) Conductor and its Technical Requirements

1.1 The HTLS Conductor except Gap Conductor shall be capable of providing the specified ampacity at a continuous operating conductor temperature higher than that of the maximum permissible sag of the existing ACSR Zebra Conductor at 65 degree. The HTLS Conductor except Gap Conductor shall be capable of providing the specified ampacity at a continuous operating conductor temperature higher than that of the maximum permissible operating temperature of the existing ACSR Zebra Conductor without exceeding the level of an existing sag of ACSR zebra conductor at worst loading condition as the lines are passing through thickly populated area of NCT of Delhi.

The physical and operating performance requirements of the transmission line after its uprating by means of re-conductoring with HTLS conductor are mentioned below. The bidder shall offer HTLS conductor complying with the specified requirements. The Bidder shall indicate particulars of the proposed conductor in the relevant GTP schedule along with calculations to establish compliance with the specified requirements.

1.2 Current Carrying Capacity / Ampacity Requirements

1.2.1 Each conductor in the HTLS conductor shall be suitable to carry minimum 50 Hz alternating current of 1200 Amperes per conductor under the ambient conditions & maximum conductor sag specified below while satisfying other specified technical requirements/ parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Ambient Temperature</td>
<td>50°C</td>
</tr>
<tr>
<td>Reference Ambient Temperature</td>
<td>45°C</td>
</tr>
<tr>
<td>Minimum Temperature of Air</td>
<td>0°C</td>
</tr>
<tr>
<td>Relative Humidity:</td>
<td></td>
</tr>
<tr>
<td>Maximum:</td>
<td>100%</td>
</tr>
<tr>
<td>Minimum:</td>
<td>10%</td>
</tr>
<tr>
<td>Wind Velocity:</td>
<td>0.56 m/s</td>
</tr>
<tr>
<td>Solar absorption Coefficient</td>
<td>0.8</td>
</tr>
<tr>
<td>Solar Radiation:</td>
<td>1045 watt/sq.m</td>
</tr>
<tr>
<td>Emissivity Constant:</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Maximum Conductor sag for [Ruling span as per Annexure - 1] span at steady state conductor temperature and nil wind corresponding to
50 Hz alternating current of 1200 Amperes per conductor under ambient conditions specified above = \[\text{Maximum conductor sag as per Annexure - 1}] \text{ m}

The calculations for Ampacity shall be based on IEEE Standard 738. The bidder in his bid shall furnish calculations for the ampacity based on the above Standard for the proposed HTLS conductor.

1.2.2 The design of conductor shall be suitable for operation at a steady state conductor temperature experienced for a conductor AC current flow of 1200 Amperes under the above ambient conditions based on ampacity calculations mentioned above. The bidder shall also indicate the maximum permissible conductor temperature for continuous operation without any deterioration of its electrical, mechanical & metallurgical properties. The bidder shall also furnish the maximum permissible conductor temperature for short term operations including permissible duration of such short term operation.

1.3 Technical Particulars of HTLS Conductor

The HTLS conductor shall meet the following minimum requirements:

<table>
<thead>
<tr>
<th>Overall diameter of complete conductor</th>
<th>Not exceeding 28.62 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. mass of complete conductor (kg/km)</td>
<td>Less than or equal to 1621 kg/km</td>
</tr>
<tr>
<td>Direction of lay of outer layer</td>
<td>Right Hand</td>
</tr>
</tbody>
</table>

The bidder shall indicate the technical particulars and details of the construction of the conductor in the relevant schedule of GTP. The bidder shall also guarantee the DC resistance of conductor at 20 deg C and AC resistance at the calculated temperature corresponding to 50Hz alternating current flow of 1200 amperes per conductor at specified ambient conditions (maximum continuous operating temperature).

The bidder shall submit the supporting calculations for the AC resistance indicating details & justifications of values of temperature coefficient of resistance & DC to AC resistance conversion factor(s) with due reference to construction / geometry of the conductor.
1.4 Sag-Tension Requirements

1.4.1 The HTLS conductor shall meet the following sag tension requirements for ruling span of ________ meters

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Limiting value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension at every day condition (32°C, no wind)</td>
<td>≤ …….. kgs &amp; Not exceeding 25% of UTS of proposed conductor</td>
</tr>
<tr>
<td>Sag at maximum continuous operating temp (corresponding to 1200 amperes per conductor and ambient conditions specified at 1.2.1)</td>
<td>≤ …….. metres</td>
</tr>
<tr>
<td>Tension at 32°C, full wind</td>
<td>≤ …….. kgs &amp; not exceeding 70% of UTS of proposed conductor</td>
</tr>
<tr>
<td>Tension at 0°/5 deg ,&amp;2/3rd full wind</td>
<td>≤ …….. kgs &amp; not exceeding 70% of UTS of proposed conductor</td>
</tr>
</tbody>
</table>

Note: The above blank values shall be according to values specified in Annexure – 1 as per ruling span.

Sag-Tension calculations at various conditions mentioned above shall be submitted along with the bid. These calculations shall also include calculations for determination of transition / knee point temperature.

The bidder shall also furnish sag & tensions under no wind for various temperatures starting from 0 deg C to maximum continuous operating temperature in steps of 5 deg C.

1.4.2 After award of the contract, the Supplier shall submit Sag-Tension calculations corresponding to various conditions given above for all the existing spans as per detailed survey and spans ranging from 100 m to 1100 m in intervals of 50m.

1.4.3 Besides above, the Supplier shall also furnish details of creep characteristics in respect of HTLS conductor based on laboratory investigations/ experimentation (creep test as per IEE1138 or IEC 61395) conducted on similar type of conductor and shall indicate creep strain values corresponding to 1 month, 6 month, 1 year & 10 year
creep at everyday tension & at maximum continuous operating temperature.

1.5 Workmanship

1.5.1 All the conductor strands shall be smooth, uniform and free from all imperfections, such as spills and splits, cracks, die marks, scratches, abrasions, rust etc.

1.5.2 The finished conductor shall be smooth, compact, uniform and free from all imperfections including kinks (protusion of wires), wire cross over, over riding, looseness (wire being dislocated by finger/hand pressure and/or unusual bangle noise on tapping), material inclusions, white rust, powder formation or black spot (on account of reaction with trapped rain water etc.), dirt, grit etc.

1.6 Joints in Wires

1.6.1 Aluminium Alloy Wires

1.6.1.1 During stranding, no Aluminium Alloy wire welds shall be made for the purpose of achieving the required conductor length.

1.6.1.2 No joints shall be permitted in the individual wires in the outer most layer of the finished conductor. However joints are permitted in the inner layer(s) of the conductor unavoidably broken during stranding provided such breaks are not associated with either inherently defective wire or with the use of short lengths of Aluminium Alloy wires. Such joints shall not be more than four (4 ) per conductor length and shall not be closer than 15 meters from joint in the same wire or in any other Aluminium Alloy wire of the completed conductor. A record of such joints for each individual length of the conductor shall be maintained by the Contractor for Employers review.

1.6.1.3 Joints shall be made by cold pressure butt welding and shall withstand a stress of not less than the breaking strength of individual strand guaranteed.

1.6.2 Core Wires

There shall be no joint of any kind in the finished wire entering into the manufacture of the strand. There shall also be no joints or splices in any length of the completed stranded core.
1.7 **Tolerances**

Manufacturing tolerances on the dimensions to the extent of one percent shall be permitted for individual strands and the complete conductor. In case of opposite core the tolerances shall be $\pm 0.05$ mm as per ASTM B 987.

1.8 **Materials**

The materials used for construction of the conductor shall be such that the conductor meets the specified technical and performance requirements.

1.8.1 **Outer layer**

1.8.1.1 The material of outer layer of HTLS conductor shall be of high temperature resistant aluminum alloy added with zirconium or any other suitable element(s) etc. to electrolytic aluminium having purity not less than 99.5% and a copper content not exceeding 0.04%. The strands shall be manufactured through appropriate manufacturing process to ensure consistent electrical mechanical and metallurgical properties under continuous high temperature operation. Bidder shall guarantee the chemical composition in the schedule GTP and also furnish description of the manufacturing process in the Bid.

1.8.1.2 In case of fully annealed type (0 tempered) aluminium/ alloy strands/ round wire/ trapezoidal/ Z-shaped wire shall only be accepted.

1.8.2 **Core**

The core wire strand(s) shall be of galvanized steel wires/ aluminium clad steel wires/ galvanized invar wires/ aluminium clad invar wires/Zinc 5% Aluminium –Misch metal alloy coated steel /invar wires or composite materials etc and shall have properties conforming to the technical performance requirements of the finished conductor. Bidder shall furnish properties and composition of the core wire strand(s) in the schedule GTP.

The zinc used for galvanizing in case of steel /invar core shall be electrolytic High Grade Zinc of 99.95% purity. It shall conform to and satisfy all the requirements of IS: 209. The minimum mass of zinc coating shall be as per requirements of Class-1 coating as per IEC-888.
Zinc-5% Aluminium – Mischmetal alloy coating, if used, shall conform to and satisfy all the requirements of ASTM B 803 / B 958.

The aluminium cladding of invar/ steel wires shall be with aluminum having purity not less than 99.5 % and shall be thoroughly bonded to the core wire strand(s). The minimum thickness of aluminium cladding shall be 0.07mm to achieve a minimum conductivity of 14% of International Annealed Copper Standard (IACS).

Where composite material for core is offered, the material shall be either of High strength grade or extra high strength grade as per ASTM B987. The materials shall be of such proven quality that its properties are not adversely influenced by the normal operating conditions of a 220 kV transmission line in tropical environment conditions as experienced by the existing line. The bidder shall provide adequate details including specifications/test reports/operating experience details/performance certificates etc. in support of the suitability of the offered materials.

1.9  Conductor Length

1.9.1 The contractor after his survey of the existing line shall determine the most appropriate individual conductor lengths to be manufactured & supplied keeping in view section lengths, special crossings etc. and the drum schedules shall be submitted to Employer for review & approval.

1.9.2 The bidder shall also indicate the maximum single length of HTLS Conductor, (he can manufacture) in the guaranteed technical particulars of offer.

1.10 Evaluation of Ohmic Losses & Differential Price Loading

1.10.1 Based on the conductor parameters guaranteed by the bidders, average ohmic losses for different conductors offered by the bidders shall be calculated as per the following:

Average Ohmic Loss

\[ = \text{Loss Load factor} \times \text{Line Length} \times \text{No. of Sub-conductors} \times \left(\text{Continuous maximum Operating Current under normal conditions}\right)^2 \times \text{AC resistance corresponding to the temperature at continuous Operating Current under normal conditions}. \]
For 22.64 kms D/C 220 kV Line, considering single conductor per phase, loss factor = 0.50, continuous operating current under normal conditions of 500 Amp;

Average Ohmic loss (kW)

\[ = 0.50 \times 22.64 \times 6 \times (500)^2 \times \frac{\text{Rac}}{1000} \]

\[ = 1.698 \times 10^4 \times \text{Rac} \]

Where Rac is the AC resistance per Km guaranteed by the bidder at temperature corresponding to the continuous Operating Current of 500A under normal conditions.

Differential price evaluation for the conductors offered by the bidders shall be carried out considering the average ohmic losses calculated as above and considering **Rs. 1, 52,600 per kW**.

The best parameter of loss (lowest ohmic loss for conductor) corresponding to lowest AC resistance quoted among bidders by any technically responsive and qualified bidder shall be taken as basis and that quoted by the particular bidder shall be used to arrive at differential price to be applied for each bid.

### 2.0 Tests and Standards

#### 2.1 Type Tests

HTLS conductor offered by the bidder should have type tested and the reports for the same shall be submitted by bidder along with the bid for evaluation.

#### 2.1.1 Type Tests on Stranded Conductor/ Stranded wire

The following tests shall be conducted once on sample/samples of conductor from each manufacturing facility:

1. **On complete Conductor**
   
   a) DC resistance test on stranded conductor : As per Annexure-A
   
   b) UTS test on stranded conductor : As per Annexure-A
   
   c) Radio interference voltage test (dry) : As per Annexure-A
   
   d) Corona extinction voltage test (dry) : As per Annexure-A
e) Stress-Strain test on stranded conductor and core at room temperature: IEC 1089

f) Stress-strain test on stranded conductor and core at elevated temperature: As per Annexure-A

g) High temperature endurance & creep test on stranded conductor: As per Annexure-A

h) Sheaves Test: As per Annexure-A

i) Axial Impact Test: As per Annexure-A

j) Radial Crush Test: As per Annexure-A

k) Torsional Ductility Test: As per Annexure-A

l) Aeolian Vibration: As per Annexure-A

m) Temperature Cycle Test: As per Annexure-A

(ii) **On Conductor Strand/core**

a) Heat resistance test on Aluminium Alloy strands or core: As per Annexure-A

b) Bending test on core: As per Annexure-A

c) Compression test on core: As per Annexure-A

d) Coefficient of linear expansion on core/core strands: As per Annexure-A

e) Strand Brittle fracture Test (for polymer composite core only): As per Annexure-A
2.2 Acceptance Tests

a) Visual and dimensional check on drum: As per Annexure-A

b) Visual check for joints scratches etc. and length measurement of conductor by rewinding: As per Annexure-A

c) Dimensional check on core strands/composite core and Aluminium Alloy strands: As per Annexure-A

d) Check for lay-ratios of various layers: As per Annexure-A

e) Galvanising test on core strands: As per Annexure-A

f) Aluminium thickness on aluminium clad wires

g) Torsion and Elongation tests on core strands/composite core: As per Annexure-A

h) Breaking load test on core strands and Aluminium / Aluminium Alloy strands: As per Annexure-A

i) Wrap test on core strands and Aluminium Alloy strands: As per IEC:888 & IEC:889

j) Minimum conductivity test on thermal resistant Aluminium Alloy strands: As per IEC:889

k) Procedure qualification test on welded joint of Aluminium Alloy strands: As per Annexure-A

l) Heat resistance test on Aluminium Alloy strands: As per Annexure-A

m) Ageing test on filler (if applicable): As per Annexure-A
n) Minimum conductivity test on aluminium clad core strands
  : As per Annexure-A

o) Glass transition temperature test (for polymer composites only)
  : As per Annexure-A

p) Flexural Strength test (for polymer composites only)
  : As per Annexure-A

Note: All the above tests except (j) shall be carried out on Aluminium / Aluminium Alloy and core strands after stranding only.

2.3 Routine Test

a) Check to ensure that the joints are as per Specification

b) Check that there are no cuts, fins etc., on the strands.

c) Check that drums are as per Specification

d) All acceptance tests as mentioned above to be carried out on each coil /drum.

2.4 Tests During Manufacture

a) Chemical analysis of zinc used for galvanizing
  : As per Annexure-A

b) Chemical analysis of Aluminium alloy used for making Aluminium Alloy strands
  : As per Annexure-A

c) Chemical analysis of core strands/composite core
  : As per Annexure-A

2.5 Testing Expenses

2.5.1 The break-up of the testing charges for the type tests shall be indicated separately if specified in BOQ item. If the type test is required to be conducted then the report for the same will be submitted before commercial production of material/equipment in this project.

2.5.2 Bidder shall indicate the laboratories in which they propose to conduct the type tests. They shall ensure that adequate facilities are available in
the laboratories and the tests can be completed in these laboratories within the time schedule guaranteed by them.

2.5.3 In case of failure in any type test the Supplier is either required to manufacture fresh sample lot and repeat the entire test successfully once or repeat that particular type test three times successfully on the sample selected from the already manufactured lot at his own expenses. In case a fresh lot is manufactured for testing then the lot already manufactured shall be rejected.

2.5.4 The entire cost of testing for the acceptance and routine tests and Tests during manufacture specified herein shall be treated as included in the quoted unit price of conductor, except for the expenses of the inspector/Employer’s representative.

2.5.5 In case of failure in any type test, if repeat type tests are required to be conducted, then all the expenses for deputation of Inspector/Employer’s representative shall be deducted from the contract price. Also if on receipt of the Supplier’s notice of testing, the Employer’s representative does not find material/ testing facilities to be ready for testing the expenses incurred by the Employer for redeputation shall be deducted from contract price.

2.5.6 The Supplier shall intimate the Employer about carrying out of the type tests alongwith detailed testing programme at least 3 weeks in advance (in case of testing in India) and at least 6 weeks in advance (in case of testing abroad) of the schedule date of testing during which the Employer will arrange to depute his representative to be present at the time of carrying out the tests.

2.6 Additional Tests

2.6.1 The Employer reserves the right of having at his own expenses any other test(s) of reasonable nature carried out at Supplier’s premises, at site or in any other place in addition to the aforesaid type, acceptance and routine tests to satisfy himself that the materials comply with the Specifications.

2.6.2 The Employer also reserves the right to conduct all the tests mentioned in this specification at his own expense on the samples drawn from the site at Supplier’s premises or at any other test centre. In case of
evidence of non compliance, it shall be binding on the part of Supplier to prove the compliance of the items to the technical specifications by repeat tests, or correction of deficiencies, or replacement of defective items all without any extra cost to the Employer.

2.7 Sample Batch For Type Testing

2.7.1 The Supplier shall offer material for selection of samples for type testing only after getting Quality Assurance Plan approved from Employer’s Quality Assurance Deptt. The sample shall be manufactured strictly in accordance with the Quality Assurance Plan approved by Employer.

2.7.2 The Supplier shall offer at least three drums for selection of sample required for conducting all the type test.

2.7.3 The Supplier is required to carry out all the acceptance tests successfully in presence of Employer’s representative before sample selection.

2.8 Test Reports

2.8.1 Copies of type test reports shall be furnished in at least three copies along with one original. One copy will be returned duly certified by the Employer only after which the commercial production of the material shall start.

2.8.2 Record of routine test reports shall be maintained by the Supplier at his works for periodic inspection by the Employer’s representative.

2.8.3 Test Certificates of tests during manufacture shall be maintained by the Supplier. These shall be produced for verification as and when desired by the Employer.

2.9 Inspection

2.9.1 The Employer’s representative shall at all times be entitled to have access to the works and all places of manufacture, where conductor shall be manufactured and representative shall have full facilities for unrestricted inspection of the Supplier’s works, raw materials and process of manufacture for conducting necessary tests as detailed herein.
2.9.2 The Supplier shall keep the Employer informed in advance of the time of starting and of the progress of manufacture of conductor in its various stages so that arrangements can be made for inspection.

2.9.3 No material shall be dispatched from its point of manufacture before it has been satisfactorily inspected and tested, unless the inspection is waived off by the Employer in writing. In the later case also the conductor shall be dispatched only after satisfactory testing for all tests specified herein have been completed.

2.9.4 The acceptance of any quantity of material shall in no way relieve the Supplier of any of his responsibilities for meeting all requirements of the Specification, and shall not prevent subsequent rejection it such material is later found to be defective.

2.10 **Test Facilities**

2.10.1 The following additional test facilities shall be available at the Supplier’s works:

a) Calibration of various testing and measuring equipment including tensile testing machine, resistance measurement facilities, burette, thermometer, barometer etc.

b) Standard resistance for calibration of resistance bridges.

c) Finished conductor shall be checked for length verification and surface finish on separate rewinding machine at reduced speed (variable from 8 to 16 meters per minute). The rewinding facilities shall have appropriate clutch system and free of vibrations, jerks etc. with traverse laying facilities.

2.11 **Packing**

2.11.1 The conductor shall be supplied in non-returnable, strong, wooden/painted steel/hybrid (painted steel cum wood) drums provided with lagging of adequate strength, constructed to protect the conductor against all damage and displacement during transit, storage and subsequent handling and stringing operations in the field. The Supplier shall select suitable drums for supply of conductor and shall be responsible for any loss or damage to conductor and/or drum
during transportation handling and storage due to improper selection of drum or packing.

2.11.2 The drums shall be suitable for wheel mounting and for letting off the conductor under a minimum controlled tension of the order of 5 KN.

2.11.3 The Bidder should submit their proposed drum drawings along with the bid.

2.11.4 One conductor length only shall be wound on each drum.

2.11.5 The conductor ends shall be properly sealed and secured on the side of one of the flanges to avoid loosening of the conductor layers during transit and handling.

2.11.6 **Marking**

Each drum shall have the following information stenciled on it in indelible ink along with other essential data:

(a) Contract/Award letter number.
(b) Name and address of consignee.
(c) Manufacturer’s name and address.
(d) Drum number
(e) Size of conductor
(f) Length of conductor in meters
(g) Arrow marking for unwinding
(h) Position of the conductor ends
(i) Distance between outer-most Layer of conductor and the inner surface of lagging.
(k) Barrel diameter at three locations & an arrow marking at the location of the measurement.
(l) Number of turns in the outer most layer.
(m) Gross weight of drum after putting lagging.
(n) Tear weight of the drum without lagging.
(o) Net weight of the conductor in the drum.

(p) CIP/MICC No.

The above should be indicated in the packing list also.

2.12 Verification of Conductor Length

The Employer reserves the right to verify the length of conductor after unreeling at least ten (10) percent of the drums in a lot offered for inspection.

2.13 Standards

2.13.1 The conductor shall conform to the following Indian/International Standards, which shall mean latest revisions, with amendments/changes adopted and published, unless specifically stated otherwise in the Specification.

2.13.2 In the event of the supply of conductor conforming to standards other than specified, the Bidder shall confirm in his bid that these standards are equivalent to those specified. In case of award, salient features of comparison between the standards proposed by the Supplier and those specified in this document will be provided by the Supplier to establish their equivalence.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Indian Standard</th>
<th>Title</th>
<th>International Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>IS : 1778-1980</td>
<td>Reels and Drums for Bare Conductors</td>
<td>BS:1559-1949</td>
</tr>
<tr>
<td></td>
<td>Reference Code</td>
<td>Description</td>
<td>Standards</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>6.</td>
<td>IS : 2629-1990</td>
<td>Recommended Practice for Hot Dip Galvanising of Iron and Steel</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>IS : 2633-1992</td>
<td>Method of Testing Uniformity of Coating on Zinc Coated Articles</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>Zinc Coated steel wires for stranded Conductors</td>
<td>IEC : 888-1987</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td>Aluminium clad steel wires</td>
<td>IEC:1232</td>
</tr>
<tr>
<td>16.</td>
<td></td>
<td>Method of measurement of resistivity of metallic materials</td>
<td>IEC:468</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td>Ampacity</td>
<td>IEEE738</td>
</tr>
</tbody>
</table>
1. **Tests on Conductor**

1.1 **UTS Test on Stranded Conductor**
Circles perpendicular to the axis of the conductor shall be marked at two places on a sample of conductor of minimum 5 m length between fixing arrangement suitably fixed by appropriate fittings on a tensile testing machine. The load shall be increased at a steady rate upto 50% of minimum specified UTS and held for one minute. The circles drawn shall not be distorted due to relative movement of strands. Thereafter the load shall be increased at steady rate to minimum UTS and held for one minute. The Conductor sample shall not fail during this period. The applied load shall then be increased until the failing load is reached and the value recorded.

1.2 **Corona Extinction Voltage Test**
The sample of the conductor of 5 m length shall be strung at a height not exceeding 7.01 m above ground. The sample assembly when subjected to power frequency voltage shall have a corona extinction voltage of not less than 154 kV (rms) line to ground under dry condition. There shall be no evidence of corona on any part of the samples. The test should be conducted without corona control rings. However, small corona control rings may be used to prevent corona in the end fittings. The voltage should be corrected for standard atmospheric conditions.

1.3 **Radio Interference Voltage Test**
Under the conditions as specified under (1.2) above, the conductor sample shall have radio interference voltage level below 1000 micro volts at one MHz when subjected to 50 Hz AC voltage of 154 kV line to ground under dry conditions. This test may carried out with corona control rings and arcing horns.

1.4 **D.C. Resistance Test on Stranded Conductor**
On a conductor sample of minimum 5m length two contact-clamps shall be fixed with a predetermined bolt torque. The resistance shall be measured by a Kelvin double bridge or using micro ohm meter of suitable accuracy by placing the clamps initially zero metre and subsequently one metre apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20° C as per IS: 398. The resistance corrected at 20deg C shall conform to the requirements of this Specification.

1.5 **Stress-strain test at elevated temperature**
Stress-strain test as per IEC-1089 shall be conducted keeping conductor temperature at designed maximum temperature.
1.6 High Temperature endurance & creep test
A conductor sample of at least 20 m length shall be strung at tension equal to 25 % of conductor UTS. The conductor temperature shall be increased to designed maximum temperature in steps of 20 deg. C and thermal elongation of the conductor sample shall be measured & recorded at each step. The temperature shall be held at each step for sufficient duration for stabilization of temperature. Further, the temperature of the conductor shall be maintained at maximum continuous operating temperature (±10 Deg. C) for 1000 hours. The elongation/creep strain of the conductor during this period shall be measured and recorded at end of 1 hour, 10 hour, 100 hour and subsequently every 100 hour upto 1000 hours time period. After completion of the above, the conductor sample shall be subjected to UTS test as mentioned above at clause 1.1 of Annexure-A. The supplier shall plot the thermal elongation with temperature.

The supplier shall furnish details of creep characteristic in respect of the conducted based on laboratory test and other laboratory investigations/experimental conducted on similar type of conductor and shall indicate creep strain values corresponding to 1 month, 6 month, 1 year, 10 year & 20 year creep at everyday tension & continuous designed temperature.

1.7 Sheaves Test
The conductor sample of minimum length of 35 meter shall be tensioned at 22 % of the UTS and shall be passed through pulleys having diameter of 32 times that of the conductor with angle of 20 deg. between the pulleys. The conductor shall be passed over the pulleys 36 times a speed of 2 m/sec. After this test UTS test on the conductor shall be carried out.

1.8 Axial Impact Test
The conductor sample shall be suspended vertically and load applied by dropping a 650 Kg from an elevation of 4 meters above the sample. The impact velocity shall not be less than 8 m/sec. with an initial pre-tension of 200 kgs. The curve for load vs time shall be recorded and recorded load of failure for core shall not be less than UTS of core.

1.9 Radial Crush Test
A section of conductor is to be crushed between two six inch steel platens. Load shall be held at 350 Kgs for 1 minute and then released. All the strands shall be subsequently disassembled and tensile tested. All the strands shall exhibit full strength retention.
1.10 **Torsional Ductility Test**

The conductor shall be loaded to 25% of UTS (ultimate tensile strength) and then rotated in increasing steps of +/-180 deg. The conductor shall withstand at least 16 such rotation.

1.11 **Aeolian Vibration Test**

The conductor and supporting hardware shall be loaded to 25% of RTS (rated tensile strength). A dynamometer, load cell, calibrated beam or other device shall be used to measure the conductor tension. Some means should be provided to maintain constant tension to allow for temperature fluctuations during the testing. The overall span between system terminations shall be a minimum of 30 m. The span shall be supported at a height such that the static sag angle of the cable to horizontal is (1.5 ± 0.5) deg in the active span. Means shall be provided for measuring and monitoring the mid-loop (antinode) vibration amplitude at a free loop, not a support loop. An electronically controlled shaker shall be used to excite the conductor in the vertical plane. The shaker armature shall be securely fastened to the conductor so it is perpendicular to the conductor in the vertical plane. The shaker should be located in the span to allow for a minimum of six vibration loops between the suspension assembly and the shaker.

The test shall be carried out at one or more resonance frequencies (more than 10 Hz). The amplitude at the antinode point shall be one third of conductor diameter. The assembly shall be vibrated for not less than 10 million cycles without any failure. After the test, the conductor should not exhibit any damage (broken strands). The conductor shall be tested to demonstrate that it retains at least 95% RTS.

1.12 **Temperature Cycle Test**

The purpose of this test is verification of degradation characteristics of metallic and non-metallic material when subjected to thermal cycling. Temperature cycling can create large internal stresses due to thermal expansion mismatch between constituents.

**Test Methods:**

- Mechanical tension, 20 % RBS (rated breaking strength), marks on the conductor at the edge of the conductor
- 100 cycles from room temperature up to maximum temperature. Hold at maximum temperature ± 2.5 deg. C (duration of a cycle, 1 hour or so, non included cooling)
- Mechanical tension up to 70 % RBS at room temperature during 24 H and release to 20 % RBS.
- This cycling test shall be repeated 5 times.
- During the test, temperature of connectors, conductor and resistance are recorded according to ANSI C 119.
- A breaking load test is applied at the end of the test. Conductor strength has to be higher than 95 % RBS.
1.13 **Heat Resistance test on Aluminium Alloy wire**

Breaking load test as per clause 1.25 shall be carried out before and after heating the sample in uniform heat furnace at following temperature for one hour. The breaking strength of the wire after heating shall not be less than the 90% of the breaking strength before heating.

<table>
<thead>
<tr>
<th>Maximum continuous operating temperature of the conductor</th>
<th>Test Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 150 deg. C</td>
<td>230 deg. C(+5/-3 deg C)</td>
</tr>
<tr>
<td>More than 150 &amp; up to 210 deg. C</td>
<td>280 deg. C(+5/-3 deg C)</td>
</tr>
<tr>
<td>More than 210 &amp; up to 230 deg. C</td>
<td>400 deg. C(+5/-3 deg C)</td>
</tr>
</tbody>
</table>

1.14 **Bending test on aluminium clad core strand**

A sample of aluminium clad invar strand measuring 30 cm in length shall be subject to bending with help of a vise. The vised length of wire should be 5 cm and radius of bend 4.8 mm. The bending should be first 90 degrees left and 90 degree right. After this operation the strand should cut at the bending point. There should be no separation of core and aluminium at the bending point after this operation.

1.15 **Compression test on aluminium clad strand**

A sample of aluminium clad core strand 10 mm in length is to be compressed by a plate with a load of 3600 kgs. The aluminium and core strand should not break.

1.16 **Coefficient of linear expansion for core/core strands**

The temperature and elongation on a sample shall be continuously measured and recorded at interval of approximately 15 degree C from 15 degree C to maximum continuous operating temperature corresponding to rated current (1200 A) by changing the temperature by suitable means. Coefficient of linear expansion shall be determined from the measured results.

1.17 **Strand Brittle fracture test (for polymer composite core only)**

The sample shall be tensioned with simultaneous application of 1N-HNO3 acid directly in contact with naked polymer composite core. The contact length of acid shall not be less than 40mm and thickness around the core not less than 10mm. The rod shall withstand 80% of SML for 96 hours.

1.18 **Visual and Dimensional Check on Drums**

The drums shall be visually and dimensionally checked to ensure that they conform to the approved drawings.
1.19 **Visual Check for Joints, Scratches etc.**
Conductor drums shall be rewound in the presence of the Employer. The Employer shall visually check for scratches, joints etc. and that the conductor generally conform to the requirements of this Specification. Ten percent (10%) drums from each lot shall be rewound in the presence of the Employer's representative.

1.20 **Dimensional Check on Core Strands and Aluminium Alloy Strands**
The individual strands shall be dimensionally checked to ensure that they conform to the requirement of this Specification.

1.21 **Check for Lay-ratios of Various Layers**
The lay-ratios of various layers shall be checked to ensure that they conform to the guaranteed values furnished by the Contractor.

1.22 **Galvanizing Test**
The test procedure shall be as specified in IEC: 888. The material shall conform to the requirements of this Specification. The adherence of zinc shall be checked by wrapping around a mandrel four times the diameter of steel wire.

1.23 **Aluminum thickness on aluminum clad wires**
The thickness of aluminium of the specimen shall be determined by using suitable electrical indicating instruments operating on the permeameter principle, or direct measurement. Measurements shall be read to three decimal places, and number rounded to two decimal places is considered as measured thickness. For reference purposes, direct measurement shall be used to determine aluminium thickness on specimens taken from the end of the coils.

1.24 **Torsion and Elongation Tests on Core Strands/ Composite core**
The test procedures shall be as per clause No. 10.3 of IEC 888. In torsion test, the number of complete twists before fracture shall not be less than 18 on a length equal to 100 times the standard diameter of the strand. In case test sample length is less or more than 100 times the stranded diameter of the strand, the minimum number of twists will be proportioned to the length and if number comes in the fraction then it will be rounded off to next higher whole number. In elongation test, the elongation of the strand shall not be less than 1.5% for a gauge length of 250 mm.

1.25 **Breaking load test on Aluminium Alloy & Core strands and D.C Resistance test on Aluminium Alloy wire**
The above tests shall be carried out as per IEC: 888/889 and the results shall meet the requirements of the specification.
1.26 **Wrap test on Core strand (Applicable for steel/Al clad Steel core only)**
The wrap test on steel strands shall be meeting the requirements of IEC: 888. In case of aluminium clad core wire, the same shall be wrapped around a mandrel of diameter of five times that of the strand to form a helix of eight turns. The strand shall be unwrapped. No breakage of strand shall occur.

1.27 **Minimum conductivity test on thermal resistant aluminium alloy strands**
Resistivity test as per IEC-468/IEC 889 shall be conducted to confirm minimum conductivity as per specification requirement.

1.28 **Procedure Qualification test on welded Aluminium Alloy strands.**
Two Aluminium Alloy wire shall be welded as per the approved quality plan and shall be subjected to tensile load. The breaking strength of the welded joint of the wire shall not be less than the guaranteed breaking strength of individual strands.

1.29 **Ageing Test on Filler (if applicable)**
The test shall be done in accordance with Grease drop point test method. The specimen should be drop as a droplet when kept at a temperature 40 deg. C above designed maximum operating temperature of the conductor for 30 minutes. The temperature shall then be increase till one droplet drops and the temperature recorded.

1.30 **Aluminium conductivity test on aluminium clad strand**
Resistivity test as per IEC-468 shall be conducted to confirm minimum conductivity as per specification requirement.

1.31 **Glass Transition Temperature Test (for polymer composite core only)**
Test method shall be as per mutually agreed between employer and supplier during detailed engineering.

1.32 **Flexural Strength Test (for polymer composite core only)**
Test method shall be as per mutually agreed between employer and supplier during detailed engineering.

1.33 **Chemical Analysis of Aluminium Alloy and Core**
Samples taken from the Aluminium and core coils/strands shall be chemically/spectrographically analyzed. The same shall be in conformity to the particulars guaranteed by the bidder so as to meet the requirements stated in this Specification.

1.34 **Chemical Analysis of Zinc**
Samples taken from the zinc ingots shall be chemically/ spectrographically analyzed. The same shall be in conformity to the requirements stated in the Specification.
### SAG - TENSION DETAILS OF NARROW BASE TOWERS

**SPAN LENGTH - 225M.**

<table>
<thead>
<tr>
<th>Temperature and wind condition</th>
<th>Conductor (ACSR Zebra)</th>
<th>Ground Wire (19/2.50MM, Grade-3, 1100N/MM²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tension (Kg)</td>
<td>Sag (M)</td>
</tr>
<tr>
<td>0°C &amp; Still wind</td>
<td>3649</td>
<td>2.814</td>
</tr>
<tr>
<td>32°C &amp; Still wind</td>
<td>2715</td>
<td>3.783</td>
</tr>
<tr>
<td>65°C/50°C &amp; Still wind</td>
<td>2136</td>
<td>4.808</td>
</tr>
<tr>
<td>0°C &amp; 2/3rd Full wind</td>
<td>3854</td>
<td>2.665</td>
</tr>
<tr>
<td>32°C &amp; Full wind</td>
<td>3181</td>
<td>3.229</td>
</tr>
</tbody>
</table>

### SAG - TENSION DETAILS OF BROAD BASE TOWERS

**SPAN LENGTH - 320M.**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Temperature and wind condition</th>
<th>Conductor (ACSR Zebra)</th>
<th>Ground Wire (19/2.50MM, Grade-3, 1100N/MM²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tension (Kg)</td>
<td>Sag (M)</td>
</tr>
<tr>
<td>1.</td>
<td>5°C &amp; Still wind</td>
<td>4012</td>
<td>5.173</td>
</tr>
<tr>
<td>2.</td>
<td>32°C &amp; Still wind</td>
<td>3322</td>
<td>6.245</td>
</tr>
<tr>
<td>3.</td>
<td>67°C &amp; Still wind</td>
<td>2721</td>
<td>7.626</td>
</tr>
<tr>
<td>4.</td>
<td>5°C &amp; 2/3rd Full wind</td>
<td>4377</td>
<td>5.558</td>
</tr>
<tr>
<td>5.</td>
<td>32°C &amp; Full wind</td>
<td>4083</td>
<td>6.898</td>
</tr>
</tbody>
</table>
SECTION-III

TECHNICAL SPECIFICATION

HARDWARE FITTING & ACCESSORIES
1. Technical Description of Hardware Fittings

1.1 General

This section details technical particulars of fittings viz. suspension clamps and compression type dead end clamps for the HTLS Conductor to be supplied by the bidder. Each fitting shall be supplied complete in all respects.

1.2 The fittings shall be suitable for attachment to suspension and tension insulator strings along with hardware fittings and shall include 2.5% extra fasteners and Aluminium filler plugs. The supplier shall be responsible for satisfactory performance of complete conductor system along with fittings offered by them for continuous operation at the maximum temperature specified by them for the conductor.

1.3 Corona and RI Performance

Sharp edges and scratches on all the hardware fittings shall be avoided. All surfaces must be clean, smooth, without cuts and abrasions or projections. The Supplier shall be responsible for satisfactory corona and radio interference performance of the materials offered by him.

1.4 Maintenance

1.4.1 The hardware fittings offered shall be suitable for employment of hot line maintenance technique so that usual hot line operations can be carried out with ease, speed and safety. The technique adopted for hot line maintenance shall be generally bare hand method & hot stick method.

1.5 Split Pins

1.5.1 Split pins shall be used with bolts & nuts.

1.6 Suspension Assembly

1.6.1 The suspension assembly shall be suitable for the HTLS Conductor, the bidder intend to supply. The technical details of the conductor shall be as proposed by the bidder.

1.6.2 The suspension assembly shall include either free centre type suspension clamp along with standard preformed armour rods or armour grip suspension clamp; except for Pilot insulator string for which only suitable Envelope type suspension clamp shall be used.

1.6.3 The suspension clamp along with standard preformed armour rods set shall be designed to have maximum mobility in any direction and minimum moment of inertia so as to have minimum stress on the conductor in the case of oscillation of the same.
1.6.4 The suspension clamp suitable for various type of Conductor alongwith standard preformed armour rods/armour grip suspension clamp set shall have slip strength between 8 to 15\% of UTS of zebra conductor.

1.6.5 The suspension clamp shall be designed for continuous operation at the temperature specified by the bidder for conductor.

1.6.6 The suspension assembly shall be designed, manufactured and finished to give it a suitable shape, so as to avoid any possibility of hammering between suspension assembly and conductor due to vibration. The suspension assembly shall be smooth without any cuts, grooves, abrasions, projections, ridges or excrescence which might damage the conductor.

1.6.7 The suspension assembly/clamp shall be designed so that it shall minimise the static & dynamic stress developed in the conductor under various loading conditions as well as during wind induced conductor vibrations. It shall also withstand power arcs & have required level of Corona/RIV performance.

1.6.8 **Free Centre Type Suspension Clamp**

For the Free Centre Suspension Clamp seat shall be smoothly rounded and curved into a bell mouth at the ends. The lip edges shall have rounded bead. There shall be at least two U-bolts for tightening of clamp body and keeper pieces together.

1.6.9 **Standard Preformed Armour Rod Set**

1.6.9.1 The Preformed Armour Rods Set shall be used to minimise the stress developed in the sub-conductor due to different static and dynamic loads because of vibration due to wind, slipping of conductor from the suspension clamp as a result of unbalanced conductor tension in adjacent spans and broken wire condition. It shall also withstand power arcs, chafing and abrasion from suspension clamp and localised heating effect due to magnetic power losses from suspension clamps as well as resistance losses of the conductor.

1.6.9.2 The preformed armour rods set shall have right hand lay and the inside diameter of the helics shall be less than the outside diameter of the conductor to have gentle but permanent grip on the conductor. The surface of the armour rod when fitted on the conductor shall be smooth and free from projections, cuts and abrasions etc.

1.6.9.3 The pitch length of the rods shall be determined by the Bidder but shall be less than that of the outer layer of conductor and the same shall be accurately controlled to maintain uniformity and consistently reproducible characteristic wholly independent of the skill of linemen.
1.6.9.4 The number of armour rods in each set shall be twelve. Each rod shall be marked in the middle with paint for easy application on the line.

1.6.9.5 The armour rod shall not loose their resilience even after five applications.

1.6.9.6 The conductivity of each rod of the set shall not be less than 40% of the conductivity of the International Annealed Copper Standard (IACS).

1.6.10 Armour Grip Suspension Clamp

1.6.10.1 The armour grip suspension clamp shall comprise of retaining strap, support housing, elastomer inserts with aluminium reinforcements and AGS preformed rod set.

1.6.10.2 Elastomer insert shall be resistant to the effects of temperature up to maximum conductor temperature guaranteed by the bidder corresponding to peak current, Ozone, ultraviolet radiations and other atmospheric contaminants likely to be encountered in service. The physical properties of the elastomer shall be of approved standard. It shall be electrically shielded by a cage of AGS performed rod set. The elastomer insert shall be so designed that the curvature of the AGS rod shall follow the contour of the neoprene insert.

1.6.10.2.1 The supplier shall submit relevant type/performance test certificates as per applicable standard/product specifications for elastomer to confirm suitability of the offered elastomer for the specified application.

1.6.10.3 The length of the AGS preformed rods shall be such that it shall ensure sufficient slipping strength as detailed under clause 1.6.4 and shall not introduce unfavourable stress on the conductor under all operating conditions.

1.7 Envelope Type Suspension Clamp

1.7.1 The seat of the envelope type suspension clamp shall be smoothly rounded & suitably curved at the ends. The lip edges shall have rounded bead. There shall be at least two U-bolts for tightening of clamp body and keeper pieces together. Hexagonal bolts and nuts with split-pins shall be used for attachment of the clamp.

1.8 Dead end Assembly

1.8.1 The dead end assembly shall be suitable for the offered HTLS Conductor.

1.8.2 The dead end assembly shall be of compression type with provision for compressing jumper terminal at one end. The angle of jumper terminal to be mounted should be 30° with respect to the vertical line. The area of bearing surface on all the connections shall be sufficient to ensure positive electrical and mechanical contact and avoid local heating due to $I^2R$
losses. The resistance of the clamp when compressed on Conductor shall not be more than 75% of the resistance of equivalent length of Conductor.

1.8.3 Die compression areas shall be clearly marked on each dead-end assembly designed for continuous die compressions and shall bear the words ‘COM PRESS FIRST’ suitably inscribed near the point on each assembly where the compression begins. If the dead end assembly is designed for intermittent die compressions it shall bear identification marks ‘COMPRESSION ZONE’ AND ‘NON-COMPRESSION ZONE’ distinctly with arrow marks showing the direction of compressions and knurling marks showing the end of the zones. Tapered aluminium filler plugs shall also be provided at the line of demarcation between compression & non-compression zone. The letters, number and other markings on the finished clamp shall be distinct and legible. The dimensions of dead end assembly before & after compression alongwith tolerances shall be guaranteed in the relevant schedules of the bid and shall be decided by the manufacturer so as to suit the conductor size & conform to electrical & mechanical requirement stipulated in the specification. These shall be guaranteed in the relevant schedules of bid.

1.8.4 The assembly shall not permit slipping of, damage to, or failure of the complete conductor or any part there of at a load less than 95% of the ultimate tensile strength of the conductor.

1.9 Fasteners: Bolts, Nuts and Washers

1.9.1 All bolts and nuts shall conform to IS 6639. All bolts and nuts shall be galvanised as per IS 1367 (Part-13)/IS 2629. All bolts and nuts shall have hexagonal heads, the heads being forged out of solid truly concentric, and square with the shank, which must be perfectly straight.

1.9.2 Bolts upto M16 and having length upto 10 times the diameter of the bolt should be manufactured by cold forging and thread rolling process to obtain good and reliable mechanical properties and effective dimensional control. The shear strength of bolt for 5.6 grade should be 310 MPa minimum as per IS 12427. Bolts should be provided with washer face in accordance with IS 1363 (Part-1) to ensure proper bearing.

1.9.3 Nuts should be double chamfered as per the requirement of IS 1363 Part-III 1984. It should be ensured by the manufacturer that nuts should not be over tapped beyond 0.4 mm oversize on effective diameter for size upto M16.
1.9.4 Fully threaded bolts shall not be used. The length of the bolt shall be such that the threaded portion shall not extend into the place of contact of the component parts.

1.9.5 All bolts shall be threaded to take the full depth of the nuts and threaded enough to permit the firm gripping of the component parts but no further. It shall be ensured that the threaded portion of the bolt protrudes not less than 3 mm and not more than 8 mm when fully tightened. All nuts shall fit and tight to the point where shank of the bolt connects to the head.

1.9.6 Flat washers and spring washers shall be provided wherever necessary and shall be of positive lock type. Spring washers shall be electro-galvanised. The thickness of washers shall conform to IS: 2016.

1.9.7 The Contractor shall furnish bolt schedules giving thickness of components connected, the nut and the washer and the length of shank and the threaded portion of bolts and size of holes and any other special details of this nature.

1.9.8 To obviate bending stress in bolt, it shall not connect aggregate thickness more than three time its diameter.

1.9.9 Bolts at the joints shall be so staggered that nuts may be tightened with spanners without fouling.

1.9.10 To ensure effective in-process Quality control it is essential that the manufacturer should have all the testing facilities for tests like weight of zinc coating, shear strength, other testing facilities etc, in-house. The manufacturer should also have proper Quality Assurance system which should be in line with the requirement of this specification and IS-14000 services Quality System standard.

1.9.11 Fasteners of grade higher than 8.8 are not to be used and minimum grade for bolt shall be 5.6.

1.10 **Materials**

The materials of the various components shall be as specified hereunder. The Bidder shall indicate the material proposed to be used for each and every component of hardware fittings stating clearly the class, grade or alloy designation of the material, manufacturing process & heat treatment details and the reference standards.

1.10.1 The details of materials for different component are listed as in Table No-1.
1.11 Workmanship

1.11.1 All the equipment shall be of the latest design and conform to the best modern practices adopted in the Extra High Voltage field. The Bidder shall offer only such equipment as guaranteed by him to be satisfactory and suitable for 220 kV transmission lines and will give continued good performance.

1.11.2 High current, heat rise test shall be conducted by the supplier to determine the maximum temperature achieved in different components of fittings under simulated service condition corresponding to continuous operation of conductor at rated maximum temperature. The material of the components should be suitable for continued good performance corresponding to these maximum temperatures. The supplier shall submit relevant type/performance test certificates as per applicable standards/product specifications to confirm suitability of the offered material.

1.11.3 The design, manufacturing process and quality control of all the materials shall be such as to give the specified mechanical rating, highest mobility, elimination of sharp edges and corners to limit corona and radio-interference, best resistance to corrosion and a good finish.

1.11.4 All ferrous parts including fasteners shall be hot dip galvanised, after all machining has been completed. Nuts may, however, be tapped (threaded) after galvanising and the threads oiled. Spring washers shall be electro galvanised. The bolt threads shall be undercut to take care of the increase in diameter due to galvanising. Galvanising shall be done in accordance with IS 2629 / IS 1367 (Part-13) and shall satisfy the tests mentioned in IS 2633. Fasteners shall withstand four dips while spring washers shall withstand three dips of one minute duration in the standard Preece test. Other galvanised materials shall have a minimum average coating of zinc equivalent to 600 gm/sq.m., shall be guaranteed to withstand at least six successive dips each lasting one (1) minute under the standard preece test for galvanising.

1.11.5 The zinc coating shall be perfectly adherent of uniform thickness, smooth, reasonably bright, continuous and free from imperfections such as flux, ash rust, stains, bulky white deposits and blisters. The zinc used for galvanising shall be grade Zn 99.95 as per IS: 209.

1.11.6 In case of casting, the same shall be free from all internal defects like shrinkage, inclusion, blow holes, cracks etc. Pressure die casting shall not be used for casting of components with thickness more than 5 mm.
1.11.7 All current carrying parts shall be so designed and manufactured that contact resistance is reduced to minimum.

1.11.8 No equipment shall have sharp ends or edges, abrasions or projections and cause any damage to the conductor in any way during erection or during continuous operation which would produce high electrical and mechanical stresses in normal working. The design of adjacent metal parts and mating surfaces shall be such as to prevent corrosion of the contact surface and to maintain good electrical contact under service conditions.

1.11.9 All the holes shall be cylindrical, clean cut and perpendicular to the plane of the material. The periphery of the holes shall be free from burrs.

1.11.10 All fasteners shall have suitable corona free locking arrangement to guard against vibration loosening.

1.11.11 Welding of aluminium shall be by inert gas shielded tungsten arc or inert gas shielded metal arc process. Welds shall be clean, sound, smooth, uniform without overlaps, properly fused and completely sealed. There shall be no cracks, voids, incomplete penetration, incomplete fusion, under-cutting or inclusions. Porosity shall be minimised so that mechanical properties of the aluminium alloys are not affected. All welds shall be properly finished as per good engineering practices.

1.12 **Bid Drawings**

1.12.1 The Bidder shall furnish full description and illustrations of materials offered.

1.12.2 Fully dimensioned drawings of the hardwares and their component parts shall be furnished in five (5) copies along with the bid. Weight, material and fabrication details of all the components should be included in the drawings.

All drawings shall be identified by a drawing number and contract number. All drawings shall be neatly arranged. All drafting & lettering shall be legible. The minimum size of lettering shall be 3 mm. All dimensions & dimensional tolerances shall be mentioned in mm.

The drawings shall include:

(i) Dimensions and dimensional tolerance.

(ii) Material, fabrication details including any weld details & any specified finishes & coatings. Regarding material designation & reference of standards are to be indicated.

(iii) Catalogue No.
1.12.3 After placement of award, the Contractor shall submit fully dimensioned drawing including all the components in four (4) copies to the Owner for approval. After getting approval from the Owner and successful completion of all the type tests, the Contractor shall submit ten (10) more copies of the same drawings to the Owner for further distribution and field use at Owner’s end.

**TABLE-1**

(Details of Materials)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of item &amp; part description</th>
<th>Material treatment</th>
<th>Process of Standard/Manufacturing</th>
<th>Reference</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Security Clips</td>
<td>Stainless Steel/ Phospher Bronze</td>
<td>-</td>
<td>AISI 302 or 304-L/ IS-1385</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>For Free Centre /Envelope type clamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>Clamp Body, Keeper Piece</td>
<td>High Strength Al. Alloy 4600/ LM-6 or 6061/65032</td>
<td>Casted or forged &amp; Heat treated</td>
<td>IS:617 or ASTM-B429</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>Cotter bolts/ Hangers, Shackles, Brackets</td>
<td>Mild Steel</td>
<td>Hot dip galvanised</td>
<td>As per IS-226 or IS-2062</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>U Bolts</td>
<td>Stainless Steel or High Strength Al alloy 6061/ 65032</td>
<td>Forged &amp; Heat treated</td>
<td>AISI 302 or 304-L ASTM-B429</td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>P. A. Rod</td>
<td>High Strength Al. Alloy 4600/ LM-6 or 6061/65032</td>
<td>Heat treatment during manufacturing</td>
<td>ASTM-B429</td>
<td></td>
</tr>
</tbody>
</table>
3. **For AGS type clamp**

| (a) | Supporting House | High Strength Corrosion resistant Al. Alloy 4600/ LM-6 or 6061/65032 | Casted or forged & Heat treated | IS:617 or ASTM-B429 |
| (b) | Al insert & Retaining strap | High Strength Al. Alloy 4600/ LM-6 or 6061/65032 | Casted or forged & Heat treated | IS:617 or ASTM-B429 |
| (c) | Elastomer | Moulded on Al. reinforcement |

4. **For Dead End Assembly**

| (a) | Outer Sleeve | EC grade Al of purity not less than 99.50% |
| (b) | Steel Sleeve | Mild Steel | Hot Dip Galvanised | IS:226/IS-2062 |
| 5. | Ball & Socket Fittings, | Class-IV Steel | Drop forged & normalized Hot dip galvanised | As per IS: 2004 |
| 6. | Yoke Plate | Mild Steel | Hot dip galvanized | As per IS-226 or IS-2062 |
| 7. | Sag Adjustment plate | Mild Steel | Hot dip galvanized | As per IS-226 or IS-2062 |
| 8(a). | Corona Control ring/Grading ring | High Strength Al. Alloy tube (6061/6063/1100 type or 65032/63400 Type) | Heat treated Hot dip galvanised | ASTM-B429 or as per IS |
| 8(b). | Supporting Brackets & Mounting Bolts | High Strength Al Alloy 7061/6063/65032/63400 Type | Heat treated Hot dip galvanised | ASTM-B429 or as per IS:226 or IS:2062 |

**Note**: Alternate materials conforming to other national standards of other countries also may be offered provided the properties and compositions of these are close to the properties and compositions of material specified. Bidder should furnish the details of comparision of material offered viz a viz specified in the bid or else the bids are liable to be rejected.
2.0 Accessories for the HTLS Conductor

2.1 General

2.1.1 This portion details the technical particulars of the accessories for Conductor.

2.1.2 2.5% extra fasteners, filler plugs and retaining rods shall be provided.

2.1.3 The supplier shall be responsible for satisfactory performance of complete conductor system along with accessories offered by him for continuous operation at temperature specified for the HTLS Conductor.

2.2 Mid Span Compression Joint

2.2.1 Mid Span Compression Joint shall be used for joining two lengths of conductor. The joint shall have a resistivity less than 75% of the resistivity of equivalent length of conductor. The joint shall not permit slipping off, damage to or failure of the complete conductor or any part thereof at a load less than 95% of the ultimate tensile strength of the conductor. It must be able to withstand the continuous design temperature of conductor.

2.2.2 The dimensions of mid span compression joint before & after compression alongwith tolerances shall be guaranteed in the relevant schedules of the bid and shall be decided by the manufacturer so as to suit the conductor size & conform to electrical & mechanical requirement stipulated in the specification.

2.3 Repair Sleeve

Repair Sleeve of compression type shall be used to repair conductor with not more than two strands broken in the outer layer. The sleeve shall be manufactured from 99.5% pure aluminium / aluminium alloy and shall have a smooth surface. It shall be able to withstand the continuous maximum operating temperature of conductor. The repair sleeve shall comprise of two pieces with a provision of seat for sliding of the keeper piece. The edges of the seat as well as the keeper piece shall be so rounded that the conductor strands are not damaged during installation. The dimensions of Repair sleeve alongwith tolerances shall be guaranteed in the relevant schedules of the bid and shall be decided by the manufacturer so as to suit the conductor size & conform to electrical & mechanical requirement stipulated in the specification.
2.4 **Vibration Damper**

2.4.1 Vibration dampers of 4R-stockbridge type with four (4) different resonances spread within the specified aeolian frequency band width corresponding to wind speed of 1 m/s to 7 m/s are installed in the existing line at suspension and tension points on each conductor in each span to damp out aeolian vibration as well as sub-span oscillations. One damper minimum on each side per sub-conductor for suspension points and two dampers minimum on each side per sub-conductor for tension points has been used for a ruling design span of [ruling span as per Annexure - 1] meters.

2.4.2 The bidder shall offer damping system including Stockbridge type dampers for HTLS conductor for its protection from wind induced vibrations which could cause conductor fatigue/strand breakage near a hardware attachment, such as suspension clamps. Alternate damping systems with proven design offering equivalent or better performance also shall be accepted provided the manufacturer meets the qualifying requirements stipulated in the Specifications. Relevant technical documents including type test reports to establish the technical suitability of alternate systems shall be furnished by the Bidder alongwith the bid.

The damper shall be designed to have minimum 4 nos of resonance frequencies to facilitate dissipation of vibration energy through interstrand friction of the messenger cable and shall be effective in reducing vibration over a wide frequency range (depending upon conductor dia) or wind velocity range specified above. The vibration damper shall meet the requirement of frequency or wind velocity range and also have mechanical impedance closely matched with the offered HTLS conductor. The vibration dampers shall be installed at suitable positions to ensure damping effectiveness across the frequency range. The power dissipation of the vibration dampers shall exceed the wind power so that the vibration level on the conductor is reduced below its endurance limit. The bidder shall clearly indicate the method for evaluating performance of dampers including analytical and laboratory test methods. The bidder shall indicate the type tests to evaluate the performance of offered damping system.

2.4.3 The clamp of the vibration damper shall be made of high strength aluminium alloy of type LM-6. It shall be capable of supporting the damper and prevent damage or chafing of the conductor during erection or continued operation. The clamp shall have smooth and permanent grip to keep the damper in position on the conductor without damaging the
strands or causing premature fatigue failure of the conductor under the clamp. The clamp groove shall be in uniform contact with the conductor over the entire clamping surface except for the rounded edges. The groove of the clamp body and clamp cap shall be smooth, free from projections, grit or other materials which could cause damage to the conductor when the clamp is installed. Clamping bolts shall be provided with self locking nuts and designed to prevent corrosion of threads or loosening in service.

2.4.4 The messenger cable shall be made of high strength galvanised steel/stainless steel. It shall be of preformed and postformed quality in order to prevent subsequent droop of weight and to maintain consistent flexural stiffness of the cable in service. The messenger cables other than stainless steel shall be hot dip galvanised in accordance with the recommendations of IS:4826 for heavily coated wires.

2.4.5 The damper mass shall be made of hot dip galvanised mild steel/cast iron or a permanent mould cast zinc alloy. All castings shall be free from defects such as cracks, shrinkage, inclusions and blowholes etc. The surface of the damper masses shall be smooth.

2.4.6 The damper clamp shall be casted over the messenger cable and offer sufficient and permanent grip on it. The messenger cable shall not slip out of the grip at a load less than the mass pull-off value of the damper. The damper masses made of material other-than zinc alloy shall be fixed to the messenger cable in a suitable manner in order to avoid excessive stress concentration on the messenger cables which shall cause premature fatigue failure of the same. The messenger cable ends shall be suitably and effectively sealed to prevent corrosion. The damper mass made of zinc alloy shall be casted over the messenger cable and have sufficient and permanent grip on the messenger cable under all service conditions.

2.4.7 The damper assembly shall be so designed that it shall not introduce radio interference beyond acceptable limits.

2.4.8 The vibration damper shall be capable of being installed and removed from energised line by means of hot line technique. In addition, the clamp shall be capable of being removed and reinstalled on the conductor at the designated torque without shearing or damaging of fasteners.

2.4.9 The contractor must indicate the clamp bolt tightening torque to ensure that the slip strength of the clamp is maintained. The clamp when installed on the conductor shall not cause excessive stress concentration
on the conductor leading to permanent deformation of the conductor strands and premature fatigue failure in operation.

2.4.10 The vibration analysis of the system, with and without damper and dynamic characteristics of the damper as detailed under Annexure-A, shall have to be submitted. The technical particulars for vibration analysis and damping design of the system are as follows:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Technical particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Span length in meters</td>
<td>[ruling spans per Annexure - 1]</td>
</tr>
<tr>
<td>i)</td>
<td>Ruling design span</td>
<td>Ruling span as per Annexure - 1</td>
</tr>
<tr>
<td>ii)</td>
<td>Maximum span</td>
<td>1100 meters</td>
</tr>
<tr>
<td>iii)</td>
<td>Minimum span</td>
<td>100 meters</td>
</tr>
<tr>
<td>2.</td>
<td>Configuration</td>
<td>Double Circuitsingle conductor per phase in vertical configuration.</td>
</tr>
<tr>
<td>3.</td>
<td>Tensile load in Conductor at temperature of 0 deg. C and still air</td>
<td>as per Annexure - 1</td>
</tr>
<tr>
<td>4.</td>
<td>Armour rods used</td>
<td>Standard preformed armour rods/AGS</td>
</tr>
<tr>
<td>5.</td>
<td>Maximum permissible dynamic strain endurance limit</td>
<td>+/- 150 micro strains</td>
</tr>
</tbody>
</table>

2.4.11 The damper placement chart shall be submitted for spans ranging from 100m to 1100m. Placement charts should be duly supported with relevant technical documents and sample calculations.

2.4.12 The damper placement charts shall include the following

1. Location of the dampers for various combinations of spans and line tensions clearly indicating the number of dampers to be installed per conductor per span.
2. Placement distances clearly identifying the extremities between which the distances are to be measured.
3. Placement recommendation depending upon type of suspension clamps (viz Free centre type/Armour grip type etc.)
4. The influence of mid span compression joints, repair sleeves and armour rods (standard and AGS) in the placement of dampers.
2.5  **Material and Workmanship**

2.5.1 All the equipment shall be of the latest proven design and conform to the best modern practice adopted in the extra high voltage field. The Bidder shall offer only such equipment as guaranteed by him to be satisfactory and suitable for 220 kV transmission line applications and will give continued good performance at all service conditions.

2.5.2 The design, manufacturing process and quality control of all the materials shall be such as to achieve requisite factor of safety for maximum working load, highest mobility, elimination of sharp edges and corners, best resistance to corrosion and a good finish.

2.5.3 High current, heat rise test shall be conducted by the supplier to determine the maximum temperature achieved in different components of fittings under simulated service condition corresponding to continuous operation of conductor at rated maximum temperature. The material of the components should be suitable for continued good performance corresponding to these maximum temperatures. The supplier shall submit relevant type/ performance test certificates as per applicable standards/product specifications to confirm suitability of the offered material.

2.5.4 All ferrous parts shall be hot dip galvanised, after all machining has been completed. Nuts may, however, be tapped (threaded) after galvanising and the threads oiled. Spring washers shall be electro galvanised as per grade 4 of IS-1573. The bolt threads shall be undercut to take care of increase in diameter due to galvanising. Galvanising shall be done in accordance with IS:2629/ IS-1367 (Part-13) and satisfy the tests mentioned in IS-2633. Fasteners shall withstand four dips while spring washers shall withstand three dips. Other galvanised materials shall have a minimum average coating of Zinc equivalent to 600 gm/sq.m and shall be guaranteed to withstand at least six dips each lasting one minute under the standard Preece test for galvanising unless otherwise specified.

2.5.5 The zinc coating shall be perfectly adherent, of uniform thickness, smooth, reasonably bright, continuous and free from imperfections such as flux, ash, rust stains, bulky white deposits and blisters. The zinc used for galvanising shall be of grade Zn 99.95 as per IS:209.

2.5.6 In case of castings, the same shall be free from all internal defects like shrinkage, inclusion, blow holes, cracks etc.

2.5.7 All current carrying parts shall be so designed and manufactured that contact resistance is reduced to minimum and localised heating phenomenon is averted.
2.5.8 No equipment shall have sharp ends or edges, abrasions or projections and shall not cause any damage to the conductor in any way during erection or during continuous operation which would produce high electrical and mechanical stresses in normal working. The design of adjacent metal parts and mating surfaces shall be such as to prevent corrosion of the contact surface and to maintain good electrical contact under all service conditions.

2.5.9 Particular care shall be taken during manufacture and subsequent handling to ensure smooth surface free from abrasion or cuts.

2.5.10 The fasteners shall conform to the requirements of IS:6639-1972. All fasteners and clamps shall have corona free locking arrangement to guard against vibration loosening.

2.6 Compression Markings

Die compression areas shall be clearly marked on each equipment designed for continuous die compressions and shall bear the words ‘COMPRESS FIRST’ suitably inscribed on each equipment where the compression begins. If the equipment is designed for intermittent die compressions, it shall bear the identification marks ‘COMPRESSION ZONE’ and ‘NON-COMPRESSION ZONE’ distinctly with arrow marks showing the direction of compression and knurling marks showing the end of the zones. The letters, number and other markings on finished equipment shall be distinct and legible.

2.7 Bid Drawings

2.7.1 The Bidder shall furnish detailed dimensioned drawings of the equipments and all component parts. Each drawing shall be identified by a drawing number and Contract number. All drawings shall be neatly arranged. All drafting and lettering shall be legible. The minimum size of lettering shall be 3 mm. All dimensions and dimensional tolerances shall be mentioned in mm.

2.7.2 The drawings shall include

(i) Dimensions and dimensional tolerances
(ii) Material, fabrication details including any weld details and any specified finishes and coatings. Regarding material, designations and reference of standards are to be indicated.
(iii) Catalogue No.
(iv) Marking
(v) Weight of assembly
(vi) Installation instructions
(vii) Design installation torque for the bolt or cap screw
(viii) Withstand torque that may be applied to the bolt or cap screw without failure of component parts
(ix) The compression die number with recommended compression pressure.
(x) All other relevant technical details

2.7.3 Placement charts for damper

2.7.4 The above drawings shall be submitted with all the details as stated above along with the bid document. After the placement of award, the Contractor shall again submit the drawings in four copies to the Owner for approval. After Owner’s approval and successful completion of all type tests, 10 (ten) more sets of drawings shall be submitted to Owner for further distribution and field use at Owner’s end.

3.0 Tests and Standards

3.1 Type Tests

3.1.1 On Suspension Clamp
a) Magnetic power loss test : As per Annexure-A
b) Clamp slip strength Vs torque test : As per Annexure-A
c) Ozone Test on elastomer : As per Annexure-A

3.1.2 On Dead end Tension Assembly
a) Electrical resistance test for dead end Assembly : As per IS:2486-(Part-I)
b) Heating cycle test for dead end Assembly : As per IS:2486-(Part-I)
c) Slip strength test for dead end assembly : As per IS:2486-(Part-I)
d) Ageing test on filler (if applicable) : As per Annexure-A

3.1.3 Mid Span Compression Joint for Conductor
a) Chemical analysis of materials : As per Annexure-A
b) Electrical resistance test : As per IS:2121 (Part-II)
c) Heating cycle test : As per IS:2121 (Part-II)
d) Slip strength test : As per Annexure-A
e) Corona extinction voltage test (dry) : As per Annexure-A
f) Radio interference voltage test (dry) : As per Annexure-A

3.1.4 Repair Sleeve for Conductor

a) Chemical analysis of materials : As per Annexure-A
b) Corona extinction voltage test (dry) : As per Annexure-A
c) Radio interference voltage test (dry) : As per Annexure-A

3.1.5 Vibration Damper for Conductor

a) Chemical analysis of materials : As per Annexure-A
b) Dynamic characteristics test* : As per Annexure-A
c) Vibration analysis : As per Annexure-A
d) Clamp slip test : As per Annexure-A
e) Fatigue tests : As per Annexure-A
f) Magnetic power loss test : As per Annexure-A
g) Corona extinction voltage test (dry) : As per Annexure-A
h) Radio interference voltage test (dry) : As per Annexure-A
i) Damper efficiency test : As per IS:9708

* Applicable for 4 R Stockbridge dampers. For alternate type of vibration dampers (permitted as per clause 2.4.2), as an alternative to dynamic characteristic test, damper efficiency test as per IEEE-664 may be proposed/carried out by the supplier.

3.2 Acceptance Tests

3.2.1 On Both Suspension Clamp and Tension Assembly

a) Visual Examination : As per IS:2486-(Part-I)
b) Verification of dimensions : As per IS:2486-(Part-I)
c) Galvanising/Electroplating test : As per IS:2486-(Part-I)
d) Mechanical strength test of each component : As per Annexure-A
e) Mechanical Strength test of welded joint : As per Annexure-A
f) Chemical analysis, hardness tests, grain size, inclusion rating & magnetic particle inspection for forgings/castings : As per Annexure-A

3.2.2 On Suspension Clamp only

a) Clamp Slip strength Vs Torque test for suspension clamp : As per Annexure-A
b) Shore hardness test of elastomer cushion for AG suspension clamp : As per Annexure-A
c) Bend test for armour rod set : As per IS:2121(Part-I), Clause 7.5, 7.10 & 7.11
d) Resilience test for armour rod set : As per IS:2121(Part-I), Clause 7.5, 7.10 & 7.11
e) Conductivity test for armour rods set : As per IS:2121(Part-I), Clause 7.5, 7.10 & 7.11

3.2.3 On Tension Hardware Fittings only

a) Slip strength test for dead end assembly : As per IS:2486 (Part-I) Clause 5.4
d) Ageing test on filler (if applicable) : As per Annexure-B

3.2.4 On Mid Span Compression Joint for Conductor

a) Visual examination and dimensional verification : As per IS:2121 (Part-II), Clause 6.2,
b) Galvanising test : As per Annexure-B

c) Hardness test : As per Annexure-B

d) Ageing test on filler (if applicable) : As per Annexure-B

3.2.5 Repair Sleeve for Conductor

a) Visual examination and dimensional verification : As per IS:2121(Part-II) Clause 6.2, 6.3

3.2.6 Vibration Damper for Conductor

a) Visual examination and dimensional verification : As per IS:2121(Part-II) Clause 6.2, 6.3 & 6.7

b) Galvanising test : As per Annexure-B

(i) On damper masses : As per Annexure-B

(ii) On messenger cable : As per Annexure-B

c) Verification of resonance frequencies : As per Annexure-B

d) Clamp slip test : As per Annexure-B

e) Clamp bolt torque test : As per Annexure-B

f) Strength of the messenger cable : As per Annexure-B

g) Mass pull off test : As per Annexure-B

h) Dynamic characteristics test* : As per Annexure-B

* Applicable for 4 R stockbridge dampers. For alternate type of vibration dampers (permitted as per clause 2.4.2), as an alternative to dynamic characteristic test, damper efficiency test as per IEEE-664 may be proposed/carry out by the supplier.
3.3 Routine Tests

3.3.1 For Hardware Fittings

a) Visual examination IS:2486-(Part-I)
b) Proof Load Test : As per Annexure-A

3.3.2 For conductor accessories

a) Visual examination and dimensional verification : As per IS:2121(Part-II) Clause 6.2, 6.3 & 6.7

3.4 Tests During Manufacture on all components as applicable

a) Chemical analysis of Zinc used for galvanising IS:2486-(Part-I)
b) Chemical analysis mechanical metallographic test and magnetic particle inspection for malleable castings : As per Annexure-A
c) Chemical analysis, hardness tests and magnetic particle inspection for forging : As per Annexure-A

3.5 Testing Expenses

3.5.1 Testing charges for the type test specified shall be indicated separately in the prescribed scheduleif specified in BOQ item. If the type test is required to be conducted then the report for the same will be submitted before commercial production of material/equipment in this project.

3.5.2 Bidder shall indicate charges for all type tests covered under Clause No. 3.1.1 to 3.1.5 separately if specified in BOQ item. The charges for each type test shall be separately indicated if specified in BOQ item.

3.5.3 Bidder shall indicate the laboratories in which they propose to conduct the type tests. They shall ensure that adequate facilities for conducting the tests are available in the laboratory and the tests can be completed in these laboratories within the time schedule guaranteed by them in the appropriate schedule.

3.5.4 The entire cost of testing for acceptance and routine tests and tests during manufacture specified herein shall be treated as included in the quoted Ex-works/CIF Price.
3.5.5 In case of failure in any type test, repeat type tests are required to be conducted, then, all the expenses for deputation of Inspector/Owner’s representative shall be deducted from the contract price. Also if on receipt of the Contractor’s notice of testing, the Owner’s representative/Inspector does not find material & facilities to be ready for testing the expenses incurred by the Owner’s for redeputation shall be deducted from contract price.

3.5.6 The Contractor shall intimate the Owner about carrying out of the type tests alongwith detailed testing programme at least 3 weeks in advance (in case of testing in India and at least 6 weeks advance in case of testing abroad) of the scheduled date of testing during which the Owner will arrange to depute his representative to be present at the time of carrying out the tests.

3.6 Sample Batch For Type Testing

3.6.1 The Contractor shall offer material for sample selection for type testing only after getting Quality Assurance Programme approved by the Owner. The Contractor shall offer at least three times the quantity of materials required for conducting all the type tests for sample selection. The sample for type testing will be manufactured strictly in accordance with the Quality Assurance Programme approved by the Owner.

3.6.2 Before sample selection for type testing the Contractor shall be required to conduct all the acceptance tests successfully in presence of Owner’s representative.

3.7 Schedule of Testing and Additional Tests

3.7.1 The Bidder has to indicate the schedule of following activities in their bids

(a) Submission of drawing for approval.
(b) Submission of Quality Assurance programme for approval.
(c) Offering of material for sample selection for type tests.
(d) Type testing.

3.7.2 The Owner reserves the right of having at his own expense any other test(s) of reasonable nature carried out at Contractor’s premises, at site, or in any other place in addition to the aforesaid type, acceptance and routine tests to satisfy himself that the material comply with the specifications.

3.7.3 The Owner also reserves the right to conduct all the tests mentioned in this specification at his own expense on the samples drawn from the site at Contractor’s premises or at any other test centre. In case of evidence of
non compliance, it shall be binding on the part of Contractor to prove the
compliance of the items to the technical specifications by repeat tests, or
correction of deficiencies, or replacement of defective items, all without
any extra cost to the Owner.

3.8 Co-ordination for testing
The Contractors shall have to co-ordinate testing of their hardware fittings
with insulators to be supplied by other Supplier to the Owner and shall
have to also guarantee overall satisfactory performance of the hardware
fittings with the insulators.

3.9 Test Reports
3.9.1 Copies of type test reports shall be furnished in atleast four copies
alongwith one original. One copy shall be returned duly certified by the
Owner, only after which the commercial production of the concerned
material shall start.

3.9.2 Copies of acceptance test report shall be furnished in atleast four copies.
One copy shall be returned, duly certified by the Owner, only after which
the materials will be despatched.

3.9.3 Record of routine test report shall be maintained by the Contractor at his
works for periodic inspection by the Owner’s representative.

3.9.4 Test certificates of tests during manufacture shall be maintained by the
Contractor. These shall be produced for verification as and when desired
by the Owner.

3.10 Inspection
3.10.1 The Owner’s representative shall at all times be entitled to have access to
the works and all places of manufacture, where the material and/or its
component parts shall be manufactured and the representatives shall
have full facilities for unrestricted inspection of the Contractor’s, sub-
Contractor’s works, raw materials manufacturer’s of all the material and
for conducting necessary tests as detailed herein.

3.10.2 The material for final inspection shall be offered by the Contractor only
under packed condition as detailed in the Specification. The engineer shall
select samples at random from the packed lot for carrying out acceptance
tests.

3.10.3 The Contractor shall keep the Owner informed in advance of the time of
starting and of the progress of manufacture of material in its various
stages so that arrangements could be made for inspection.
3.10.4 Material shall not be despatched from its point of manufacture before it has been satisfactorily inspected and tested unless the inspection is waived off by the Owner in writing. In the latter case also the material shall be despatched only after all tests specified herein have been satisfactorily completed.

3.10.5 The acceptance of any quantity of material shall in no way relieve the Contractor of his responsibility for meeting all the requirements of the Specification, and shall not prevent subsequent rejection, if such materials are later found to be defective.

3.11 **Packing and Marking**

3.11.1 All material shall be packed in strong and weather resistant wooden cases/crates. The gross weight of the packing shall not normally exceed 200 Kg to avoid handling problems.

3.11.2 The packing shall be of sufficient strength to withstand rough handling during transit, storage at site and subsequent handling in the field.

3.11.3 Suitable cushioning, protective padding, dunnage or spacers shall be provided to prevent damage or deformation during transit and handling.

3.11.4 Bolts, nuts, washers, cotter pins, security clips and split pins etc. shall be packed duly installed and assembled with the respective parts and suitable measures shall be used to prevent their loss.

3.11.5 Each component part shall be legibly and indelibly marked with trade mark of the manufacturer and year of manufacture.

3.11.6 All the packing cases shall be marked legibly and correctly so as to ensure safe arrival at their destination and to avoid the possibility of goods being lost or wrongly despatched on account of faulty packing and faulty or illegible markings. Each wooden case/crate shall have all the markings stencilled on it in indelible ink.

3.12 **Standards**

3.12.1 The Hardware fittings; conductor and earthwire accessories shall conform to the following Indian/International Standards which shall mean latest revisions, with amendments/changes adopted and published, unless specifically stated otherwise in the Specification.

3.12.2 In the event of the supply of hardware fittings; conductor and earthwire accessories conforming to standards other than specified, the Bidder shall confirm in his bid that these standards are equivalent to those specified.
In case of award, salient features of comparison between the Standards proposed by the Contractor and those specified in this document will be provided by the Contractor to establish their equivalence.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Indian Standard</th>
<th>Title</th>
<th>International Standard</th>
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<tr>
<td>2.</td>
<td>IS 1573</td>
<td>Electroplated Coating of Zinc on iron and Steel</td>
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<td>3.</td>
<td>IS : 2121 (Part-II)</td>
<td>Specification for Conductor and Earthwire Accessories for Overhead Power lines: Mid-span Joints and Repair Sleeves for Conductors</td>
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<td>4.</td>
<td>IS:2486 (Part-I)</td>
<td>Specification for Insulator Fittings for Overhead power Lines with Nominal Voltage greater than 1000 V: General Requirements and Tests</td>
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<td>5.</td>
<td>IS:2629</td>
<td>Recommended Practice for Hot Dip Galvanising of Iron and Steel</td>
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<td>6.</td>
<td>IS:2633</td>
<td>Method of Testing Uniformity of Coating on Zinc Coated Articles</td>
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<tr>
<td>7.</td>
<td></td>
<td>Ozone test on Elastomer</td>
<td>ASTM- D1 171</td>
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<td>8.</td>
<td></td>
<td>Tests on insulators of Ceramic material or glass for overhead lines with a nominal voltage greater than 1000V</td>
<td>IEC:383-1993</td>
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<tr>
<td>9.</td>
<td>IS:4826</td>
<td>Galvanised Coating on Round Steel Wires</td>
<td>ASTM A472-7 2 9</td>
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<td>BS:443-1969</td>
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<td>10.</td>
<td>IS:6745</td>
<td>Methods of Determination of Weight of Zinc Coating of Zinc Coated Iron and Steel Articles</td>
<td>BS:433 ISO : 1460 (E)</td>
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<tr>
<td>BS</td>
<td>British Standards, British Standards Institution 101, Pentonvile Road, N - 19-ND UK</td>
<td></td>
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<tr>
<td>IEC/CISPR</td>
<td>International Electro technical Commission, Bureau Central de la Commission, electro Technique international, 1 Rue de verembe, Geneva SWITZERLAND</td>
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<tr>
<td>BIS/IS</td>
<td>Beureau Of Indian Standards. ManakBhavan, 9, Bahadur Shah ZafarMarg, New Delhi - 110001. INDIA</td>
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<tr>
<td>ISO</td>
<td>International Organisation for Standardization. Danish Board of Standardization Danish Standardizing Sraat, Aurehoegvej-12 DK-2900, Heeleprup, DENMARK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electric Manufacture Association, 155, East 44th Street. New York, NY10017 U.S.A.</td>
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</tbody>
</table>

The standards mentioned above are available from:
1.0 Tests on Hardware Fittings

1.1 Magnetic Power Loss Test for Suspension Assembly

Two hollow aluminium tubes of 32 mm diameter for the conductor shall be placed 450 mm apart respectively. An alternating current over the range of 1000 to 1500 amperes shall be passed through each tube. The reading of the wattmeter with and without suspension assemblies along with line side yoke plate, clevis eye shall be recorded. Not less than three suspension assemblies shall be tested. The average power loss for suspension assembly shall be plotted for each value of current. The value of the loss corresponding to 1200 amperes shall be read off from the graph and the same shall be limited to the value guaranteed by the supplier.

1.2 Galvanising/Electroplating Test

The test shall be carried out as per Clause no. 5.9 of IS:2486-(Part-1) except that both uniformity of zinc coating and standard preceee test shall be carried out and the results obtained shall satisfy the requirements of this specification.

1.3 Mechanical Strength Test of Each Component

Each component shall be subjected to a load equal to the specified minimum ultimate tensile strength (UTS) which shall be increased at a steady rate to 67% of the minimum UTS specified. The load shall be held for five minutes and then removed. The component shall then again be loaded to 50% of UTS and the load shall be further increased at a steady rate till the specified UTS and held for one minute. No fracture should occur. The applied load shall then be increased until the failing load is reached and the value recorded.

1.4 Mechanical Strength Test of Welded Joint

The welded portion of the component shall be subjected to a load of 2000 kgs for one minute. Thereafter, it shall be subjected to die-penetratration/ultrasonic test. There shall not be any crack at the welded portion.

1.5 Clamp Slip Strength Vs Torque Test for Suspension Clamp

The suspension assembly shall be vertically suspended by means of a flexible attachment. A suitable length of conductor shall be fixed in the clamp. The clamp slip strength at various tightening torques shall be obtained by gradually applying the load at one end of the conductor. The Clamp slip strength vs torque curve shall be drawn. The above procedure is applicable only for free centre type suspension clamp. For AG
suspension clamp only clamp slip strength after assembly shall be found out. The clamp slip strength at the recommended tightening torque shall be between 8 to 15% of UTS of zebra conductor.

1.6 **Heating Cycle Test**

Heating cycle test shall be performed in accordance with IS 2486 (Part-I) with following modifications:

i) Temperature of conductor during each cycle: 40 deg. C above designed maximum operating temperature of the conductor.

ii) Number of cycle: 100

iii) Slip strength test shall also be carried out after heating cycle test.

1.7 **Ageing Test on Filler (if applicable)**

The test shall be done in accordance with Grease drop point test method. The specimen should be drop as a droplet when kept at a temperature 40 deg. C above designed maximum operating temperature of the conductor for 30 minutes. The temperature shall then be increase till one droplet drops and the temperature recorded.

1.8 **Shore Hardness Test for Elastomer Cushion for AG Suspension Assembly**

The shore hardness at various points on the surface of the elastomer cushion shall be measured by a shore hardness meter and the shore hardness number shall be between 65 to 80.

1.9 **Proof Load Test**

Each component shall be subjected to a load equal to 50% of the specified minimum ultimate tensile strength which shall be increased at a steady rate to 67% of the UTS specified. The load shall be held for one minute and then removed. After removal of the load the component shall not show any visual deformation.

1.10 **Tests for Forging Casting and Fabricated Hardware**

The chemical analysis, hardness test, grain size, inclusion rating and magnetic particle inspection for forging, castings and chemical analysis and proof load test for fabricated hardware shall be as per the internationally recognised procedures for these tests. The sampling will be based on heat number and heat treatment batch. The details regarding test will be as in the Quality Assurance programme.
1.11 Ozone Test for Elastomer

This test shall be performed in accordance with ASTM D-1171 by the Ozone chamber exposure method (method B). The test duration shall be 500 hours and the ozone concentration 50 PPHM. At the test completion, there shall be no visible crack under a 2 x magnification.

2.0 Tests on Accessories for Conductor

2.1 Mid Span Compression Joint for Conductor

(a) Slip Strength Test

The fitting compressed on conductor shall not be less than one metre in length. The test shall be carried out as per IS:2121 (Part-ii)-1981 clause 6-4 except that the load shall be steadily increased to 95% of minimum ultimate tensile strength of conductor/earthwire and retained for one minute at this load. There shall be no movement of the conductor/ earthwire relative to the fittings and no failure of the fittings during this one minute period.

2.2 Vibration Damper for Conductor

(a) Dynamic Characteristics, Test

The damper shall be mounted with its clamp tightened with torque recommended by the manufacturer on shaker table capable of simulating sinusoidal vibrations for aeolian vibration frequency band ranging from 5 to 40 Hz for damper for conductor. The damper assembly shall be vibrated vertically with a ± 1 mm amplitude from 5 to 15 Hz frequency and beyond 15 Hz at ± 0.5mm to determine following characteristics with the help of suitable recording instruments:

(i) Force Vs frequency

(ii) Phase angle Vs frequency

(iii) Power dissipation Vs frequency

The Force Vs frequency curve shall not show steep peaks at resonance frequencies and deep troughs between the resonance frequencies. The resonance frequencies shall be suitably spread within the aeolian vibration frequency-band between the lower and upper dangerous frequency limits determined by the vibration analysis of conductor without dampers.
Acceptance criteria for vibration damper.

(i) The above dynamic characteristics test on five damper shall be conducted.

(ii) The mean reactance and phase angle Vs frequency curves shall be drawn with the criteria of best fit method.

(iii) The above mean reactance response curve should lie within 0.191 f to 0.762 f Kgf/mm limits where f is frequency in Hz.

(iv) The above mean phase angle response curve shall be between 25° to 130° within the frequency range of interest.

(v) If the above curve lies within the envelope, the damper design shall be considered to have successfully met the requirement.

(vi) Visual resonance frequencies of each mass of damper is to be recorded and to be compared with the guaranteed values.

(b) Vibration Analysis

The vibration analysis of the conductor shall be done with and without damper installed on the span. The vibration analysis shall be done on a digital computer using energy balance approach. The following parameters shall be taken into account for the purpose of analysis:

(i) The analysis shall be done for single conductor without armour rods as per the parameters given in the Specification. The tension shall be taken from Sag & Tension calculation (0 deg. C & no wind condition and [ruling spanas per Annexure - 1] m) for a span ranging from 100 m to 1100.

(ii) The self damping factor and flexural stiffness (El) for conductor shall be calculated on the basis of experimental results. The details for experimental analysis with these data should be furnished.

(iii) The power dissipation curve obtained from Dynamic Characteristics Test shall be used for analysis with damper.
(iv) Examine the aeolian vibration level of the conductor with and without vibration damper installed at the recommended location or wind velocity ranging from 0 to 30 Km per hour, predicting amplitude, frequency and vibration energy input.

(v) From vibration analysis of conductor without damper, anti-node vibration amplitude and dynamic strain levels at clamped span extremities as well as antinodes shall be examined and thus lower and upper dangerous frequency limits between which the Aeolian vibration levels exceed the specified limits shall be determined.

(vi) From vibration analysis of conductor with damper/dampers installed at the recommended location, the dynamic strain level, at the clamped span extremities, damper attachment point and the antinodes on the conductor shall be determined. In addition to above damper clamp vibration amplitude and anti-node vibration amplitudes shall also be examined.

The dynamic strain levels at damper attachment points, clamped span extremities and antinodes shall not exceed the specified limits. The damper clamp vibration amplitude shall not be more than that of the specified fatigue limits.

(c) Clamp Slip and Fatigue Tests

(i) Test Set Up

The clamp slip and fatigue tests shall be conducted on a laboratory set up with a minimum effective span length of 30 m. The conductor shall be tensioned at tension corresponding to 0 deg & no wind condition and ruling span \[\text{ruling span as per Annexure - 1} \] from sag–tension calculation and shall not be equipped with protective armour rods at any point. Constant tension shall be maintained within the span by means of lever arm arrangement. After the conductor has been tensioned, clamps shall be installed to support the conductor at both ends and thus influence of connecting hardware fittings are eliminated from the free span. The clamps shall not be
used for holding the tension on the conductor. There shall be no loose parts, such as suspension clamps, U bolts on the test span supported between clamps mentioned above. The span shall be equipped with vibration inducing equipment suitable for producing steady standing vibration. The inducing equipment shall have facilities for stepless speed control as well as stepless amplitude arrangement. Equipment shall be available for measuring the frequency, cumulative number of cycles and amplitude of vibration at any point along the span.

(ii) Clamp Slip test

The vibration damper shall be installed on the test span. The damper clamp, after lightning with the manufacturer’s specified tightening torque, when subjected to a longitudinal pull of 2.5 kN parallel to the axis of conductor for a minimum duration of one minute shall not slip i.e. the permanent displacement between conductor and clamp measured after removal of the load shall not exceed 1.0 mm. The load shall be further increased till the clamp starts slipping. The load at which the clamp slips shall not be more than 5 kN.

(iii) Fatigue Test

The vibration damper shall be installed on the test span with the manufacturer’s specified tightening torque. It shall be ensured that the damper shall be kept minimum three loops away from the shaker to eliminate stray signals influencing damper movement.

The damper shall then be vibrated at the highest resonant frequency of each damper mass. For dampers involving resonant frequencies, tests shall be done at torsional modes also in addition to the highest resonant frequencies at vertical modes. The resonance frequency shall be identified as the frequency at which each damper mass vibrates with the maximum amplitude on itself. The amplitude of vibration of the damper clamp shall be maintained not less than $\pm 25/f$ mm, where $f$ is the frequency in Hz.

The test shall be conducted for minimum ten million cycles at each resonant frequency mentioned above. During the,
test if resonance shift is observed the test frequency shall be tuned to the new resonant frequency.

The clamp slip test as mentioned hereinabove shall be repeated after fatigue test without re-torquing or adjusting the damper clamp, and the clamp shall withstand a minimum load equal to 80% of the slip strength for a minimum duration of one minute.

After the above tests, the damper shall be removed from conductor and subjected to dynamic characteristics test. There shall not be any major deterioration in the characteristic of the damper. The damper then shall be cut open and inspected. There shall not be any broken, loose, or damaged part. There shall not be significant deterioration or wear of the damper. The conductor under clamp shall also be free from any damage.

For the purpose of acceptance, the following criteria shall be applied.

(1) There shall not be any frequency shift by more than ±2 Hz for frequencies lower than 15 Hz and ±3 Hz for frequencies higher than 15 Hz.

(2) The force response curve shall generally lie within guaranteed % variation in reactance after fatigue test in comparison with that before fatigue test by the Contractor.

(3) The power dissipation of the damper shall not be less than guaranteed % variation in power dissipation before fatigue test by the Contractor. However, it shall not be less than minimum power dissipation which shall be governed by lower limits of reactance and phase angle indicated in the envelope.

2.3 Corona Extinction Voltage Test (Dry)

The sample when subjected to power frequency voltage shall have a corona extinction voltage of not less than 154 kV rms line to ground under dry condition. There shall be no evidence of corona on any part of the sample. The atmospheric condition during testing shall be recorded and
the test results shall be accordingly corrected with suitable correction factor as stipulated in IS: 731- 1971.

2.4 **Radio Interference Voltage Test (Dry)**

Under the conditions as specified above, the sample shall have a radio interference voltage level below 1000 microvolts at one MHz when subjected to 50 Hz AC voltage of 154 kV rms line to ground under dry condition. The test procedure shall be in accordance with IS: 8263.

2.5 **Chemical Analysis Test**

Chemical analysis of the material used for manufacture of items shall be conducted to check the conformity of the same with Technical Specification and approved drawing.

3.0 **Tests on All components (As applicable)**

3.1 **Chemical Analysis of Zinc used for Galvanizing**

Samples taken from the zinc ingot shall be chemically analysed as per IS-209-1979. The purity of zinc shall not be less than 99.95%.

3.2 **Tests for Forgings**

The chemical analysis hardness tests and magnetic particle inspection for forgings, will be as per the internationally recognised procedures for these tests. The, sampling will be based on heat number and heat treatment batch. The details regarding test will be as discussed and mutually agreed to by the Contractor and Owner in Quality Assurance Programme.

3.3 **Tests on Castings**

The chemical analysis, mechanical and metallographic tests and magnetic particle inspection for castings will be as per the internationally recognised procedures for these tests. The samplings will be based on heat number and heat treatment batch. The details regarding test will be as discussed and mutually agreed to by the Contractor and Owner in Quality Assurance Programme.
ANNEXURE-B

Acceptance Tests

1. Mid Span Compression Joint for Conductor
   (a) Hardness Test
       The Brinnel hardness at various points on the steel sleeve of conductor core and tension clamp shall be measured.

2. Vibration Damper for Conductor
   (a) Verification of Resonance Frequencies
       The damper shall be mounted on a shaker table and vibrate at damper clamp displacement of +/-0.5 mm to determine the resonance frequencies. The resonance shall be visually identified as the frequency at which damper mass vibrates with maximum displacement on itself. The resonance frequency thus identified shall be compared with the guaranteed value. A tolerance of ±1 Hz at a frequency lower than 15 Hz and ±2 Hz at a frequency higher than 15 Hz only shall be allowed.
   (b) Clamp Slip Test
       Same as Clause 2.2 (c) (ii) of Annexure-A.
   (c) Clamp Bolt Torque Test
       The clamp shall be attached to a section of the conductor/earthwire. A torque of 150 percent of the manufacturer’s specified torque shall be applied to the bolt. There shall be no failure of component parts. The test set up is as described in Clause 2.2 (c) (i), Annexure-A.
   (d) Strength of the Messenger Cable
       The messenger cable shall be fixed in a suitable tensile testing machine and the tensile load shall be gradually applied until yield point is reached. Alternatively, each strand of messenger cable may be fixed in a suitable tensile testing machine and the tensile load shall be gradually applied until yield point is reached. In such a case, the 95% of yield strength of each wire shall be added to get the total strength of the cable. The load shall be not less than the value guaranteed by the Contractor
   (e) Mass Pull off Test
Each mass shall be pulled off in turn by fixing the mass in one jaw and the clamp in the other of a suitable tensile testing machine. The longitudinal pull shall be applied gradually until the mass begins to pull out of the messenger cable. The pull off loads shall not be less than the value guaranteed by the Contractor.

(f) Dynamic Characteristics Test

The test will be performed as acceptance test with the procedure mentioned for type test with sampling mentioned below

<table>
<thead>
<tr>
<th>Vibration Damper of conductor</th>
<th>1 Sample for 1 000 Nos. &amp; below</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 Samples for lot above 1 000 &amp; upto 5000 nos.</td>
</tr>
<tr>
<td></td>
<td>Additional 1 sample for every additional 1500 pieces above 5000.</td>
</tr>
</tbody>
</table>

The acceptance criteria will be as follows

(i) The above dynamic characteristics curve for reactance & phase angle will be done for frequency range of 5 Hz to 40 Hz.

(ii) If all the individual curve for dampers are within the envelope as already mentioned for type test for reactance & phase angle, the lot passes the test.

(iii) If individual results do not fall within the envelope, averaging of characteristics shall be done.

(a) Force of each damper corresponding to particular frequency shall be taken & average force of three dampers at the frequency calculated.

(b) Similar averaging shall be done for phase angle.

(c) Average force Vs frequency and average phase Vs frequency curves shall be plotted on graph paper. Curves of best fit shall be drawn for the entire frequency range.

(d) The above curves shall be within the envelope specified.
SECTION-IV

TECHNICAL SPECIFICATION

TOWER
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<td>3.0</td>
<td>Details of Transmission Towers in existing line</td>
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<tr>
<td>4.0</td>
<td>De-stringing&amp; Stringing of Conductor and Installation of Line Materials</td>
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</table>

Pre commissioning procedure for transmission line
1.0 Site Inspection

1.1 Site Inspection Report

1.1.1 The contractor shall visit the site to inspect the transmission line and collect observations/information which would be useful for restringing activity. Complete BOQ of the transmission lines for re-conductoring shall be furnished in the report.

1.1.1.1 All observations/ information which the Contractor thinks would be useful to implement the re-conductoring of the existing transmission line mentioned under scope of work are to be reported.

1.1.1.2 The detailed procedure for carrying out the re-conductoring shall be submitted to the site Engineer-in-charge before taking up the work.

1.1.1.3 Suggestions regarding location for setting up stores during line construction in consultation with Employer representative shall also be provided by the contractor.

1.1.1.4 Working months available during various seasons along the transmission line, with period, time of sowing & harvesting of different type of crops and the importance attached to the crops particularly in the context of way leave problems and compensation payable shall be stated by the Contractor.

1.1.1.5 Some portions of the line may require clearance from various authorities. The Contractor shall indicate the portion of the line so affected, the nature of clearance required and the name of concerned organizations such as local bodies, municipalities, P&T (name of circle), Inland navigation, Irrigation Department, Electricity Boards and Zonal railways, Divisional Forest Authorities etc.

1.1.1.6 All the requisite data for processing the case of statutory clearances such as PTCC, Forest and Railway shall be provided along with the report.

1.1.1.7 Six copies of survey reports shall be furnished by the contractor to the Employer.
2.0 Environmental Conditions

2.1 Forest
The line route passing through forest stretches if any shall be indicated to the successful Bidder.

2.2 General Climatic Conditions

Climatic conditions shall be of tropical nature having summer period for 8 months and winter period for 4 months in a year. Working season shall be approximately 9 months/year and balance 3 months shall be monsoon period. The maximum temperature during summer shall be of the order of 50°C and the minimum temperature in the winter shall be of the order of 4°C. Normal everyday temperature is 32°C.

2.3 Statutory Regulations and Standards

2.3.1 Statutory Regulations
The Contractor is required to follow local statutory regulations stipulated in Electricity (Supply) Act 1948, Indian Electricity Rules, 1956 as amended and other local rules and regulations referred in this Specifications.

2.3.2 Reference Standards
2.3.2.1 The Codes and/or standards referred to in the specifications shall govern, in all cases wherever such references are made. In case of a conflict between such codes and/or standards and the specifications, latter shall govern. Such codes and/or standards, referred to shall mean the latest revisions, amendments/changes adopted and published by the relevant agencies.
2.3.2.2 Other internationally accepted standards which ensure equal or better performance than those specified shall also be accepted, subject to prior approval by the Employer.

3.0 Details of Transmission Towers in existing line

3.1 General Description of the Tower
3.1.1 The towers are of the following types:
a) Double Circuit (DA, DB & DC)
3.1.2 The towers are of self supporting hot dip galvanised lattice steel type designed to carry the line conductors with necessary insulators, earthwires and all fittings under all loading conditions.

3.2 Type of Towers
3.2.1 The towers in the existing line are classified as given below:
<table>
<thead>
<tr>
<th>Type of Tower</th>
<th>Deviation Limit</th>
<th>Typical Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/DA</td>
<td>0 deg</td>
<td>i) Used as tangent tower.</td>
</tr>
<tr>
<td>B/DB</td>
<td>0 deg - 30 deg</td>
<td>i) Angle towers with tension insulator string. ii) Also to be used for Anti Cascading Condition</td>
</tr>
<tr>
<td></td>
<td>0 deg</td>
<td>i) Used as Section Tower.</td>
</tr>
<tr>
<td>C/DC</td>
<td>30 deg-60 deg</td>
<td>i) Angle tower with tension insulator string. ii) Also to be used for anti cascading condition. iii) Used for river crossing anchoring with longerwind span</td>
</tr>
<tr>
<td>C/DC</td>
<td>0 deg</td>
<td>i) Used as section tower. ii) Dead end with 0 deg. To 15 deg. Deviation both on line side and sub-station side (slack span)</td>
</tr>
</tbody>
</table>

**Note:** The above towers are also used for longer span with smaller angle of deviations.

3.2.2  **Extensions**

The towers are having 3M, 6M, 12 M and 15 M body extensions/leg extensions for maintaining adequate ground clearances without reducing the specified factor of safety in any manner.

3.3  **Span and clearances**

3.3.1  **Normal Span**

Ruling Design span for Narrow base tower is 225 meters and for Broad Base tower is 320 meters

3.3.2  **Wind Span**

The wind span is the sum of the two half spans adjacent to the support under consideration. For normal horizontal spans this equals to normal ruling span.

3.3.3  **Weight span**

The weight span is the horizontal distance between the lowest point of the conductors on the two spans adjacent to the tower.

3.4  **Electrical Clearances**

3.4.1  **Ground Clearance**
The minimum ground clearance from the bottom conductor is not be less than 7100 mm at the maximum sag conditions corresponding to maximum continuous operating temperature and still air.

4.0 De-stringing & Stringing of Conductor and Installation of Line Materials

4.1 General

4.1.1 The scope of erection work shall include the cost of all labour, tools and plant and all other incidental expenses in de-stringing and stringing work. The contractor shall have to destring the existing conductor and restrung with the HTLS conductor section wise and restore the line in original conditions as per program finalized in coordination with site. Destringing and stringing of the lines shall be carried out under induced voltage condition i.e. one circuit undercharged condition. Adequate safety measures and precautions shall be taken by the Contractor during this erection work.

4.1.2 The Contractor shall be responsible for transportation to site of all the materials to be provided by the Contractor as well as proper storage and preservation of the same at his own cost, till such time the erected line is taken over by the Employer. Similarly, the Contractor shall be responsible for proper storage, safe custody, and loss or damage of all Employer’s supplied items, if any, as well as its transportation to site for incorporation in the lines and shall maintain and render proper account of all such materials at all times.

4.1.3 Contractor shall set up required number of stores along the line and the exact location of such stores shall be discussed and agreed upon with the Employer.

4.1.4 The complete erection work including installation of line materials (insulator strings, hardware and accessories for conductor) shall be supervised by a team of supplier/Contractor’s engineers/supervisory staff/workmen already experienced in stringing work associated with the type of HTLS conductor being supplied. The contractor shall furnish experience details of the engineers/supervisory staff proposed to be deployed.

4.1.5 The scope of work of the contractor shall inter-alia include the following:-

i) De-stringing the existing conductor, dismantling of insulators/insulator strings, hardware fittings, and accessories for conductor etc.

ii) Disposing off of all the dismantled line materials recovered from the existing line.

iii) Installation of necessary hardware, hoisting of insulator strings, installing & stringing of HTLS conductor including fixing of conductor accessories. Corona
control rings/arcing horn shall be fitted in an approved manner. Torque wrench shall be used for fixing various line materials and components.

4.3 Handling of Conductor

4.3.1 Running Out of the Conductors

4.3.1.1 The conductors shall be run out of the drums form the top in order to avoid damage. The Contractor shall be entirely responsible for any damage to tower or conductors during stringing.

4.3.1.2 A suitable braking device shall be provided to avoid damaging, loose running out and kinking of the conductors. Care shall be taken that the conductors do not touch and rub against the ground or objects which could scratch or damage the strands.

4.3.1.3 The sequence of running out shall be from the top down. Unbalanced loads on towers shall be avoided as far as possible. Inner phase of line conductors shall be strung before the stringing of the outer phases is taken up.

4.3.1.4 Tower not designed for one sided stringing shall be well guyed and step taken by contractor to avoid damage. Guying proposal alongwith necessary calculation shall be submitted by the contractor to Employer for approval. All expenditure related to this work is deemed to be included in the bid price and no extra payment shall be made for the same.

4.3.1.5 The Contractor shall take adequate safety precautions to protect personnel; from the potentially dangerous voltage build up due to electromagnetic and electrostatic coupling in the pulling wire, conductors during destringing and stringing operations. These precautions includes measures taking in account the other circuit on the line under 220 kV line conditions.

4.3.1.6 The Contractor shall also take adequate a safety precaution to protect personnel from potentially dangerous voltage build up due to distant electrical storms/energized lines.

4.3.2 Running Blocks

4.3.2.1 The groove of the running blocks shall be of such a design that the seat is semicircular and larger than the diameter of the conductor and it does not slip over or rub against the slides. The grooves shall be lined with hard rubber or neoprene to avoid damage to conductor and shall be mounted on properly lubricated bearings.

4.3.2.2 The running blocks shall be suspended in a manner to suit the design of the cross-arm. All running blocks, especially at the tensioning end will be fitted on the
cross-arms with jute cloth wrapped over the steel work and under the slings to avoid damage to the slings as well as to the protective surface finish of the steel work.

4.3.3 Repairs to Conductors

4.3.3.1 The conductor shall be continuously observed for loose or broken strands or any other damage during the running out operations.

4.3.3.2 Repairs to conductor where no more than two strands in the outermost layer are broken shall be carried out with repair sleeve with approval of Engineer-Incharge.

4.3.3.3 Repairing of the conductor surface shall be carried out only in case of minor damage, scuff marks, etc. The final conductor surface shall be clean, smooth and free from projections, sharp points, cuts, abrasions, etc.

4.3.3.4 The Contractor shall be entirely responsible for any damage to the towers during stringing.

4.3.4 Crossings

Derricks or other equivalent methods ensuring that normal services need not be interrupted nor damage caused to property shall be used during stringing operations where roads, channels, telecommunication lines, power lines and railway lines have to be crossed. In case of railway crossings, shutdown might not be available and therefore, contractor shall be required to carry out reconductoring under such condition i.e. without any shutdown of railways. However, shut down shall be obtained when working at crossings of overhead power lines. The Contractor shall be entirely responsible for the proper handling of the conductor and accessories in the field.

4.4 Stringing of Conductor

4.4.1 The stringing of the HTLS conductor shall be done by the standard stringing method suitable for the type of HTLS conductor offered

4.4.1.1 The Contractor shall deploy appropriate tools/equipments/machinery to ensure that the stringing operation is carried out without causing damage to conductor and the conductor is installed at the prescribed sag tension as per the approved stringing chart. Prior to taking up stringing work the Contractor shall submit for approval of Site-In charge the complete details of stringing methods he propose to follow.

4.4.1.2 If any special tools and tackles other than those generally used for stringing of ACSR conductors are deployed for stringing of HTLS conductor by the contractor, a set of those tools & tackles shall be supplied by the contractor to the Employer, on
completion of the project, at no extra cost. The quantity of such tools & tackles shall be sufficient to carry out stringing operations of the longest section (from angle tower to angle tower) of the existing transmission line.

4.4.2 The contractor shall submit, for approval of site in-charge, the complete details of the stringing methods he proposes to follow. Prior to stringing the Contractor shall submit the stringing charts for the conductor showing the initial and final sags and tension for various temperatures and spans along with equivalent spans in the lines for the approval of the Employer.

4.4.3 Conductor creep are to be compensated by over tensioning the conductor at an appropriate temperature lower than the ambient temperature based on creep calculations to be furnished by the Contractor.

4.5 Jointing

4.5.1 When approaching the end of a drum length at least three coils shall be left in place when the stringing operations are stopped. These coils are to be removed carefully, and if another length is required to be run out, a joint shall be made as per the approved drawing and procedures recommended by the manufacturer of joints.

4.5.2 Conductor splices shall not crack or otherwise be susceptible to damage in the stringing operation. The Contractor shall use only such equipment/methods during conductor stringing which ensures complete compliance in this regard.

4.5.3 All the joints on the conductor shall be of the compression type, in accordance with the recommendations of the manufacturer, for which all necessary tools and equipment like compressors, dies etc., shall be obtained by the Contractor. Each part of the joint shall be cleaned by wire brush till it is free of dust or dirt etc., and be properly greased with anti-corrosive compound. If required and as recommended by the manufacturer, before the final compression is carried out with the compressors. For composite core HTLS conductor suitable sleeve, collets, collet housing shall be used for jointing of core as per the offered design and methodology applicable for similar type of design/application.

4.5.4 All the joints of splices shall be made at least 30 metres away from the tower structures. No joints or splices shall be made in spans crossing over main roads, railways and small river tension spans. Not more than one joint per subconductor per span shall be allowed. The compression type fittings shall be of the self-centering type or care shall be taken to mark the conductors to indicate when the fitting is centered properly. During compression or splicing operation; the conductor shall be handled in
such a manner as to prevent lateral or vertical bearing against the dies. After compressing the joint the aluminium sleeve shall have all corners rounded, burrs and sharp edges removed and smoothed.

4.5.5 During stringing of conductor to avoid any damage to the joint, the Contractor shall use a suitable protector for mid span compression joints in case they are to be passed over pulley blocks/aerial rollers. The pulley groove size shall be such that the joint along with protection can be passed over it smoothly.

4.6 Tensioning and Sagging Operations

4.6.1 The tensioning the sagging shall be done in accordance with the approved stringing charts or sag tables. The “initial” stringing chart shall be used for the conductor. The conductors shall be pulled up to the desired sag and left in running blocks for at least one hour after which the sag shall be rechecked and adjusted, if necessary, before transferring the conductors from the running blocks to the suspension clamps.

4.6.2 The sag will be checked in the first and the last section span for sections up to eight spans, and in one additional intermediate span for sections with more than eight spans. The sag shall also be checked when the conductors have been drawn up and transferred from running blocks to the insulator clamps.

4.6.3 The running blocks, when suspended from the transmission structure for sagging, shall be so adjusted that the conductors on running blocks will be at the same height as the suspension clamp to which it is to be secured.

4.6.4 At sharp vertical angles, conductor and earthwire sags and tensions shall be checked for equality on both sides of the angle and running block. The suspension insulator assemblies will normally assume verticality when the conductor is clamped.

4.6.5 Tensioning and sagging operations shall be carried out in calm whether when rapid changes in temperature are not likely to occur.

4.7 Clipping In

4.7.1 Clipping of the conductors into position shall be done in accordance with the manufacturer’s recommendations.

4.7.2 Jumpers at section and angle towers shall be formed to parabolic shape as per existing tower line diagrams to ensure minimum clearance requirements.

4.7.3 Fasteners in all fittings and accessories shall be secured in position. The security clip shall be properly opened and sprung into position.
4.8 Fixing of Conductors Accessories

Conductor accessories including spacers, spacer dampers (for bundle conductor) and vibration dampers shall be installed by the Contractor as per the design requirements and manufacturer’s instruction within 24 hours of the conductor clamping. While installing the conductor accessories, proper care shall be taken to ensure that the surfaces are clean and smooth and that no damage occurs to any part of the accessories or of the conductors. Torque wrench shall be used for fixing the Dampers/Spacer Dampers, Suspension Clamps etc. and torque recommended by the manufacturer of the same shall be applied.

4.9 Permitted Extra Consumption of Line Materials

4.9.1 Contractor supplied line materials viz. Conductor, insulators, associated fittings and accessories, the extra consumption on account of damage, loss and wastage etc. shall be to the Contractor's account.

4.9.2 The Contractor shall not be required to return to the Employer any balance empty conductor drums and shall dispose off the same at his cost.

4.9.3 The quantities of line materials to be supplied by the contractor (i.e. HTLS conductor and associated hardware fittings and accessories and composite insulators) as indicated in the Bill of materials are tentative. The actual quantities shall depend upon final inspection report & site requirements & shall also include reasonable quantity of spares (of the order of 2% approx.). Contractor shall be responsible for regulating the supplies of contractor supplied materials based on actual requirements. The Employer shall have right not to take any surplus contractor supplied materials.

4.10 Final checking, Testing and Commissioning

After completion of the works, final checking of the line shall be carried out by the Contractor to ensure that all stringing have been done strictly according to the specifications and as approved by the Employer. All the works shall be thoroughly inspected in order to ensure that:

a) The stringing of the conductors has been done as per the approved sag and tension charts and desired clearances are clearly available;

b) All conductor accessories are properly installed;
c) The original tracings of profile are submitted to the Employer for reference and record.

d) The insulation of the line as a whole is tested by the Supplier through provision of his own equipment, labour etc., to the satisfaction of the Employer.

e) The line is tested satisfactorily for commissioning purpose.

5.0 Field Quality Plan

All field activity shall be carried out in accordance with Standard Field Quality plan.

6.0 Standards

6.1 The design, manufacturing, fabrication, galvanising, erection procedure and materials used for manufacture and erection of assorted tower members shall conform to the following Indian Standards (IS)/International Standards which shall mean latest revisions, with amendments/changes adopted and published, unless specifically stated otherwise in the Specification. In the event of supply of material conforming to Standards other than specified, the Bidder shall confirm in his bid that these Standards are equivalent to those specified. In case of award, salient features of comparison between the Standards proposed by the Bidder and those specified in this document will be provided by the Contractor to establish their equivalence.

6.2 The material and services covered under these specifications shall be performed as per requirements of the relevant standard code referred hereinafter against each set of equipment and services. Other internationally acceptable standards which ensure equal or higher performance than those specified shall also be accepted.

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<th>Sl. No.</th>
<th>Indian Standard</th>
<th>Title</th>
<th>International Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>IS 278-1991</td>
<td>Galvanised Steel Barbed wire</td>
<td>ASTM A131</td>
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<td>3.</td>
<td>IS 800-1991</td>
<td>Code of Practice for General Building Construction in Steel</td>
<td>CSA 6.1</td>
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<td>Section-2 : Permissible stresses.</td>
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<td>----------------------------------</td>
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<td>5. IS:808-1991 Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle Sections.</td>
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<td>7. IS:1363-1990 Hexagon Nuts (size range M5 to M36)</td>
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<tr>
<td>10. IS:1573-1991 Electro-Plated Coatings of iron on iron and Steel IEEE 693</td>
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<td>11. IS:1852-1993 Rolling and Cutting Tolerances of Hot Rolled Steel Products</td>
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<td>14. IS:2062-1992 Steel for general structural purposes</td>
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<td>16. IS:2551-1990 Danger Notice Plates</td>
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<td>17. IS:2629-1990 Recommended Practice for Hot Dip Galvanising of iron and steel. ASTM A123 CSA G164</td>
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<td>21. IS:3757-1992 High Strength Structural Bolts</td>
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<td>22. IS:4759-1990 Specification for Hot zinc coatings on structural steel and other Allied products</td>
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<td>23. IS:5369-1991 General Requirements for Plain Washers</td>
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<td>27. IS:6639-1990 Hexagon Bolts for Steel Structure.</td>
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## STANDARD FIELD QUALITY PLAN
FOR TRANSMISSION LINE PACKAGE

**Section: ERECTION**

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<th>Sl. No.</th>
<th>Component/Operation &amp; Description of Test</th>
<th>Sampling Plan with basis</th>
<th>Ref. Document &amp; acceptance norm</th>
<th>Testing Agency</th>
<th>Remarks</th>
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<tr>
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<td>LINE STRINGING</td>
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<tr>
<td>A)</td>
<td>Insulator Checking</td>
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<tr>
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<td>Visual checking of Insulators</td>
<td>100%</td>
<td>IS:5613 &amp; DTL approved drawings/specification</td>
<td>Joint inspection by DTL and Contractor</td>
<td>Approval by DTL</td>
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<td></td>
<td>(Identification, cleanliness, glazing, cracks &amp; white spots)</td>
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<td>ii)</td>
<td>IR Measurement</td>
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<td>Joint inspection by DTL and Contractor</td>
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<td>C)</td>
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<td>100%</td>
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<td>Joint inspection by DTL and Contractor</td>
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<td>iii)</td>
<td>Drum rubbing against ground or any metal part</td>
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<tr>
<td>i)</td>
<td>Initial conductor position</td>
<td>Entire route</td>
<td>IS:5613 &amp; DTL approved SAG &amp; Tension Charts and Specifications</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Approval by DTL</td>
<td>B</td>
</tr>
<tr>
<td>ii)</td>
<td>Check for temperature</td>
<td>Entire route</td>
<td>IS:5613 &amp; DTL approved SAG &amp; Tension Charts and Specifications</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Approval by DTL</td>
<td>B</td>
</tr>
<tr>
<td>iii)</td>
<td>Final Conductor &amp; Earthwire position</td>
<td>Entire Route</td>
<td>IS:5613 &amp; DTL approved SAG &amp; Tension Charts and Specifications</td>
<td>Joint Inspection by DTL and Records to be kept duly signed by DTL</td>
<td>Approval by DTL</td>
<td>B</td>
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<tr>
<td>a)</td>
<td>Electrical Clearance</td>
<td>Contractor contractor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Sag/Tension for conductor &amp; earthwire</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>c)</td>
<td>Joints in conductor and earthwire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv)</td>
<td>Jumpering</td>
<td>Entire route</td>
<td>IS:5613 &amp; DTL approved SAG &amp; Tension Charts and Specifications</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Checklist to be prepared and signed jointly</td>
<td>B</td>
</tr>
<tr>
<td>v)</td>
<td>Fixing of pilot insulator string (if any)</td>
<td>Entire route</td>
<td>IS:5613 &amp; DTL approved SAG &amp; Tension Charts and Specifications</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Checklist to be prepared and signed jointly</td>
<td>B</td>
</tr>
<tr>
<td>2.</td>
<td>FINAL CHECKING</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Check for the completion of back-filling &amp; leftover materials</td>
<td>100%</td>
<td>IS:5613 &amp; DTL approved drawings/specification</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Checklist to be prepared and signed jointly</td>
<td>B</td>
</tr>
<tr>
<td>b)</td>
<td>Fixing of ACD &amp; all tower accessories</td>
<td>Entire route</td>
<td>IS:5613 &amp; DTL approved drawings/specification</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Checklist to be prepared and signed jointly</td>
<td>B</td>
</tr>
<tr>
<td>c)</td>
<td>Tightening, punching and tack welding of bolts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>d)</td>
<td>Final ground and electrical clearance</td>
<td></td>
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<td></td>
<td>A</td>
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<tr>
<td>e)</td>
<td>Earthing</td>
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<td></td>
<td>A</td>
</tr>
<tr>
<td>3.</td>
<td>MEGGER TEST</td>
<td>100%</td>
<td>DTL latest Pre-Commissioning Procedures</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Records to be kept duly signed by DTL and contractor</td>
<td>A</td>
</tr>
<tr>
<td>4.</td>
<td>FINAL TESTING &amp; PRE-COMMISSIONING ON LINE</td>
<td>100%</td>
<td>DTL latest Pre-Commissioning Procedures</td>
<td>Joint Inspection by DTL and Contractor</td>
<td>Records to be kept duly signed by DTL and contractor</td>
<td>A</td>
</tr>
</tbody>
</table>
SECTION-V

PRE-COMMISSIONING PROCEDURES

FOR TRANSMISSION LINES
INTRODUCTION

Over all procedure, safety rules, Statutory Requirements, dispatch procedures, switching sequences, observations, passing criteria and documentation of test results have been documented in this report.

The detailed inspection and handing over documents are required to be checked for the entire length of transmission line before energization.

The detailed inspection/test procedures for each activity has been elaborated in separate section of this documentation. The contents of this report are as following:

1. Definition
2. Overall Procedures
3. Safety procedures
4. Inspection
5. Statutory Requirements
6. Handing over
7. Protective system
8. Dispatch procedures
9. Switching procedures
10. Testing
11. Energization
12. De-energization
13. Observations and duration
14. Passing criteria
15. Documentation

1.0 DEFINITION

"Main Transmission Lines" means all high pressure cables and overhead lines (not being an essential part of the distribution system of a licensee) transmitting electricity from a generating station to another generating station or a sub-station, together with any step-up and step-down transformers, switch-gear and other works necessary to and used for the control of such cables or overhead lines, and such buildings or part thereof as may be required to accommodate such transformers, switch-gear and other works and the operating staff thereof;
"Power System" means a system under the control of the Government or any Board of Generating Company or other agency and having one or more-

i) generating station; or

ii) main transmission lines and sub-stations; or

iii) generating stations and main transmission lines and substations;

"Regional Electricity Board" means any of the Boards as constituted immediately before the commencement of the Electricity Laws (Amendment) Act, 1991, by resolution of the Central Government for ensuring integrated operation of constituent system in the region;

"Regional Load Dispatch Centre" means the Centre so designated where the operation of each of the Regional Electricity Grids constituting the country's power system is coordinated;

"Sub-Station" means a station for transforming or converting electricity for the transmission or distribution thereof and includes transformers, convertors, switch-gear, capacitors, synchronous condensers, structures cables and other appurtenant equipments and any buildings used for that purpose and the site thereof, a site intended to be used for any such purpose and any buildings used for housing the staff of the sub section;

"Tie-Line" means a line for the transfer of electricity between two power systems together with switchgear and other works necessary to, and used for the control of such line.

2.0 OVERALL PROCEDURE

First it is to be ascertained that the transmission line to be energized is ready for operation and has been properly handed over (released) in writing. This will include all safety aspects, Electrical inspector clearance, PTCC clearance, Statutory clearance, and final inspection, if any.

Instructions for the work and supervision is given by the test leader (Line in charge). However all switching and all operational activities will be executed by the regular operators.

Line charging instructions received from owner are clearly understood by the Line in charge and doubts, if any, are to be got clarified prior to the energisation of the line.

Once the line is handed over for charging no work shall be permitted without a valid WORKPERMIT.

When the whole system has been energized, including the AC line, it will be kept in this state for 8 hours or more for "soaking" with continuous inspection and monitoring. However recommendations of the owner may be checked. Otherwise it may be put into continuous operation.
3.0 SAFETY PROCEDURES

Energization implies an abrupt and serious change of the working conditions in the line.

In order to avoid serious accidents, thorough information must be imparted to all personnel involved in the construction of transmission line. Incharge of the Transmission line (Group head OR Divisional head) must ensure that due publicity has been made to the public in all the villages/areas along the line route cautioning them against climbing the towers etc. and that the line is proposed to be charged on so and so date. It is also to be confirmed that the AGENCIES involved in the construction activities shall not carry out any job on the said line without a valid WORK PERMIT.

It shall be ensured before charging that all men, material, Tools and plants and any temporary earthing on any part of the entire length of line are removed.

It must be ensured that any power supply / low voltage charging used as anti-theft measure must be disconnected and isolated to avoid accidental connection.

All equipment tests and pre-commissioning tests must have been completed, re-connected (in case cables were isolated for testing purpose) and documented.

The system must be formally declared ready for energization and handed over for operation in writing.

4.0 INSPECTION

Before the line is scheduled to be handed over for the pre-commissioning/energization the same shall be inspected by representatives of DTL and Construction Agency.

Such an inspection shall include:

i) Right of way/way leave/electrical clearance

ii) Foundation and Revetments/Protection Work

iii) Tower and Tower accessories

iv) Hardware Fittings

v) Insulators

vi) Conductors and Earthwire

vii) Accessories for conductor and Earthwire

viii) Aviation Warning Signals (Lights/globules/painting)

4.1 RIGHT OF WAY/WAY LEAVE/ELECTRICAL CLEARANCE

4.1.1 Right of way/Way leave clearance

Ensure that no tree/tree branches are falling within the zone of minimum clearance specified as per Fig. 1.
Guidelines of forest/environmental rules shall be followed to avoid excessive tree cutting i.e. all the trees should be cut from ROUTE level in the 3 meter corridor below each line Conductor/Earthwires. In the balance corridor, Trees branches are only to be lopped to attain the specified clearance as per Table no 1.

**TABLE NO. 1**

<table>
<thead>
<tr>
<th>TRANSMISSION VOLTAGE (IN KV)</th>
<th>MINIMUM RIGHT OF WAY (IN MTRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/132</td>
<td>22/27</td>
</tr>
<tr>
<td>220</td>
<td>35</td>
</tr>
<tr>
<td>400</td>
<td>52 (S/C)</td>
</tr>
<tr>
<td>400</td>
<td>46 (D/C)</td>
</tr>
<tr>
<td>+/- 800 kV HVDC</td>
<td>69</td>
</tr>
</tbody>
</table>

**4.1.2. Electrical Clearance**

In case of line crossings, clearance between lowest conductor of line and top conductor of the other line shall be adequate as follows:

(Minimum clearances in mm between lines when crossing each other)
Jumpers in the tension tower are properly intact with conductor and form a parabolic shape in order to achieve adequate clearance from super steel structure.

4.1.2.1. Ground clearance

Normally at the time of construction adequate clearance is provided between lowest conductor and ground, but due to delay in charging/commissioning there are chances of dumping/heaping soil, earth and concrete etc. or staking bricks etc. which may cause reduction in ground clearance. In such cases the stored materials shall be removed.

Ensure that there is no temporary or permanent construction of houses or shades below the line. If the same has been constructed they shall be removed before charging.

The various clearances are given below as guidance however all the clearances indicated by Approved Drawings are to be referred.

The round profile at the time of commissioning shall be checked with the profile approved at the time of check survey.

Ground clearance of lowest conductors at critical points/where ever the lowest conductor is touching the ground shall be checked in the field from any of the prevalent method and the values of ground clearance at these critical points shall be recorded in the prescribed format.

In case of hilly Terrain and for building clearance, the side clearance from conductors and jumpers at critical points shall also be checked and recorded for all phases of conductor/earthwire towards hill/ building side.

The permissible minimum ground clearances for different voltages are as given below

<table>
<thead>
<tr>
<th>TRANSMISSION VOLTAGE (IN KV)</th>
<th>GROUND CLEARANCE (MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/132</td>
<td>6100</td>
</tr>
<tr>
<td>220</td>
<td>7015</td>
</tr>
<tr>
<td>400</td>
<td>8840</td>
</tr>
<tr>
<td>+/- 800 kV HVDC</td>
<td>18000 for rural &amp; sub-urban areas &amp; 20000 for urban &amp; populated areas</td>
</tr>
</tbody>
</table>
4.1.2.2. Clearance for Telephone line crossings

The minimum clearances between the conductors of the power line and telecommunication lines are specified as follows:

<table>
<thead>
<tr>
<th>TRANSMISSION VOLTAGE (IN KV)</th>
<th>CLEARANCE (MM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/132</td>
<td>2745</td>
</tr>
<tr>
<td>220</td>
<td>3050</td>
</tr>
<tr>
<td>400</td>
<td>4880</td>
</tr>
<tr>
<td>+/- 800 kV HVDC</td>
<td>9040</td>
</tr>
</tbody>
</table>

The vertical clearances between conductors and between conductor and earth-wire shall be checked randomly say in any one span of all sections and 10 sections of hilly areas from single line diagram of the towers.

4.4. HARDWARE FITTINGS

Tightening of all bolts and nuts are to be checked up to specified torque.

Check the fixing of all security clips (W/R type clips).

Surface condition of corona control rings and distance/alignment between Tower side arcing horn (wherever applicable) and line side arcing horn/corona control ring to be checked as per approved drawings.

To restrict the swing of jumpers, the provision of Pilot strings in case of Tension Towers shall be verified from the approved drawings.

4.5 INSULATORS

All the damaged/broken insulator shall be replaced.

Unusual deflection in suspension strings if observed shall be rectified.

The insulators shall be cleaned before charging.

4.6. CONDUCTORS and EARTHWIRES

Surface Condition

Surface of the conductors shall be free from scratches/rubs

Ensure that conductor strands are not cut and opened up. Wherever strands are found cut/damaged/scratched, they must be repaired with repair sleeves/repair protective rods in case the nos. of damaged strands are within specified limits(normally up to 1/6th nos. of strands in the outer layer). ***
4.7. **ACCESSORIES FOR CONDUCTOR**

4.7.1. **Joints**

All joints on conductor shall be away from the tower at a distance of at least 30 metres or as provided in the Technical specification (TS).

Ensure that not more than one joint in a conductor is provided in one span or as per the provisions of technical specifications.

Ensure that no mid span joint is provided in major crossings for main roads, railway crossing and major rivers etc. or as per the provisions of technical specifications.

Ensure that all mid span joints on conductors and repair sleeves of compression type are free from sharp edges, rust and dust. Wherever grease are specified, the same shall be applied in the joints.

4.7.2. **Clipping**

Ensure that conductor is not over tightened in the suspension clamps.

4.7.3 **Spacers, vibration dampers and copper bonds**

Placement and no. of dampers on each phase shall be verified as per damper placement chart.

Spacing of Vibration dampers from the tower and spacing between damper to damper in case two Vibration Dampers (VD) were provided, shall be verified as per the damper placement chart. All loose/ displaced VD shall be properly tightened/relocated and missing VDs shall be provided.

To be ensured that no copper bond is loose/missing.

4.7.4 **Jumpers**

Verify Electrical clearance of jumpers to tower body as per design.

All the jumpers shall be checked properly. In case, jumpers (conductor/earthwire) is found loose, it shall be tightened sufficiently.

4.7.5 **Foreign material**

Ensure that all foreign materials viz dead bird, fallen tree branches, bird nests etc. on conductors, earthwires, Jumper, insulator string, cross arms are removed.

4.7.6. **Others**

It shall be ensured that all temporary/local earthing, guys, T & P (Tools and Plants), foreign material and other loose material which were used during stringing/tower erection have been removed.
In case there is any change in the ground profile before commissioning of line from the approved profile, the extra earth/obstruction /temporary sheds/any other construction shall be removed.

5.0 STATUTORY REQUIREMENT

5.1. The concerned authorities shall be informed before commissioning the lines and their approval obtained in accordance with Indian Electricity Act, 1910 and Indian Electricity Rule, 1956. and Electricity Act 2003.

5.2. Before charging of the line PTCC approval from P&T Dept. shall be obtained.

6.0 HANDING OVER

The transmission line shall be inspected prior to energization and a formal handing over document to be jointly signed by the representative of SUPPLIER (if available), ERECTION AGENCY, Delhi Transco Limited. However all contractual taking over has to be resolved separately as per the terms and conditions of the contract. The Handing over shall be limited to the completion of Erection and ready for Energization.

Any outstanding points or remaining activities are to be listed jointly by DELHI TRANSCO LIMITED and CONTRACTOR and signed jointly. This documents are also to be retained at Group Head Quarter with a copy to Regional Head Quarter. The remaining activities/outstanding points are classified in the following category.

Details of the SECTIONS :

A. List of outstanding activities remaining in any part of the line
B. A list of temporary arrangements introduced.
C. Check list records properly documented, completed and signed.
D. Original tracing of Profile, Route Alignment, Tower Design, Structural Drawings, Bill of Materials, Shop Drawings, Stringing charts (initial and final as applicable) etc. of all towers/line submitted to DELHI TRANSCO LIMITED.

With the outstanding activities mentioned above are solved or with only minor points without influence on the charging remain (minor issues handing over of the transmission line shall be accepted by the pre-commissioning team. This handing over for energization with or without remaining activities shall be made by the group head to the commissioning in charge in writing.

Shortcomings noticed during the inspection, "List of outstanding activities" shall be recorded and a copy of the format is to be given to the responsible parties like SUPPLIER(s) and ERECTION AGENCY etc. for corrective action to be taken on a time schedule.

7.0 PROTECTIVE SYSTEM

Before energization it must be ascertained that all protective systems for the unit to be energized are operative.
This includes confirmation that the protections have been properly tested and that the tests have been documented.

It also includes verification by inspection or otherwise, if necessary by repetition of trip test, that the protections are actually functionally enabled. This verification serves to prevent that energization takes place of a unit where a protection has been disabled for test or other reason.

8.0 DISPATCH PROCEDURES

All operational activities (switching etc.) must be coordinated and communicated with the system dispatcher.

In this respect the general procedures already established by DELHI TRANSCO LIMITED will be followed.

9.0 SWITCHING PROCEDURES

For each activity the instructions to the operators and the communications to the dispatchers will be made in writing or by confirmed telephone messages. The switching procedures first to be properly documented step by step and understood by everybody involved in the switching operation prior to the energization. Any clarification required in the procedures must be resolved. The format established by DELHI TRANSCO LIMITED for switching orders and operational data logging shall be followed.

The implication of this is that each and every activity must be listed and described, so that complete information is available for detail investigation, if required in future.

10.0 TESTING AND MEASUREMENT PROCEDURES

10.2.2 Conductor Continuity Test

10.2.2.1 The objective of this test is to verify that each conductor of the overhead line properly connected electrically (the value of electrical resistance of line does not vary abnormally from that of a continuous conductor of the same size and length). The electrical resistance of the conductor shall be measured with a Whetstone bridge or other suitable instrument, if available taking the safety aspects of Equipment as well as testing Engineer.

11.0 ENERGIZATION

Execution of the energization is simply the last event in the switching sequence, switching of the close control button for the relevant circuit breaker.
12.0 DE-ENERGIZATION

Instructions about de-energization will be given only if this is part of the test. Otherwise de-energization will be considered part of regular operation.

13.0 OBSERVATION AND DURATION

Visual and audible inspection (look and listen) of the relevant equipment and reading of permanent instrumentation will be made.

The system shall be charged at least for 8 hours. During this time continuous monitoring and inspection will be maintained in control room, auxiliary systems areas and switch yards.

This will include frequent, scheduled inspection of all equipment and reading of all permanent instruments and recorders, and surge arrester counters, especially system parameters as per standard procedures adopted by DELHI TRANSCO LIMITED.

14.0 PASSING CRITERIA

Neither insulation breakdown nor protective system actions must occur. No irregular equipment behaviour noise, vibration, high temperature is permitted.

Corona discharges may not be “unreasonable”. Local discharges that may be attributable to sharp points shall be carefully located and recorded. After termination of the energization the equipment shall be closely inspected and the points rounded or covered.

No unscheduled changes of system or of equipment is permitted during the 8 hour energized condition.

15.0 DOCUMENTATION

Switching and operational activities will be recorded in regular manner in the operators log. Likewise all readings of permanent instruments. Copies of this log, notes on special observations from inspections and other measurements will constitute the test records.

END
SECTION-VI

GENERAL TECHNICAL REQUIREMENTS (GTR)
SECTION-VI

GENERAL TECHNICAL REQUIREMENTS (GTR)

1.0 FOREWORD

1.1. The provisions under this section are intended to supplement general requirements for the materials, equipments and services covered under other sections of tender documents and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall prevail.

2.0 GENERAL REQUIREMENT

2.1. The bidders shall submit the technical requirements, data and information as per the technical data sheets provided in the Section-GTP of bid documents.

2.2. The bidders shall furnish catalogues, engineering data, technical information, design documents, drawings etc. fully in conformity with the technical specification.

2.3. It is recognised that the Contractor may have standarised on the use of certain components, materials, process or procedures different from those specified herein. Alternate proposals offering similar equipment based on the manufacturer’s standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Owner. Unless brought out clearly, the Bidder shall be deemed to conform to this specification scrupulously. All deviations from the specifications shall be clearly brought out in the respective “Schedule of Deviations” along with the bid. Any discrepancy between the specification and the catalogue or the bid, if not clearly brought out in “Schedule of Deviation”, will not be considered as valid deviation and the offer in such case shall be liable to be rejected outright without assigning any reasons thereof.

2.4. Wherever a material or article is specified or defined by the name of a particular Brand, Manufacturer or Vendor, the specific name mentioned shall be understood as establishing type, function and quality and not as limiting competition.

2.5. Equipment furnished shall be complete in every respect with all standard accessories normally provided with such equipment and/or needed for erection, completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the Technical Specifications unless included in the list of exclusions. Materials and components not specifically stated in the specification but which are necessary for commissioning and satisfactory operation of the transmission line unless specifically excluded shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost. All similar standard components/parts of similar standard equipment provided, shall be interchangeable with one another.

3.0 STANDARDS

3.1. The works covered by the specification shall be designed, engineered, manufactured, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.
3.2 The equipment to be furnished under this specification shall conform to latest issue with all amendments (as on the date of bid opening) of standards specified under Annexure-A of this section, unless specifically mentioned in the specification.

3.3 The Bidder shall note that standards mentioned in the specification are not mutually exclusive or complete in themselves, but intended to compliment each other.

3.4 The Contractor shall also note that list of standards presented in this specification is not complete. Whenever necessary the list of standards shall be considered in conjunction with specific IS/IEC.

3.5 When the specific requirements stipulated in the specifications exceed or differ than those required by the applicable standards, the stipulation of the specification shall take precedence.

3.6 Other internationally accepted standards which ensure equivalent or better performance than that specified in the standards specified under Annexure C/individual sections for various equipments shall also be accepted. However, the salient points of difference shall be clearly brought out in additional information along with English language version of such standard.

3.7 The bidder shall clearly indicate in his bid the specific standards in accordance with which the works will be carried out.

4.0 SERVICES TO BE PERFORMED BY THE EQUIPMENT BEING FURNISHED

4.1 All equipments shall also perform satisfactorily under various other electrical, electromechanical and meteorological conditions of the site of installation.

4.2 All equipment shall be able to withstand all external and internal mechanical, thermal and electromechanical forces due to various factors like wind load, temperature variation, ice & snow (wherever applicable) short circuit etc. for the equipment.

4.3 The bidder shall design terminal connectors of the equipment taking into account various forces that they are required to withstand.

4.4 The equipment shall also comply to the following:

a) All outdoor EHV equipments shall be suitable for hot line washing.

b) To facilitate erection of equipment, all items to be assembled at site shall be “match marked”.

5.0 ENGINEERING DATA AND DRAWINGS

5.1 The engineering data shall be furnished by the Contractor in accordance with the schedule for each set of equipment as specified in the Technical Specifications.
5.2 The list of drawings/documents which are to be submitted to the Owner shall be discussed and finalised by the Owner at the time of award. The Contractor shall necessarily submit all the drawings/documents unless anything is waived.

The Contractor shall submit 4 (four) sets of drawings/design documents/data/test reports as may be required for the approval of the owner.

5.3 DRAWINGS

5.3.1 All drawings submitted by the Contractor including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, material description, Bill of Materials, weight, length/height of each component, break-up for packing and shipment, dimensions, internal & the external connections, fixing arrangement required and any other information specifically requested in the specifications.

5.3.2 Each drawing submitted by the Contractor shall be clearly marked with the name of the Owner, the unit designation, the specifications title, the specification number and the name of the Project. If standard catalogue pages are submitted, the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

5.3.3 Further work by the Contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the Owner, if so required.

5.4 The review of these data by the Owner will cover only general conformance of the data to the specifications and documents, interfaces with the equipment provided under the specifications, external connections and of the dimensions. This review by the Owner may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. This review and/or approval by the Owner shall not be considered by the Contractor, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents.

5.5 All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the Contractor’s risk. The Contractor may make any changes in the design which are necessary to make the equipment conform to the provisions and intent of the Contract and such changes will again be subject to approval by the Owner. Approval of Contractor’s drawing or work by the Owner shall not relieve the contractor of any of his responsibilities and liabilities under the Contract.

5.6 All engineering data submitted by the Contractor after final process including review and approval by the Owner shall form part of the Contract Document and the entire works performed under these specifications shall be performed
in strict conformity, unless otherwise expressly requested by the Owner in Writing.

5.7 APPROVAL PROCEDURE

The scheduled dates for the submission of the drawings as well as for, any data/information to be furnished by the contractor would be discussed and finalised at the time of award. The following schedule shall be followed generally for approval and for providing final documentation.

i) Initial submission by the contractor As per agreed schedule

ii) Approval/comments/ by Owner on initial submission As per agreed schedule

iii) Resubmission (whenever Required) -As per agreed schedule

iv) Approval or comments -As per agreed schedule

v) Furnishing of distribution copies in bound volume (5 copies per transmission Line and one copy for Planning Deptt.) 2 weeks from the date of final approval

vi) Furnishing of distribution copies of test reports

(a) Type test reports (three copy per Transmission Line plus one copy for Planning Deptt.) 2 weeks from the date of final approval

(b) Routine Test Reports (four copy for each Transmission Line) -do-

vii) Furnishing of instruction/ operation manuals (4 copies per transmission Line and Two copies for Planning Deptt.) As per agreed schedule

viii) RTFs of drawings (one set per transmission Line and one set for Planning Deptt.) -do-

ix) As built drawings & RTFs On completion of entire
NOTE:
(1) The contractor may please note that all resubmissions must incorporate all comments given in the earlier submission by the owner or adequate justification for not incorporating the same must be submitted failing which the submission of documents is likely to be returned.

(2) The drawings which are required to be referred frequently during execution should be submitted on cloth lined paper. The list of such drawings shall be finalised with the Contractor at the time of Award.

(3) All major drawings should be submitted in latest Auto CAD Version or better.

(4) The instruction Manuals shall contain full details of drawings of all equipment being supplied under this contract, their exploded diagrams with complete instructions for storage, handling, erection, commissioning, testing, operation, trouble shooting, servicing procedures.

(5) If after the commissioning and initial operation of the transmission Line, the instruction manuals require any modifications, additions/changes, the same shall be incorporated and the updated final instruction manuals shall be submitted by the Contractor to the Owner.

5.8 The major drawing shall be submitted as per schedule finalised before award of contract. Some other drawings which are not indicated tender documents, but form an integral part of contract shall also be submitted.

6.0 MATERIAL/WORKMANSHP

6.1 General Requirement

6.1.1 Where the specification does not contain references to workmanship, equipment, materials and components of the covered equipment, it is essential that the same must be new, of highest grade of the best quality of their kind, conforming to best engineering practice and suitable for the purpose for which they are intended.

6.1.2 In case where the equipment, materials or components are indicated in the specification as “similar” to any special standard, the Owner shall decide upon the question of similarity. When required by the specification or when required by the Owner the Contractor shall submit, for approval, all the information concerning the materials or components to be used in manufacture. Machinery, equipment, materials and components supplied, installed or used without such approval shall run the risk of subsequent rejection, it being understood that the cost as well as the time delay associated with the rejection shall be borne by the Contractor.

6.1.3 The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of
time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety, subject to mutual agreements. All joints and fastenings shall be advised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfill their required function. In general, screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from the Owner.

6.1.4 Whenever possible, all similar part of the Works shall be made to gauge and shall also be made interchangeable with similar parts. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

6.1.5 All materials and equipment shall be installed in strict accordance with the manufacturer’s recommendations(s). Only first-class work in accordance with the best modern practices will be accepted. Installation shall be considered as being the erection of equipment as its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, levelling aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer’s tolerances, instructions and the Specification.

6.2 PROVISIONS FOR EXPOSURE TO HOT AND HUMID CLIMATE:
Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rain fall and environment favourable to the growth of fungi and mildew.

6.3 RATING PLATES, NAME PLATES AND LABELS
6.3.1 Each main and auxiliary item of transmission line is to have permanently attached to it in a conspicuous position a rating plate of non-corrosive material upon which is to be engraved manufacturer’s name, year of manufacture, equipment name, type or serial number together with details of the loading conditions under which the item of transmission line in question has been designed to operate, and such diagram plates as may be required by the Owner. The rating plate of each equipment shall be according to IEC requirement.

6.3.2 All such nameplates, instruction plates, rating plates of equipments shall be bilingual with Hindi inscription first followed by English. Alternatively two separate plates one with Hindi and the other with English inscriptions may be provided.

7.0 DESIGN IMPROVEMENTS/ COORDINATION
7.1 The bidder shall note that the equipment offered by him in the bid only shall be accepted for supply. However, the Owner or the Contractor may propose
changes in the specification of the equipment or quality thereof and if the Owner & contractor agree upon any such changes, the specification shall be modified accordingly.

7.2 If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the Contractor proceeds with the change. Following such agreement, the provision thereof, shall be deemed to have been amended accordingly.

7.3 The Contractor shall be responsible for the selection and design of appropriate equipments to provide the best co-ordinated performance of the entire system. The basic design requirements are detailed out in this Specification. The design of various components, subassemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

7.4 The Contractor has to coordinate designs and terminations with agencies (if any) who are Consultants/Contractor for the Owner. The names of agencies shall be intimated to the successful bidders.

7.5 The Contractor will be called upon to attend design co-ordination meetings with the Engineer, other Contractor’s and the Consultants of the Owner (if any) during the period of Contract. The Contractor shall attend such meetings at his own cost at New Delhi or at mutually agreed venue as and when required and fully cooperate with such persons and agencies involved during those discussions.

8.0 QUALITY ASSURANCE PROGRAMME

8.1 To ensure that the equipment and services under the scope of this Contract whether manufactured or performed within the Contractor’s Works or at his Sub-contractor’s premises or at the Owner’s site or at any other place of Work are in accordance with the specifications, the Contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be broadly outlined by the contractor and finalised after discussions before the award of contract. The detailed programme shall be submitted by the contractor after the award of contract and finally accepted by DTL after discussion. However, in case detailed valid programme approved by DTL for the equipment already exist, same would be followed till its validity. A quality assurance programe of the contractor shall generally cover the following:

(a) His organisation structure for the management and implementation of the proposed quality assurance programme;
(b) Documentation control system;
(c) Qualification data for bidder’s key personnel;
(d) The procedure for purchases of materials, parts components and selection of sub-Contractor’s services including vendor analysis, source inspection, incoming raw material inspection, verification of material purchases etc.
(e) System for shop manufacturing and site erection controls including process controls and fabrication and assembly control;
(f) Control of non-conforming items and system for corrective actions;
(g) Inspection and test procedure both for manufacture and field activities.
(h) Control of calibration and testing of measuring instruments and filed activities;
(i) System for indication and appraisal of inspection status;
(j) System for quality audits;
(k) System for authorising release of manufactured product to the Purchaser.
(l) System for maintenance of records;
(m) System for handling storage and delivery; and
(n) A quality plan detailing out the specific quality control measures and procedures adopted for controlling the quality characteristics relevant to each item of equipment furnished and/or services rendered. The Owner or his duly authorised representative reserves the right to carry out quality audit and quality surveillance of the system and procedure of the Contractor/his vendor’s quality management and control activities.

8.2 QUALITY ASSURANCE DOCUMENTS
The contractor would be required to submit all the Quality Assurance Documents as stipulated in the Quality Plan at the time of Owner’s inspection of equipment/material.

9.0 TYPE TESTING, INSPECTION, TESTING & INSPECTION CERTIFICATE

9.1 All equipment being supplied shall conform to type tests as per technical specification and shall be subject to routine tests in accordance with requirements stipulated under respective sections. Owner reserves the right to witness any or all the type tests. The Contractor shall intimate the Owner the detailed programme about the tests at least three (3) weeks in advance in case of domestic supplies & six (6) weeks in advance in case of foreign supplies.

9.2 The reports for all type tests and additional type test as per Technical Specification (relevant IS/ IEC) shall be furnished by the Contractor along with equipment / material drawings at the time of bid submission. The type tests conducted earlier should have either been conducted in accredited laboratory (accredited based on ISO/IEC Guide 25 / 17025 or EN 45001 by the national accreditation body of the country where laboratory is located) or witnessed by the representative(s) of DTL. The test reports submitted shall be of the tests conducted within last 5 (five) years prior to the date of bid opening. In case the test reports are of the test conducted earlier than 5 (five) years prior to the date of bid opening, the contractor shall repeat these test(s) at no extra cost to the Owner. In the event of any discrepancy in the test reports i.e. any test report not acceptable due to any design / manufacturing changes (including substitution of components) or due to non-compliance with the requirement stipulated in the Technical Specification or any/ all additional type tests not carried out, same shall be carried out without any
additional cost implication to the Owner, failing which the bid shall be rejected.

9.3 For major equipments, type test reports as per relevant standard shall be submitted for Owner’s approval.

9.4 The Owner, his duly authorised representative and/or outside inspection agency acting on behalf of the Owner shall have at all reasonable times free access to the Contractor’s/sub-vendors premises or Works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the Works during its manufacture or erection if part of the Works is being manufactured or assembled at other premises or works, the Contractor shall obtain for the Engineer and for his duly authorized representative permission to inspect as if the works were manufactured or assembled on the Contractor’s own premises or works. Inspection may be made at any stage of manufacture, despatch or at site at the option of the Owner and the equipment if found unsatisfactory due to bad workmanship or quality, material is liable to be rejected.

9.5 The Contractor shall give the Owner/Inspector fifteen (15) days written notice of any material being ready for joint testing including contractor and DTL. Such tests shall be to the Contractor’s account except for the expenses of the Inspector. The Owner / inspector, unless witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date if which the equipment is notified as being ready for test/inspection, failing which the Contractor may proceed alone with the test which shall be deemed to have been made in the Inspector’s presence and he shall forthwith forward to the Inspector duly certified copies of tests in triplicate.

9.6 The Owner or Inspector shall, within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Contractor, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The Contractor shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the Owner/Inspector giving reasons therein, that no modifications are necessary to comply with the Contract.

9.7 When the factory tests have been completed at the Contractor’s or Sub-Contractor’s works, the Owner/inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Owner /Inspector, the certificate shall be issued within fifteen (15) days of receipt of the Contractor’s Test certificate by the Engineer/Inspector. Failure of the Owner/Inspector to issue such a certificate shall not prevent the Contractor from proceeding with the Works. The completion of these tests or the issue of the certificate shall not bind the Owner to accept the equipment should, it, on furthr tests after erection, be found not to comply with the Contract. The equipment shall be dispatched to site only after approval of test reports and issuance of CIP by the Owner.
9.8 In all cases where the Contract provides for tests whether at the premises or at the works of the Contractor or of any Sub-Contractor, the Contractor except where otherwise specified shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Owner/Inspector or his authorised representative to carry out effectively such tests of the equipment in accordance with the Contract and shall given facilities to the Owner/Inspector or to his authorised representative to accomplish testing.

9.9 The inspection by Owner and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed quality assurance programme forming a part of the Contract.

9.10 The Owner will have the right of having at his own expenses may other test(s) of reasonable nature carried out at Contractor’s premises or at site or in any other place

In addition of aforesaid type and routine tests, to satisfy that the material comply with the specification.

9.11 The Owner reserves the right for getting any field tests not specified in respective sections of the technical specification conducted on the completely assembled equipment at site. The testing equipments for these tests shall be provided by the Owner.

10. TESTS

10.1 Pre-commissioning Tests

On completion of erection of the equipments/transmission line and before charging, each item of the equipment/transmission line shall be thoroughly cleaned and then inspected jointly by the Owner and the Contractor for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at Site. The list of pre-commissioning tests to be performed are given in respective chapters and shall be included in the Contractor’s quality assurance programme.

10.2 Commissioning Tests

10.2.1 The testing equipments required for testing and commissioning shall be arranged by the Contractor.

10.2.2 The specific tests requirement on equipment have been brought out in the respective chapters of the technical specification.

10.3 The Contractor shall be responsible for obtaining statutory clearances from the concerned authorities for commissioning the equipment and the transmission line. The owner will reimburse the requisite fee of Electrical Inspection only, as per actual, on production of requisite documents.
11.0 PACKAGING & PROTECTION

11.1 All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the Owner, the Contractor shall also submit packing details/associated drawing for any equipment/material under his scope of supply, to facilitate the owner to repack any equipment/material at a later date, in case the need arises. While packing all the materials, the limitation from the point of view of availability of Railway wagon sizes in India should be taken into account. The Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. Owner takes no responsibility of the availability of the wagons.

11.2 All coated surfaces shall be protected against abrasion, impact, discolouration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves and pipings and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage.

12.0 FINISHING OF METAL SURFACES

12.1 All metal surfaces shall be subjected to treatment for anti-coorosion protection. All ferrous surfaces for external use unless otherwise stated elsewhere in the specification or specifically agreed, shall be hot-dip galvanized after fabrication. High tensile steel nuts & bolts and spring washers shall be electro galvanized to service condition. All steel conductors including those used for earthing/grounding (above ground level) shall also be galvanized according to IS: 2629.

12.2 HOT DIP GALVANISING

12.2.1 The minimum weight of the zinc coating shall be 610 gm/sq. m and minimum thickness of coating shall be 85 microns for all items thicker than 6mm. For items lower than 6mm thickness requirement of coating thickness shall be as per relevant ASTM. For surface which shall be embedded in concrete, the zinc coating shall be 610 gm/sq.m minimum.

12.2.2 The galvanized surfaces shall consist of a continuous and uniform thick coating of zinc, firmly adhering to the surface of steel. The finished surface shall be clean and smooth and shall be free from defects like discoloured patches, bare spots, unevenness of coating, spelter which is loosely attached to the steel gloubles, spiky deposits, blistered surface, flaking or peeling off, etc. The presence of any of these defects noticed on visual or microscopic inspection shall render the material liable to rejection.

12.2.3 After galvanizing, no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing.
Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

12.2.4 The galvanized steel shall be subjected to six one minute dips in copper sulphate solution as per IS-2633.

12.2.5 Sharp edges with radii less than 2.5 mm shall be able to withstand four immersions of the Standard Preece test. All other coatings shall withstand six immersions. The following galvanizing tests should essentially be performed as per relevant Indian Standards.
- Coating thickness
- Uniformity of zinc
- Adhesion test
- Mass of zinc coating

12.2.6 Galvanized material must be transported to ensure that galvanized surfaces are not damaged during transit. Application of zinc rich paint at site shall not be allowed.

12.3 PAINTING

12.3.1 All sheet steel work shall be degreased, pickled, phosphated in accordance with the IS-6005 “Code of practice for phosphating iron and sheet”. All surfaces, which will not be easily accessible after shop assembly, shall beforehand be treated and protected for the life of the equipment. The surfaces, which are to be finished painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. Oil, grease, dirt and swarf shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.

12.3.2 After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute dichromate solution and oven drying. The phosphate coating shall be sealed with application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be “flash dried” while the second coat shall be stoved.

12.3.3 After application of the primer, two coats of finishing synthetic enamel paint shall be applied, each coat followed by stoving. The second finishing coat shall be applied after inspection of first coat of painting.

12.3.4 The extension colour of the paint shall be as per shade no: 697 (for outdoor) & 692 (for indoor) of IS-5. Each coat or primer and finishing paint shall be supplied for minor touchinup required at site after installation of the equipments.

12.3.5 In case the Bidder proposes to follow his own standard surface finish and protection procedures or any other established painting procedures, like electrostatic painting etc., the procedure shall be submitted alongwith the Bids for Owner’s review & approval.
13.0 HANDLING, STORING AND INSTALLATION

13.1 In accordance with the specific installation instructions as shown on manufacturer’s drawings or as directed by the Owner or his representative, the Contractor shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented. Commercial use of transmission line equipment means completion of all site tests specified and energisation at rated voltage.

13.2 Contractor may engage manufacturer’s Engineers to supervise the unloading, transportation to site, storing, testing and commissioning of the various equipment being procured by them separately. Contractor shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer’s supervisory Engineer(s) and shall extend full cooperation to them.

13.3 In case of any doubt/misunderstanding as to the correct interpretation of manufacturer’s drawings or instructions, necessary clarifications shall be obtained from the Owner. Contractor shall be held responsible for any damage to the equipment consequent to not following manufacturer’s drawings/instructions correctly.

13.4 Contractor shall be responsible for examining all the shipment and notify the Owner immediately of any damage, shortage, discrepancy etc. for the purpose of Owner’s information only. The Contractor shall submit to the Owner every week a report detailing all the receipts during the weeks. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at Site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor.

13.5 The Contractor shall be fully responsible for the equipment/material until the same is handed over to the Owner in an operating condition after commissioning. Contractor shall be responsible for the maintenance of the equipment/material while in storage as well as after erection until taken over by Owner, as well as protection of the same against theft, element of nature, corrosion, damages etc.

13.6 Where material / equipment is unloaded by Owner before the Contractor arrives at site or even when he is at site, Owner by right can hand over the same to Contractor and there upon it will be the responsibility of Contractor to store the material in an orderly and proper manner.

13.7 The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipment which require indoor storage.

13.8 The words ‘erection’ and ‘installation’ used in the specification are synonymous.
13.09 Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.

13.10 The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances as per relevant standard the Contractor shall immediately proceed to correct the discrepancy at his risks and cost.

14.0 TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly of the equipment.
LIST OF SPECIFICATIONS

GENERAL STANDARDS AND CODES

India Electricity Rules
Indian Electricity Act
Indian Electricity (Supply) Act
Indian Factories Act

IS-5 - Colors for Ready Mixed Paints and Enamels.
IS-335 - New Insulating Oils.
IS-617 - Aluminium and Aluminium Alloy Ingots and Castings for General Engineering Purposes

IS-1448 (P1 to P145) - Methods of Test for Petroleum and its Products.
IS-2071 (P1 to P3) - Methods of High Voltage Testing.
IS-12063 - Classification of degrees of protection provided by enclosures of electircal equipment.
IS-2165 -
P1:1997 - Insulation Coordination
P2:1983
IS-3043 - Code of Practice for Earthing
IS-6103 - Method of Test for Specific Resistance (Resistivity) of Electrical Insulating Liquids
IS-6104 - Method of Test for Interfacial Tension of Oil against Water by the Ring Method
IS-6262 - Method of test for Power factor & Dielectric Constant of Electrical Insulating Liquids.
IS-6792 - Method for determination of electric strength of insulating oils.
IS-8263 - Methods for Radio Interference Test on High Voltage Insulators.
IS-9224(Part 1,2&4) - Low Voltage Fuses
IEC-60060 (Part 1 to 4) - High Voltage Test Techniques
IEC 60068 - Environmental Test
IEC-60117 - Graphical Symbols
IEC-60270 - Partial Discharge Measurements.
IEC-60376 - Specification and Acceptance of New Sulphur Hexafluoride
IEC-60437 - Radio Interference Test on High Voltage Insulators.
IEC-60507 - Artificial Pollution Tests on High Voltage Insulators to be used on AC systems.
IEC-60694 - Common Specification for High Voltage Switchgear & Controlgear Standards.
IEC-60865 (P1 & P2) - Short Circuit Current – Calculation of effects.
ANSI-C.1/NFPA.70 - National Electrical Code
ANSI-C63.21 - Specification for Electromagnetic Noise and C63.3 - Field Strength Instrumentation 10 KHz to 1 GHZ
C36.4ANSI-C68.1 - Techniques for Dielectric Tests
ANSI-C76.1/EEE21 - Standard General Requirements and Test Procedure for Outdoor Apparatus Bushings.
ANSI-SI-4 - Specification for Sound Level Metres
ANSI-Y32-2/C337.2 - Drawing Symbols
ANSI-Z55.11 - Gray Finishes for Industrial Apparatus and Equipment No.61 Light Gray
NEMA-1071 - Methods of Measurements of RIV of High Voltage Apparatus
NEMA-ICS-II - General Standards for Industrial Control and Systems Part ICSI-109
CISPR-1 - Specification for CISPR Radio Interference Measuring Apparatus for the frequency range 0.15 MHz to 30 MHz
CSA-Z299.1-1978h - Quality Assurance Program Requirements
CSA-Z299.2-1979h - Quality Control Program Requirements
CSA-Z299.3-1979h - Quality Verification Program Requirement
CSA-Z299.4-1979h - Inspection Program Requirements

POLYMER INSULATOR
IEC:60383
IEC: 61109-2008

WIRES AND CABLES
ASTMD-2863 - Measuring the minimum oxygen concentration to support candle like combustion of plastics (oxygen index)
IS-694 - PVC insulated cables for working voltages upto and including 1100 Volts
IS-1255 - Code of practice for installation and maintenance of power cables, upto and including 33kV rating
IS-1554(P1 and P2) - PVC insulated (heavy duty) electric cables (part 1) for working voltage upto and including 1100 V
- Part (2) for working voltage from 3.3 kV upto and including 11kV
IS:1753 - Aluminium conductor for insulated cables
IS:2982 - Copper Conductor in insulated cables.
IS-3961(P1 to P5) - Recommended current ratings for cables
IS-3975 - Mild steel wires, formed wire and tapes for armouring of cables.
IS-5831 - PVC insulating and sheath of electric cables.
IS-6380 - Elastometric insulating and sheath of electric cables.
IS-7098 - Cross linked polyethylene insulated PVC sheathed cables for working voltage upto and including 1100 volts.
IS-7098 - Cross linked polyethylene insulated PVC sheathed cables for working voltage from 3.3 kV upto and including 33kV.
IS-8130 - Conductors for insulated electrical cables and flexible cords.
IS-1753  - Aluminum Conductors for insulated cables.
IS-10418 - Specification for drums for electric cables.
IEC-60096(Part 0 to p4) - Radio Frequency cables.
IEC-60183 - Guide to the Selection of High Voltage Cables.
IEC-60189(P1 to P7) - Low frequency cables and wires with PVC insulation and PVC sheath.
IEC-60227(P1 to P7) - Polyvinyl Chloride insulated cables of rated voltage up to and including 450/750V
IEC-60228 - Conductors of insulated cables
IEC-60230 - Impulse tests on cables and their accessories
IEC-60287(P1 to P3) - Calculation of the continuous current rating of cables (100% load factor).
IEC-60304 - Standard colours for insulation for low frequency cables and wires.
IEC-60331 - Fire resisting characteristics of Electric cables.
IEC-60332(P1 to P3) - Tests on electric cables under fire conditions.
IEC-60502 - Extruded solid dielectric insulated power cables for rated voltages from 1 kV upto to 30 kV
IEC-754 (P1 to P2) - Tests on gases evolved during combustion of electric cables.

GALVANIZING

IS-209  - Zinc Ingot
IS-2629 Recommended Practice for Hot-Dip galvanizing on iron and steel
IS-2633 - Methods for testing uniformity of coating of zinc coated articles
ASTM-A-123 - Specification for zinc (Hot Galvanizing) Coatings, on products Fabricated from rolled, pressed and forged steel shapes, plates bars and strips.
ASTM-A-121-77 - Zinc-coated (Galvanized) steel barbed wire

PAINTING

IS-6005 Code of practice for phosphating of iron and steel
ANSI-Z551 Gray finishes for industrial apparatus and equipment
SSPEC  - Steel structure painting council
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IS-7205 - Safety code for erection of structural steel work.
IS-9595 - Recommendations for metal are welding of carbon and carbon manganese steels.
ANSI-B18.2.1 - Inch series square and Hexagonal bolts and screws
ANSI-B18.2.2 - Square and hexagonal nuts
ANSI-G8.14 - Round head bolts
ASTM-A6 - Specification for General Requirements for rolled steel plates, shapes, sheet piling and bars of structural use
ASTM-A36 - Specifications of structural steel
ASTM-A47 - Specification for malleable iron castings
ASTM-A143 - Practice for safeguarding against embrilement of Hot Galvanized structural steel products and procedure for detaching embrilement
ASTM-A242 - Specification for high strength low alloy structural steel
ASTM-A283 - Specification for low and intermediate tensile strength carbon steel plates of structural quality
ASTM-A394 - Specification for Galvanized steel transmission tower bolts and nuts
ASTM-441 - Specification for High strength low alloy structural manganese vanadium steel.
ASTM-A572 - Specification for High strength low alloy columbium-Vanadium steel of structural quality
AWS D1-0 - Code for welding in building construction welding inspection
AWS D1-1 - Structural welding code
AISC - Manufactured graphite electrodes
NEMA-CGI - Manufactured graphite electrodes

OTHER CIVIL WORKS STANDARDS
IS-269 - 33 grade ordinary portland cement
IS2721 - Galvanized steel chain link fence fabric
| IS-278 | -Galvanized steel barbed wire for fencing |
| IS-383 | -Coarse and fine aggregates from natural sources for concrete. |
| IS-432(P1 and P2) | -Mild steel and medium tensile steel bars and hard-dawn steel wire for concrete reinforcement |
| IS-800 | -Code of practice for general construction in steel. |
| IS-806 | -Steel tubes for structural purposes. |
| IS-1172 | -Basic requirements for water supply, drainage and sanitation. |
| IS-1199 | -Methods of sampling and analysis of concrete. |
| IS-1742 | Code of Practice for Building drainage. |
| IS-1785 | -Plain hard-drawn steel wire for pre-stressed concrete. |
| IS-1786 | -High strength deformed Steel Bars and wires for concrete reinforcement. |
| IS-1811 | Methods of sampling Foundry sands. |
| IS-1893 | Criteria for earthquake resistant design of structures. |
| IS-2062 | Steel for general structural purposes. |
| IS-2064 | Selection, installation and maintenance of sanitary appliances code of practices. |
| IS-2065 | -Code of practice for water supply in buildings. |
| IS-2090 | -High tension steel bars used in prestressed concrete. |
| IS-2140 | -Standard Galvanized steel wire for fencing. |
| IS-2470(P1 & P2) | -Code of practice for installation of septic tanks. |
| IS-2514 | -Concrete vibrating tables. |
| IS-2645 | -Integral cement waterproofing compounds. |
| IS-3025(Part 1 to Part 48) | -Methods of sampling and test (Physical and chemical) for water and waste water. |
| IS-4091 | -Code of practice for design and construction of foundations for transmission line towers and poles. |
IS-4111(P 1 to P5) -Code of practice for ancillary structures in sewerage system.
IS-4990 -Plywood for concrete shuttering work.
IS-5600 -Sewage and drainage pumps.

GALVANISED STEEL EARTHWIRE
IS:1778 Reels and drums for Bare Conductors
IS:2629 Recommended practice for Hot Dip Galvanising on Iron and Steel.
IS:2633 Methods for testing Uniformity of Coating of Zinc Coated Articles
IS:4826 Hot dip Galvanised Coatings ASTM:A 475-72a on Round Steel Wires BS:443-1969
IS:209 Zinc ingot BS:3463-1961

CONDUITS, ACCESSORIES AND JUNCTION BOXES
(1) IS:9537 Rigid steel conduits for electric wiring
(2)IS:3480 Flexible steel conduits for electrical wiring
(3)IS:2667 Fittings for rigid steel conduits for electrical wiring.
(4)IS:3837 Accessories for rigid steel conduits for electrical wiring
(5)IS:4649 Adaptors for flexible steel conduits.
(6)IS:5133 Steel land Cast Iron Boxes
(7)IS:2629 Hot dip galvanising of Iron & Steel.
SECTION-VII

GENERAL TECHNICAL PARTICULAR
(GTP)
### Guaranteed Technical Particulars

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<tr>
<td></td>
<td>a) Type of Aluminum alloy</td>
<td></td>
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<tr>
<td></td>
<td>b) Minimum purity of aluminum</td>
<td>%</td>
<td></td>
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<tr>
<td></td>
<td>c) Maximum Copper content</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Zirconium content</td>
<td>%</td>
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</tr>
<tr>
<td></td>
<td>i) Maximum</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii) Minimum</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e) Other elements</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i)</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii)</td>
<td>%</td>
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</tr>
<tr>
<td></td>
<td>iii)</td>
<td>%</td>
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</tr>
<tr>
<td></td>
<td>iv)</td>
<td>%</td>
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<tr>
<td>3.2</td>
<td>Inner Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Material of core</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Chemical composition of core</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i)</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii)</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii)</td>
<td>%</td>
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</tr>
<tr>
<td></td>
<td>iv)</td>
<td>%</td>
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</tr>
<tr>
<td></td>
<td>v)</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vi)</td>
<td>%</td>
<td></td>
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<tr>
<td>3.3</td>
<td>Zinc used for galvanization of inner core (if applicable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Minimum purity of zinc</td>
<td>%</td>
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<td>4.</td>
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**GUARANTEED TECHNICAL PARTICULARS OF HTLS CONDUCTOR**

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<td>4.2</td>
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<tr>
<td></td>
<td>a) Nominal</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Maximum</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Minimum</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>4.3</td>
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<td>kN</td>
<td></td>
</tr>
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<td>a) Before stranding</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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<tr>
<td>4.4</td>
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<td>Ohm</td>
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<td>5</td>
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<td>5.1</td>
<td>Number of layers in inner core</td>
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<tr>
<td>5.2</td>
<td>Diameter</td>
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</tr>
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<td></td>
<td>a) Nominal</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Maximum</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Minimum</td>
<td>mm</td>
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</tr>
<tr>
<td>5.3</td>
<td>Minimum Breaking load of strand/Core</td>
<td>kN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Before stranding</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>b) After stranding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Galvanising (if applicable)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a) Minimum mass of zinc coating per sqm. Of uncoated wire surface.</td>
<td>gm</td>
<td></td>
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<tr>
<td></td>
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<td></td>
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<td></td>
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<td>Nos.</td>
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<td>6</td>
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<td>kN</td>
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# GUARANTEED TECHNICAL PARTICULARS OF HTLS CONDUCTOR

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<td>6.2</td>
<td>Lay ratio of conductor</td>
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<tr>
<td></td>
<td>a) 1st layer (outer most layer)</td>
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<tr>
<td></td>
<td>b) 2nd Layer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) 3rd Layer</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>d) 4th Layer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e) 5th Layer</td>
<td></td>
<td></td>
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<td>6.3</td>
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<td>kV (rms)</td>
<td></td>
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<td></td>
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<td></td>
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<td>Deg C</td>
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<td>6.9</td>
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<td></td>
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<td></td>
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<td>6.11</td>
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<td>6.12</td>
<td>Details of Creep characteristic for HTLS conductor enclosed (as per Clause 1.4.3 of the Technical Specification)</td>
<td>Yes/No</td>
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<td>6.13</td>
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<td></td>
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<tr>
<td>6.13.1</td>
<td>Sag Tension Calculation enclosed (clause 1.4.1 of TS)</td>
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<td>6.13.2</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>i) Tension at 32 deg. C &amp; full wind pressure</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>kg</td>
<td></td>
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<td>Tolerance on standard length of conductor</td>
<td>%</td>
<td></td>
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<td>Direction of lay for outside layer</td>
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<td>6.15</td>
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<td></td>
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<tr>
<td></td>
<td>a) Standard</td>
<td></td>
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<td></td>
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<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>b) Minimum c) Maximum</td>
<td>Kg/km Kg/km Kg/km</td>
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<tr>
<td>6.16 Standard length of conductor</td>
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<td>M</td>
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<tr>
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<td></td>
<td>M</td>
<td></td>
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<tr>
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<td>Yes/No</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Nos.</td>
<td></td>
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<td>Address of Manufacturer</td>
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<td>………………</td>
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<td>………………</td>
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<td>6.</td>
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<tr>
<td></td>
<td>a) No. of rods per set</td>
<td>No.</td>
<td>………………</td>
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<tr>
<td></td>
<td>b) Direction of lay</td>
<td></td>
<td>………………</td>
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<tr>
<td></td>
<td>c) Overall length after fitting on conductor</td>
<td>mm</td>
<td>………………</td>
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<tr>
<td></td>
<td>d) Actual length of each rod along its helix</td>
<td>mm</td>
<td>………………</td>
</tr>
<tr>
<td></td>
<td>e) Diameter of each rod</td>
<td>mm</td>
<td>………………</td>
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<tr>
<td></td>
<td>f) Tolerance in</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>i) Diameter of each rod</td>
<td>±mm</td>
<td>………………</td>
</tr>
<tr>
<td></td>
<td>ii) Length of each rod</td>
<td>±mm</td>
<td>………………</td>
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<tr>
<td></td>
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<td>±mm</td>
<td>………………</td>
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<tr>
<td></td>
<td>g) Type of Aluminium alloy used for manufacture of PA rod set</td>
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<td>………………</td>
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<tr>
<td>h)</td>
<td>UTS of each rod</td>
<td>Kg/m²</td>
<td>………………</td>
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<td>7.</td>
<td>Particulars of Elastomer (For AGS Clamp only)</td>
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<td>a)</td>
<td>Supplier of elastomer</td>
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<td>b)</td>
<td>Type of elastomer</td>
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<td>………………</td>
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<td>c)</td>
<td>Shore hardness of elastomer</td>
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<tr>
<td>d)</td>
<td>Temperature range for which elastomer is designed</td>
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<td>………………</td>
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<tr>
<td>e)</td>
<td>Moulded on insert</td>
<td>Yes/No</td>
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<td>8.</td>
<td>UTS of suspension clamp</td>
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<td>Yes/No</td>
</tr>
<tr>
<td>9.</td>
<td>Purity of Zinc used for galvanising</td>
<td>%</td>
<td>………………</td>
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<tr>
<td>10.</td>
<td>Min. No. of dips in standard preece test the ferrous parts can withstand</td>
<td>No</td>
<td>………………</td>
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<td>11.</td>
<td>Minimum corona extinction voltage under dry condition</td>
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<td>12.</td>
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<td>13.</td>
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<tr>
<td>i)</td>
<td>Clamp body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii)</td>
<td>Standard/AGS preformed rods</td>
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### GUARANTEED TECHNICAL PARTICULARS OF TENSION HARDWARE FITTINGS

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<td>3.</td>
<td>Drawing enclosed</td>
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<td>Yes/ No</td>
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<tr>
<td>4.</td>
<td>Purity of aluminum used for aluminum sleeve</td>
<td>%</td>
<td>………………</td>
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<td>5.</td>
<td>Material for steel sleeve</td>
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<tr>
<td></td>
<td>(i) Type of material with chemical composition</td>
<td></td>
<td>………………</td>
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<td></td>
<td>(ii) Range of Hardness of material (Brinnel Hardness)</td>
<td>BHN</td>
<td>From ……to ………</td>
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<tr>
<td></td>
<td>(iii) Weight of zinc coating</td>
<td>gm/m²</td>
<td>………………</td>
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<tr>
<td>6.</td>
<td><strong>Outside</strong> diameter of sleeve before compression</td>
<td>mm</td>
<td>………………</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Inside</strong> diameter of sleeve before compression</td>
<td>mm</td>
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<td>Dimensions of sleeve <strong>after</strong> compression</td>
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<td>(a) Corner to Corner</td>
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<td>(b) Surface to Surface</td>
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<td>Length of sleeve <strong>after</strong> compression</td>
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<td><strong>Weight of sleeve</strong></td>
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<td></td>
<td>(a) Aluminium/ aluminum Alloy</td>
<td>kg</td>
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<td></td>
<td>(b) Steel</td>
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DTL/GTP of HTLS Conductor & Accessories
## GUARANTEED TECHNICAL PARTICULARS OF TENSION HARDWARE FITTINGS

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<td>(c) Total</td>
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<td>Electrical resistance of dead end assembly as a percentage of equivalent length of Conductor</td>
<td>%</td>
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<td>Slip strength of dead end assembly</td>
<td>kN</td>
<td>............</td>
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<td>UTS of dead end assembly</td>
<td>kN</td>
<td>..........</td>
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<td>Purity of Zinc used for galvanising</td>
<td>%</td>
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<td>Min. No. of dips in standard preece test the ferrous parts can withstand.</td>
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<td>Minimum corona extinction voltage under dry condition</td>
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<td>19.</td>
<td>Radio interference voltage at 1 Mhz for phase to earth voltage of 154 kV (dry condition)</td>
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GUARANTEED TECHNICAL PARTICULARS OF MID SPAN COMPRESSION JOINT FOR HTLS CONDUCTOR

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<td>12.</td>
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<td>(b) Steel</td>
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GUARANTEED TECHNICAL PARTICULARS OF MID SPAN COMPRESSION JOINT FOR HTLS CONDUCTOR

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<td>kN</td>
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<td>Resistance of the compressed unit expressed, as percentage of the resistivity of equivalent length of bare conductor.</td>
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<td>Minimum Corona extinction voltage under dry condition</td>
<td>kV (rms)</td>
<td>…………</td>
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<tr>
<td>16</td>
<td>Radio interference voltage at 1 MHz for phase to earth voltage of 154 kV under dry condition</td>
<td>Microvolt</td>
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<td>17</td>
<td>Maximum permissible continuous operating temperature of mid span compression joint</td>
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GUARANTEED TECHNICAL PARTICULARS OF REPAIR SLEEVE FOR HTLS CONDUCTOR

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<td>3.</td>
<td>Drawing enclosed</td>
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<td>Yes/No</td>
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<td>4.</td>
<td>Suitable for conductor size</td>
<td>mm</td>
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<td>5.</td>
<td>Purity of Aluminium / Al Alloy type</td>
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<td>Dimension of sleeve before compression</td>
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<td>i) Inside diameter of sleeve</td>
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<td>ii) Outside dimensions of sleeve</td>
<td>mm</td>
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<td>iii) Length of sleeve</td>
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<td>Dimension of sleeve after compression</td>
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<tr>
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<td>i) Corner to Corner</td>
<td>mm</td>
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<td>ii) Surface to Surface</td>
<td>mm</td>
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<td>iii) Length of sleeve</td>
<td>mm</td>
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<td>Weight of sleeve</td>
<td>Kg</td>
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<td>9.</td>
<td>Minimum Corona extinction voltage under dry condition</td>
<td>kV (rms)</td>
<td>………………….</td>
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<td>Radio interference voltage at 1 MHz for phase to earth voltage of 154 kV dry condition</td>
<td>µV</td>
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<td>Maximum permissible continuous operating temperature of Repair Sleeve</td>
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NOTE: Tolerances, wherever applicable, shall also be specified.
GUARANTEED TECHNICAL PARTICULARS OF VIBRATION DAMPER FOR HTLS CONDUCTOR

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<td>3.</td>
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<td>(a) Design Drawing</td>
<td>YES / NO</td>
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<td></td>
</tr>
<tr>
<td>(b) Placement Chart</td>
<td>YES / NO</td>
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<td>4.</td>
<td>Suitable for conductor size</td>
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<td>Total weight of one damper</td>
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<td>Diameter of each damper mass</td>
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<td>Length of each damper mass</td>
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<td>Weight of each damper mass</td>
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<td>Material of damper masses</td>
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<td>Material of clamp</td>
<td></td>
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<td>Material of the stranded messenger cable</td>
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<td>Number of strands in stranded messenger cable</td>
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<td>13.</td>
<td>Lay ratio of stranded messenger cable</td>
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<td>Minimum ultimate tensile strength of stranded messenger cable</td>
<td>Kg/mm²</td>
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<td>Slip strength of stranded messenger cable (mass pull off)</td>
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### GUARANTEED TECHNICAL PARTICULARS OF VIBRATION DAMPER FOR HTLS CONDUCTOR

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<td>(b) Second frequency</td>
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<td>Designed clamping torque</td>
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<td>Slipping strength of damper clamp</td>
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<td>(a) Before fatigue test</td>
<td>kN</td>
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<td>(b) After fatigue test</td>
<td>kN</td>
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<td>Minimum corona Extinction voltage kV (rms) under dry condition</td>
<td>kV</td>
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<td>Radio Interference Voltage at 1 MHz for phase to earth voltage of 154 kV (rms) Microvolts under dry condition</td>
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<td>Percentage variation in reactance after fatigue test in comparison with that before fatigue test</td>
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<td>24</td>
<td>Percentage variation in power dissipation after fatigue test in comparison with that before fatigue test</td>
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NOTE: Tolerances, wherever applicable, shall also be specified.
SECTION-VIII
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<th>Tower Base</th>
<th>Distance</th>
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**Situation of bay at Gopal pur Ckt I-II**
Bay No: 4 & 2
Right & left side

**Situation of bay at Mandola Ckt I-II**
Bay No: 4 & 3
Left & Rightside

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**G.Gpl**

Date of Energization : 1975
Total Line length : 22.64 Km

**Tension**

1,2,9,17,18,19,21,24,32,33,34,35,36,38,39,40,48,49,69,72N, 78,79,80,81,82,83,84,85,86
= 29

**Suspends:**

3,4,5,6,7,8,10,11,12,13,14,15,16,22,23,25,26,27,28,29,30,31,37,286-292, 295-313, 315-322 + JCT(19 & 20)
= 58

**Pase position**

Ckt-I Top- B Bottom-R
Ckt-II Top- R Bottom-B

**Eart wire:** G.I 19/2.5

**No. of disc**

Tension-16 Susp-15

**Situation of bay at Mandola Ckt I-II**
Bay No: 4 & 3
Left & Rightside

**Total tower:** 87 Nos
Bidding Documents

For


Volume – III

Bid Form, Attachments & Price Schedules

Tender No: T18P080211
VOLUME-III

BID FORM, ATTACHMENTS & PRICE SCHEDULES

Section - I  Bid Form

Section - II  Attachments

Section -III  Price Schedule
SECTION-I

BID FORM
**SECTION: I**

**BID FORMS**

Bid Proposal Ref. No………………………   Date: ………………


To,

Delhi Transco Limited
Shakti Sadan, Kotla Road
New Delhi – 110002

Ladies and Gentlemen,

1.0 Having examined the Bidding Documents, including Amendment Nos. ______________(Insert Numbers) dated ………………… the receipt of which is hereby acknowledged, we the undersigned, offer to design, engineering, manufacture, test, deliver, install and commission (including carrying out Performance & Guarantee Test) the Facilities under the above-named package in full conformity with the said Bidding Documents for the sum of :

(Amount of Indian Rupees in Words)

(Amount in Figures)

or such other sums as may be determined in accordance with the terms and conditions of the Bidding Documents.

“Note: Being a Two Part tender, bidders are required to submit the Bid Forms in Part –I as well as in Part-II. However, the prices shall be quoted only in the Bid Form to be submitted with Price Bid Part -II.”

2.0 **ATTACHMENTS TO THE BID FORM**

In line with the requirement of the Bidding Documents, we enclose herewith the following Attachments to the Bid Form :

**(a) Attachment 1:**  Bid Security in the form of ………………….* for a sum of …………………………… (name of currency and amount in words and figures) initially valid for a period of two hundred twenty-five (225) days from the date set for opening of bids.

* Please fill in the alternative chosen in line with 12.2 Section-ITB, Vol.-I, of the Bidding Documents

**(b) Attachment 2:**  A power of attorney duly authorized by a Notary Public indicating that the person(s) signing the bid have the authority to sign the bid and thus that the bid is binding upon us during the full period of its validity in accordance with the ITB Clause 13.
The documentary evidence that we are eligible to bid in accordance with ITB Clause 1 and in Clause 8.3 (c) & (e) ITB are qualified to perform the contract if our bid is accepted. The qualification data has been furnished as per your format enclosed with the bidding documents. * Further, the required deed of Joint Venture Agreement signed by us and our Partners has also been furnished as per your format.

* Delete if not applicable

The documentary evidence establishing in accordance with ITB Clause 1, Vol.-I of the Bidding Documents that the facility offered by us are eligible facilities and conform to the Bidding Documents has been furnished as Attachment 4. Moreover, a list of Special Tools & Tackles to be furnished by us, the cost of which is included in our Bid Price, is also enclosed as per your format as Attachment 4A.

The details of all major items of services or supply which we propose subletting in case of award, giving details of the name and nationality of the proposed subcontractor/sub-vendor for each item.

The variation and deviations from the requirements of the Conditions of Contract, ITB and other commercial conditions. Technical Specification and Drawings (excluding critical provisions as mentioned at clause 6.0 below) in your format enclosed with the Bidding Documents, including, inter alia, the cost of withdrawal of the variations and deviations indicated therein.

The variation and deviations from the requirements of the CC clauses mentioned in ITB Clause 21.4.1 in your format enclosed with the Bidding Documents, including, inter alia, the cost of withdrawal of the variations and deviations indicated therein.

The details of Alternative Bid made by us indicating the complete Technical Specifications, the Bid price for the Alternative Bid and the deviation to contractual and commercial conditions.

Not applicable.

Work Completion Schedule.

Guarantee Declaration.

Information regarding ex-employees of DTL in our firm.

Unequivocal consent of the proposed Indian Associate for the purpose of executing the ‘Second Contract' and/or 'Third Contract' as an independent Contractor (Applicable to Foreign Bidders).

Capacity and Experience of Proposed Indian Associate (Applicable to Foreign Bidders).
(o) Attachment 14: Integrity Pact, in a separate envelope duly signed on each page by the person signing the bid

(p) Attachment 15: Indemnity Bond

(q) Attachment 16: Checklist

3.0 **PRICE SCHEDULES**

3.1 In line with the requirements of the Bidding documents, we enclose herewith the following Price Schedules, duly filled - in as per your proforma:

Schedule 1 : Price break-up Plant and Equipment (including Mandatory Spares Parts) to be supplied from Abroad including Type Test charges for Type Test to be conducted Abroad.

Schedule 2 : Price break-up of Plant and Equipment (including Mandatory Spares Parts) to be supplied from India including Type Test charges for Type Test to be conducted in India.

Schedule 3 : Break-up of Local Transportation, Insurance and other Incidental Services (including port clearance etc.)

Schedule 4 : Price Breakup of Installation Charges

Schedule 5 (a) : Break-up of Type Test charges for Type Tests to be conducted abroad. (Total of this schedule is included in Schedule -1 above)(Not Applicable)

Schedule 5 (b) : Break-up of Type Test charges for Type Tests to be conducted in India. (Total of this schedule is included in Schedule - 2 above) (Not Applicable)

Schedule 6 (a) : Training Charges for Training to be imparted abroad [Training in the field of design, manufacturing, operation and maintenance of the HTLS conductor including procedures for fault attending at manufacturer's / supplier's works (as per Technical Specifications)]. (Shall be Inclusive)

Schedule 6 (b) : Training Charges for Training to be imparted in India [Training in the field of design, manufacturing, operation and maintenance of the HTLS conductor including procedures for fault attending at manufacturer's / supplier's works (as per Technical Specifications)]. (Shall be Inclusive)

Schedule 7 : Grand summary of the quoted bid price.

Schedule 8 : Deleted

Schedule 9 : Deleted

Schedule 10 : Details of recommended spare parts & recommended test equipments. (in line with Technical specifications)
3.2 We are aware that the Price Schedules do not generally give a full description of the Work to be performed under each item and we shall be deemed to have read the Technical Specifications and other sections of the Bidding Documents and Drawings to ascertain the full scope of Work included in each item while filling-in the rates and prices. We agree that the entered rates and prices shall be deemed to include for the full scope as aforesaid, including overheads and profit.

3.3 We declare that as specified in the clause 11.2 CC of the Bidding Documents prices quoted by us in the Price Schedules shall be Fixed and Firm during the execution of Contract.

3.4 We understand that in the price schedules, 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. We further understand that where there are discrepancies between amounts stated in figures and amounts stated in words, the amount stated in words shall prevail. Similarly, any discrepancy in the total bid price and that of the summation of Schedule price (price indicated in a Schedule indicating the total of that schedule), the total bid price shall be corrected to reflect the actual summation of the Schedule prices.

3.5 We declare that items left blank in the Schedules will be deemed to have been included in other items. The TOTAL for each Schedule and the TOTAL of Grand Summary shall be deemed to be the total price for executing the Facilities and sections thereof in complete accordance with the Contract, whether or not each individual item has been priced.

4.0 We confirm that except as otherwise specifically provided our Bid Prices include all taxes, duties, levies and charges as may be assessed on us, our Sub Contractor/Sub-Vendor or their employees by all municipal, state or national government authorities in connection with the Facilities, in and outside of India.

4.1 We understand that notwithstanding 4.0 above, in case of award on us, you shall bear and promptly pay/reimburse all custom and import duty imposed; on the Plant & Equipment including Mandatory Spare Parts specified in Schedule No.1 to be incorporated into the Facilities, by the Indian Laws. However, we understand that if we choose to ship the equipment in Shipper's Containers, then the custom duty levied on the cost of empty Containers shall not be borne by you and shall be payable by us.

100% of applicable Taxes and Duties, which are payable by the Employer under the Contract, shall be reimbursed by the Employer after dispatch of equipment on production of satisfactory documentary evidence by the Contractor in accordance with the provisions of the bidding documents.

4.2 We further understand that notwithstanding 4.0 above, in case of award on us, you shall also bear and pay/reimburse to us/our Indian Associate (applicable for Foreign Bidders), Taxes, Duties and Levies as per GST rules in respect of transaction between you and us/our Indian Associate (applicable for Foreign Bidders), imposed on the Plant & Equipment including Mandatory Spare Parts specified in Schedule No. 2 to be incorporated into the Facilities; by the Indian Laws.

4.3 Deleted.

4.4 We confirm that we shall [or our Indian Associate (applicable for Foreign Bidders) as per para 5.0 below] also get registered with the concerned Tax Authorities as per GST rules, in all the states where the project is located.
4.5 Deleted.

4.6 We confirm that TDS under the applicable laws shall be deducted by the Employer from the payments made to us and Employer shall issue TDS certificates in lieu of deductions so made.

5.0 CONSTRUCTION OF THE CONTRACT

5.1* (Applicable to Foreign Bidders only) We declare that we have studied ITB 28 relating to mode of contracting for Foreign Bidders and we are making this proposal with a stipulation that you shall award us three separate Contracts viz 'First Contract' for all works to be performed in countries outside India covering, inter-alia, the Off-Shore Supply of equipment & materials including mandatory spares (CIF Supply); 'Second Contract' for Supply of equipment & materials including mandatory spares (Ex-works Supply) and testing to be conducted within India and 'Third Contract' for providing all services i.e. port handling and custom clearance of the imported goods; further loading and inland transportation for delivery at site, unloading, storage, handling at site, installation, testing and commissioning including Performance Testing in respect of all equipment & materials supplied under both ‘First Contract' and 'Second Contract' and any other services specified in the Bidding Documents. We declare that the award of three contracts, will not, in any way, dilute our responsibility for successful operation of Plant/Equipment and fulfillment of all obligations as per Bidding Documents and that all the three Contracts will have a cross-fall breach clause i.e. a breach in one Contract will automatically be classified as a breach of the remaining contracts which will confer on you the right to terminate the other contracts at our risk and cost and/or recover damages under any or all the Contracts.

Further, M/s..............................................................................................whose capacity, and experience are enclosed with our Bid as our Indian Associate for the purpose of executing the 'Second Contract' and / or the 'Third Contract' and written unequivocal consent of the above mentioned proposed Indian Associate to work as your independent Contractor, on the same terms and conditions as offered by us to you in this bid, is also enclosed with the Bid form. We shall, however, be overall responsible for the execution of all the three Contracts.

The above-mentioned proposed Indian Associate shall directly enter into the 'Second Contract' and/ or 'Third Contract' with you and all the three contracts shall contain the aforesaid cross-fall breach clause.

In case the Indian Associate, despite his written consent fails to enter into the 'Second Contract' and/or 'Third Contract' with you, or if the Employer in his judgment does not find acceptance of the proposed Indian Associate as its Contractor, then we undertake to enter into and execute all the Contracts, inter alia, containing the aforesaid cross-fall breach clause. In such an event, the over-all financial liability of the Employer, under the Contract shall, however, not exceed that envisaged in our this bid.

5.1** (Applicable to Domestic Bidders only) We declare that we have studied ITB 28 relating to mode of contracting for Domestic Bidders and we are making this proposal with a stipulation that you shall award us two separate Contracts viz. 'First Contract' for ex-works and CIF (if any) supply of all equipment and materials including mandatory spares identifying separately the CIF and Ex-works components of the supply and ‘Second Contract' for providing all the services i.e. inland transportation for delivery at site, unloading, storage, handling at site, installation, testing and commissioning including Performance Testing in respect of all the equipment supplied under the 'First Contract' and other services specified in the Contract Documents. We declare that the award of two
contracts will not in any way dilute our responsibility for successful operation of plant/equipment and fulfillment of all obligations as per Bidding Documents and that both the Contracts will have a cross-fall breach clause i.e. a breach in one contract will automatically be classified as a breach of other contract which will confer on you the right to terminate the other Contract at our risk and cost.

6.0 We have read the provisions of following clauses and confirm that the specified stipulations of these clauses are acceptable to us:

(i) Appendix 2 to the Form of Contract Agreement (Price Adjustment): Clause No. 10.6 ITB

(ii) Bid Security: Clause No. 12.1, 12.2 ITB.

(iii) Performance Security: Clause 13.3 CC

(iv) Liquidated Damages & (Functional Guarantee): Clause 28 & 28.5 CC

(v) Defect Liability: Clause No. 27 CC

(vi) Payment: Clause No. 12 CC

(vii) Time Schedule Appendix-IV

OR

@ We have read the provisions of following clauses and confirm that the specified stipulations of these clauses are acceptable to us except for the deviations, along with the cost of withdrawal of such deviations as listed in Attachment 6A:

(i) Appendix 2 to the Form of Contract Agreement (Price Adjustment): Clause No. 10.6 ITB

(ii) Bid Security: Clause No. 12.1, 12.2 ITB.

(iii) Performance Security: Clause 13.3 CC

(iv) Liquidated Damages & (Functional Guarantee): Clause 28 & 28.5 CC

(v) Defect Liability: Clause No. 27 CC

(vi) Payment: Clause No. 12 CC

(vii) Time Schedule Appendix-IV

@ Bidders to strike off whichever is not applicable

6.1 We further declare that additional conditions, variations, deviations, if any, found in the proposal other than those listed in Attachment 6 and/or Attachment 6A, save those pertaining to any rebates offered, shall not be given effect to.

7.0 We undertake, if our bid is accepted, to commence the work on Facilities immediately upon your Notification of Award to us, and to achieve Completion within the time stated in the Bidding Documents.
We agree to abide by this bid for a period of 180 days from the date fixed for opening of bids as stipulated in the Bidding Documents, and it shall remain binding upon us and may be accepted by you at any time before the expiration of that period.

8.0 We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

9.0 Until a formal Contract is prepared and executed between us, this bid, together with your written acceptance thereof in the form of your Notification of Award shall constitute a binding contract between us.

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

We confirm that we (including all members of our Joint Venture/Consortium*) are not associated and nor have been associated in the past, with the Consultant or any other entity, including the Employer, that has prepared the design, specifications and other prequalification and bidding documents for the project, or that was proposed as Engineer for the Contract, over the last five years.
(* Delete, if bid is not from a JV/Consortium)

We confirm that we have filled-in the data required to be furnished by us in the Conditions of Contract and Appendix-2 and Appendix-3 to the form of Contract Agreement.

We, hereby, declare that only the persons or firms interested in this proposal as principals are named here and that no other persons or firms other than those mentioned herein have any interest in this proposal or in the Contract to be entered into, if the award is made on us, that this proposal is made without any connection with any other person, firm or party likewise submitting a proposal is in all respects for and in good faith, without collusion or fraud.

Dated this ___ day of _______20__

Thanking you, we remain,

Yours faithfully,

(Signature)…………………………..
(Printed Name)……………………...
(Designation)………………………..
(Common Seal)……………………...

Date:
Place:
Business Address:
Country of Incorporation:
(State or Province to be indicated)

Name of the Principal Officer:

Address of the Principal Officer:

* In para 5.1, Indian Bidder to strike-off this provision.
** In para 5.1, Foreign Bidder to strike-off this provision.
Note: Bidders may note that no prescribed proforma has been enclosed for:
(a) Attachment 2: Power of Attorney.
(b) Attachment 7: The details of Alternative Bid
(c) Attachment 8: Deleted
(c) Attachment 12: Unequivocal consent of the proposed Indian Associate for the purpose of executing the 'Second Contract' and/or 'Third Contract' as an independent Contractor (Applicable to Foreign Bidders).
(d) Attachment 13: Capacity and Experience of Proposed Indian Associate (Applicable to Foreign Bidders).
(For Attachments 2, 7, 12 and 13, Bidders may use their own Performa for furnishing the required information with the bid)
SECTION-II

ATTACHMENTS

FOR

ATTACHMENT - 1

Tender No: T18P080211


(Bid Security Form)

Please Refer Volume I (Conditions of Contract), Section : Forms & Procedures
Tender No: T18P080211


(Power of Attorney)

Please Refer Volume I (Conditions of Contract), Section : Forms & Procedures.

or

Bidders may use their own performa for furnishing the required information with bid.
Tender No: T18P080211


(Qualifying Requirement Data)

Bidder’s Name and Address:

To: Delhi Transco Ltd.
    Shakti Sadan, Kotla Road
    New Delhi – 110002

*We have submitted bid as Individual Firm/

*We have submitted bid as Joint Venture/Consortium of following firms:

(* Strike-off whichever is not applicable)

(i) ..............................................................

(ii) ..............................................................

(iii) ..............................................................

*We wish to qualify through clause no. 1.1 (a) of Part-A, Annexure-A (ITB) of Volume-I.
*We wish to qualify through clause no. 1.1 (b) of Part-A, Annexure-A (ITB) of Volume-I
*We wish to qualify through clause no. 1.1 (c) of Part-A, Annexure-A (ITB) of Volume-I
*We wish to qualify through clause no. 1.1 (d) of Part-A, Annexure-A (ITB) of Volume-I

(* Strike-off whichever is not applicable)

In accordance with the QR specified in Annexure-A (ITB) of Volume I (relevant extracts have been brought out herein, however, in case of any discrepancy, Annexure-A (ITB) shall prevail), we are furnishing the following details/document in support of meeting the QR for HTLS Reconductoring Package.

1.0 The details / documents as listed below are furnished in the bid:

   a) Copies of original documents defining the constitution or legal status, place of registration and principal place of business; written power of attorney of the signatory of the bid to commit the bidder;

   b) The qualification and experience of key personnel proposed for carrying out the work:
c) Proposal for subcontracting elements of the supply of materials amounting to more than 10% of the Bid Price for each element;

d) Litigation History : Information regarding any current litigation in which the bidder is involved, the parties’ concerned and disputed amount;

1.1 For Bids submitted by a Joint Venture/Consortium** of firms as partners shall comply with following requirements:

a) The bid shall include all the information listed in sub clause 1.0 (a) to 1.0 (d) above for each Joint Venture/Consortium partner.

b) The bid and in case of successful bid, the form of Agreement shall be signed so as to be legally binding on all partners as per the Performa in bidding documents.

[**To be submitted only in case of Joint Venture. Strike-off in case of individual firm.]

1.2 (i) HTLS Conductor Manufacturer shall furnish details / documents that it has adequate 220 kV HTLS Conductor design infrastructure and capacity and procedures including Quality Control.

(ii) Erector shall furnish details / documents that it has adequate erection facilities and capacity and procedures including Quality Control.

2.0 General Information

The information in this form is to be completed for individual firms and each Partner of a Joint Venture/Consortium.

Where the Bidder proposes to use named subcontractor(s) for critical components of the works or for work contents in excess of 10 percent of the bid price, the following information should also be furnished for the subcontractor(s)].

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>For Individual Firm</th>
<th>For Lead Partner</th>
<th>For Other Partner - 1</th>
<th>For Other Partner - 2</th>
<th>For Other Partner - 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Name of the Firm</td>
<td></td>
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<tr>
<td>2.</td>
<td>Head Office/ Registered Office Address</td>
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<td>3.</td>
<td>Telephone</td>
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<td>4.</td>
<td>Fax</td>
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<td>5.</td>
<td>Contact Person</td>
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<td>6.</td>
<td>Place of Incorporation/ Registration</td>
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<td>7.</td>
<td>Year of Incorporation/ Registration</td>
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<td>8.</td>
<td>Authorized signatory of the bid</td>
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<tr>
<td>Sl. No.</td>
<td>Particulars</td>
<td>For Individual Firm</td>
<td>For Lead Partner</td>
<td>For Other Partner - 1</td>
<td>For Other Partner - 2</td>
<td>For Other Partner - 3</td>
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<tr>
<td>9.</td>
<td>Whether copy of Power of Attorney of the signatory to commit the bidder is attached</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>10.</td>
<td>Details/documentary evidence submitted in support of stated HTLS Conductor design infrastructure and erection facilities and capacity and procedures including quality control</td>
<td></td>
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</tbody>
</table>

### 3.0 Eligible Bidders:

a) Manufacturer of Conductor having experience of manufacturing, supply, stringing, testing & commissioning of EHV transmission line Conductors as per the experience criteria mentioned for Manufacturing and ETC of Conductors as per clause 4.1 & 4.2 respectively.

OR

b) Manufacturer of Conductor having experience of manufacturing, supply of conductor as per criteria mentioned in clause 4.1 and erection is carried out through a erector meeting experience criteria as per clause 4.2. The bid shall include consent letter (as per format annexure-B1) from the proposed erector.

OR

c) Erectors who have the experience as per the criteria mentioned in 4.2 below and supply HTLS conductor from such manufacture(s) who fulfills the criteria mentioned at 4.1(i) or 4.1 (ii) below. The bid shall include consent letter (as per format Annexure-B2) from the proposed HTLS Conductor manufacturer. In addition to the Contract Performance Guarantee to be furnished by the bidder and a confirmation letter from the manufacturer stating that the manufacturer shall furnish back up performance guarantee in the form of bank guarantee for a period of two years for amount equivalent to 10% of the Ex-works cost of the HTLS conductor in the bid documents for successful performance of HTLS conductor to be manufactured and supplied under the contract.

OR

d) A Joint venture/Consortium consisting of two or more partners including the lead partner meeting the following conditions:

(i) All the Partners of JV/Consortium shall meet collectively the requirement of Clause 4.1 & 4.2 below.

(ii) Each of the partners of the joint venture/Consortium must meet the minimum qualifying requirements as mentioned in clause No. 4.1 or 4.2 below.
4.0 Technical Experience

4.1 Experience of Manufacturer:

The Bidder shall be a manufacturer of conductor for the last five years. The Manufacturer’s experience should include the following:

(i) The Manufacturer should have manufactured, tested and supplied at least Twenty Five (25) km of High Temperature Low Sag (HTLS except GAP type) conductor having at least same or more number of strands or having minimum 150 sq. mm Aluminium cross section area as that of the conductor being offered in the package during last five (5) years and the same should have been in satisfactory operation for a period of at least 02 years as on the original date of bid opening.

OR

(ii) Indian Conductor manufacturer not meeting the requirement as stipulated above at clause 4.1(i) can also participate provided such manufacturers have manufactured, tested and supplied at least one thousand (1000) km of ACSR/ AAAC/ ACAR/ AACSR conductor and ten (10) km High Temperature Low Sag (HTLS except GAP type) conductor having at least same or more number of strands or having minimum 150 sq. mm Aluminium cross section area as that of the conductor being offered in the package during last five (5) years as on the originally scheduled date of bid opening. The same should have been in satisfactory operation for a period of at least 01 (one) year as on the originally scheduled date of bid opening.

OR

(iii) In case, the Bidder is an Indian Entity meeting the requirement stipulated in above clause at 4.1 (ii) except HTLS conductor, but has established manufacturing and testing facilities in India for HTLS conductor of sane technology as that of the conductor being offered in this package having minimum 150 sq. mm Aluminium cross section area shall also be considered provided the bidder meets the following requirements:

a) The bidder must have manufactured HTLS conductor based on the technological support of the Principal / Collaborator (s) and the bidder should have tested HTLS conductor manufactured in Indian facility as per applicable standard i.e IS / IEC/ ASTM or any other equivalent standard as on the originally schedule date of bid opening. Provided further that the Principal / collaborator (s) of the bidder meets qualifying requirements as per clause 4.1 (i) mentioned above.

b) Further, the bidder shall also submit the following along with the bid:
1. A legally enforceable undertaking (jointly with the parent company (principle) or collaborator(s) to guarantee quality, timely supply, performance and warranty obligations as specified for the equipment(s).

2. A confirmation letter from the principal/ Collaborator(s) stating that the principal/Collaborator(s) shall furnish performance guarantee for an amount equivalent to 10% of the ex-works cost of HTLS conductor to be supplied in this package. This performance guarantee shall be addition to contract Performance guarantee to be submitted by the bidder.

3. A valid collaboration agreement for technology transfer/ license to design, manufacture, test and supply HTLS conductor of same technology as that of the conductor being offered in this package in India.

(iv) In case, foreign conductor manufacturer meeting the eligibility criteria as per clause no. 4.1(i) is submitting it bid as a single bidder.

1) The bidder should have completed stringing of HTLS conductor of not less than 25 Km of cumulative rout length of transmission line of 220 kV or higher voltage class in India as on the original schedule date of bid opening.

OR

2) The bidder should have, in its bid, proposed an Indian associate for executing the On-shore supply and On-Shore service contract, as per the provision of bidding documents. The proposed Indian associate shall meet the erection experience criteria as per clause number 4.2.

Foreign manufacturer / suppliers should submit performance certificate from an end user located in a country other than the country where the product has been manufactured in support of satisfactory operation of the product offered for at least two years or more as on the originally scheduled date of bid opening.

4.2 Experience of Erector :

The erector should have completed stringing of HTLS conductor for transmission line of cumulative circuit kilometers not less than 25 kms of 66 kV or higher voltage class in India as a prime contractor or as a partner in a Joint Venture within the last five (5) years and the same should have been in satisfactory operation for a period of at least 02 years as on the originally date of bid opening.
+Note: In case of works executed under a contract that had been awarded on a Joint Venture, the experience of individual Joint Venture partner shall be considered limited to the scope of that partner under the said contract.

5.0 Techno-Commercial and Legal Arrangement of Joint Venture/consortium:

In case of Joint Venture/consortium, the following conditions shall also apply:

i. The bid, and in case of successful bid, the specified Form of Agreement shall be signed so as to be legally binding on all partners (Form enclosed).

ii. Each of the Partners of the Joint Venture/consortium must meet the minimum qualifying requirements given under clause 4.1 or 4.2. However, all the partners of Joint Venture/consortium shall meet collectively, the requirements of Clauses 4.1 and 4.2 above.

iii. One of the partners shall be nominated as Lead Partner, and the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture/consortium. Thus the lead partner shall be authorized to represent the Joint Venture/consortium for the purpose of execution of the contract. The payment shall be in the name of Joint Venture/consortium. The authorization shall be evidenced by submitting a Power of Attorney signed by legally authorized signatory of all the partners as per bidding documents.

iv. All the partners of the joint venture/consortium shall be liable jointly and severally for the execution of the Contract in accordance with the Contract terms, and a statement of this effect shall be included in the authorization mentioned under (iii) above as well as in the Bid Form and in the Contract Form (in case of a successful bid);

v. Agreement entered into by the Joint Venture/consortium partners shall be submitted with the bid.
Format A: Format for the bidders in respect of clause 4.1:

(Lead partner in case of Joint Venture) [In case of Joint Venture bidder, the QR data of each of the other partner (in support of meeting the requirement Annexure-A, Section- ITB, Volume-I of the bidding documents] is also to be furnished, as applicable, using this format

<table>
<thead>
<tr>
<th>Name of the Bidder (as per 4.1 above) (Single Firm/Lead Partner/ Partner of a Joint Venture)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. of years the bidder is a manufacturer of Conductor</td>
<td>Last ___________ years.</td>
</tr>
<tr>
<td>2. Name of Contract</td>
<td></td>
</tr>
<tr>
<td>3. Contract Reference No. &amp; Date of Award</td>
<td></td>
</tr>
<tr>
<td>4. Name and Address of the Purchaser/Utility for whom the Contract was executed by bidder/Partner</td>
<td>e-mail ID</td>
</tr>
<tr>
<td></td>
<td>Telephone No.</td>
</tr>
<tr>
<td></td>
<td>Fax No.</td>
</tr>
<tr>
<td>5 Scope of work involved in the supply of ACSR/AAAC/ACAR/AACSR and High Temperature Low Sag (HTLS) Conductor (having at least same or more number of strands as that of the conductor being offered in the package) under the above Contract</td>
<td>☐ Manufacture</td>
</tr>
<tr>
<td></td>
<td>☐ Testing</td>
</tr>
<tr>
<td></td>
<td>☐ Supply</td>
</tr>
<tr>
<td></td>
<td>- for the above Contract for Conductor. (Tick only whichever is/are applicable)</td>
</tr>
<tr>
<td>5.1 Total no. of Kms. of ACSR/AAAC/ACAR/AACSR and High Temperature Low Sag (HTLS) Conductor supplied in the above Contract</td>
<td>________ Kms.</td>
</tr>
<tr>
<td>No. of strands supplied in the Contract detailed above (Bidder to furnish details of only ACSR/AAAC/ACAR/AACSR and High Temperature Low Sag (HTLS) Conductor having at least same or more number of strands as that of the conductor being offered in the package supplied in the Contract)</td>
<td>________ Nos.</td>
</tr>
<tr>
<td>5.2 Date of completion of the above Contract</td>
<td>(dd/mm/yyyy)</td>
</tr>
<tr>
<td>5.3 No. of years the above referred Conductor is in operation as on the date of bid opening</td>
<td>________________ years</td>
</tr>
<tr>
<td>5.4 Details of documents submitted in support of stated experience/Contract/ design, infrastructure and manufacturing facilities and capacity and procedures including quality control</td>
<td>(Use separate sheet for each experience/ Contract)</td>
</tr>
</tbody>
</table>
Format B: Format for the Erector in respect of clause 4.2:

(Lead partner in case of Joint Venture) [In case of Joint Venture bidder, the QR data of each of the other partner (in support of meeting the requirement Annexure-A, Section-ITB, Volume-I of the bidding documents] is also is to be furnished, as applicable, using this format

<table>
<thead>
<tr>
<th>Name of the Erector (as per 4.2 above) (Single Firm/Lead Partner/ Partner of a Joint Venture)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. of years of experience of erector</td>
<td>Last ___________ years.</td>
</tr>
<tr>
<td>2. Name of Contract</td>
<td></td>
</tr>
<tr>
<td>3. Contract Reference No. &amp; Date of Award</td>
<td></td>
</tr>
<tr>
<td>4. Name and Address of the Purchaser/Utility for whom the Contract was executed by Erector</td>
<td>e-mail ID</td>
</tr>
<tr>
<td></td>
<td>Telephone No.</td>
</tr>
<tr>
<td></td>
<td>Fax No.</td>
</tr>
<tr>
<td>5. Scope of work for carrying out stringing works under the above Contract</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Stringing of HTLS Conductor</td>
</tr>
<tr>
<td></td>
<td>□ Stringing of Other Conductor (Specify the type of Conductor)</td>
</tr>
<tr>
<td></td>
<td>- for the above Contract for (Tick only whichever is/are applicable)</td>
</tr>
<tr>
<td>5.1 Total no. of Kms. of carrying out stringing works in the above Contract</td>
<td>__________ Kms.</td>
</tr>
<tr>
<td></td>
<td>________ Nos.</td>
</tr>
<tr>
<td>5.2 Date of completion of the above Contract</td>
<td>________________ (dd/mm/yyyy)</td>
</tr>
<tr>
<td>5.3 No. of years the above Line/Work is in operation as on the date of bid opening</td>
<td>__________ years</td>
</tr>
<tr>
<td>5.4 Details of documents submitted in support of stated experience/Contract and capacity and procedures including quality control</td>
<td></td>
</tr>
<tr>
<td>5.5 To be qualified for award of contract, whether bidder has provided evidence to the satisfaction of the Owner of their capability and adequacy of resources to carry out the contract effectively.</td>
<td>□ Yes</td>
</tr>
</tbody>
</table>

(Use separate sheet for each experience/ Contract)
6.0 Financial Position

6.1 Individual Firms:

a) Net worth for last 3 financial years should be positive.

b) Minimum Average Annual Turnover\(^*\) (MAAT) for best three years i.e. 36 months out of last five financial years of the bidder should not be less than

\[
\text{MAAT (Rs.)} = \frac{(1.5 \times \text{Estimated cost})}{\text{completion period in years}}.
\]

\[
\text{MAAT (Rs.)} = \text{Rs. 41,58,64,366/-}
\]

* Note: Annual total income as incorporated in the profit and loss account except non-recurring income i.e. sales of fixed assets etc.

c) Bidder shall have liquid assets (LA) or/and evidence of access to or availability of credit facilities of not less than

\[
\text{LA (Rs.)} = \frac{(3 \times \text{Estimated Cost})}{\text{Completion period in months}}.
\]

\[
\text{LA (Rs.)} = \text{Rs. 6,93,10,728/-}
\]

Note: In case the completion period is less than one (1) year the denominator to calculate MAAT and LA shall be considered as one (1) and twelve (12) respectively.

In case bidder is a holding company, financial position criteria referred to in clause 6.1 above shall be of that holding company only (i.e. excluding its subsidiary/group companies). In case bidder is a subsidiary of a holding company, financial position criteria referred to in clause 6.1 above shall be of that subsidiary company only (i.e. excluding its holding company).

6.2 Joint Venture/Consortium Firms:

The figures for each of the partners of the joint venture/consortium shall be added together to determine the bidder’s compliance with the minimum qualifying criteria set out in Clause 6.1 (a), (b) & (c) above. However, in order for a joint venture to qualify, partners of the joint venture/consortium must meet the following minimum criteria:

The lead partner shall meet, not less than 40% of the minimum criteria given at Para 6.1 (a), (b) & (c) above.

Each of the other partner(s) shall meet not less than 25% of the criteria given at 6.1 (a), (b) & (c) above.
A. DATA IN SUPPORT OF 6.1 (b)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Financial Year</th>
<th>Turnover</th>
<th>Annual Turnover in equivalent Rupees</th>
<th>Annual Turnover in equivalent US Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>Curreny</td>
<td>3. Turnover (in Million)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td>6.</td>
<td></td>
</tr>
</tbody>
</table>

Details in column 5 & 6 are to be filled in if currency in column 3 is different from Indian Rupees or US Dollars, considering rate of exchange at the end of reported period.

Average annual turnover for best three years.

Rs. ____________________million / US $ _____________________million

B. DATA IN SUPPORT OF 6.1 (c)

<table>
<thead>
<tr>
<th>Liquid Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Details of evidence of having Liquid assets (LA)</td>
</tr>
<tr>
<td>Or</td>
</tr>
<tr>
<td>Details of evidence of access to or availability of credit facilities</td>
</tr>
</tbody>
</table>

5.0 The Bidder shall furnish documentary evidence in support of the qualifying requirement stipulated as above.

Date:............. (Signature)..............................
Place:.... (Printed Name)..............................
                           (Common Seal)..............................
                           (Designation)..............................
ATTACHMENT-4

Tender No: T18P080211


(Form of Certificate of Origin and Eligibility)

Bidder’s Name and Address:                             To :  Delhi Transco Ltd.
                                                        Shakti Sadan, Kotla Road
                                                        New Delhi – 110002

We hereby certify that equipment and materials to be supplied are produced in ______________________ country.

We hereby certify that our company is incorporated and registered in ______________________ country.

Date:...

(Signature)                      ...............  

Place:...

(Printed Name)                    ...............  

(Designation)                    ...............  

(Common Seal)                    ...............  

Tender No. T18P080211


(List of Special Maintenance Tools & Tackles)

Bidder’s Name and Address:                                To :   Delhi Transco Ltd.
                                                                 Shakti Sadan, Kotla Road
                                                                 New Delhi – 110002

Dear Sir,

We are furnishing below the list of special maintenance tools & tackles for various equipment under the subject package. The prices for these tools & tackles are already included in the lump sum bid price. We further confirm that the list of special maintenance tools & tackles includes all the items specifically identified in your bidding documents as brought out below:

(a) 

(b) 

Notwithstanding what is stated above, we further confirm that any additional special maintenance tools and tackles, required for the equipment under this package shall be furnished by us at no extra cost to the employer.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>For Equipment</th>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
</table>

Date:...
(Signature)...
Place:...
(Printed Name)...
(Designation)...
(Common Seal)...

..............................
Tender No. T18P080211


(Bought-Out & Sub-Contracted Items)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Item Description</th>
<th>Quantity proposed to be bought/sub contracted</th>
<th>Detail of the proposed sub contractor/sub vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nationality</td>
</tr>
</tbody>
</table>

Dear Sirs,

We hereby furnish the details of the items/ sub-assemblies, we propose to buy for the purpose of furnishing and installation of the subject Package:

Date:...

(Signature) ...................

Place:...

(Printed Name) ...................

(Designation) ...................

(Common Seal) ...................
Tender No. T18P080211

**Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories.**

(Deviations)

**Bidder’s Name and Address:**                             To : Delhi Transco Ltd.
Shakti Sadan, Kotla Road
New Delhi – 110002

The bidder shall itemise any deviation from the Specifications included in his bid. Each item shall be listed (separate sheets may be used and enclosed with this Attachment) with the following information:

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Reference Clause in the specification</th>
<th>Deviation</th>
<th>Reason for change</th>
<th>The change in Bid price if the deviation is withdrawn and bidder conforms to the specification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any proposed deviation will be applicable only for the bidder whose bid is substantially responsive in accordance with clause 21, Section ITB, Vol. I of the bidding documents. If a bid is not substantially responsive, it will be rejected and may not subsequently be made responsive by the bidder by correction of the non conformity.

Date:...

(Signature)... ................................

Place:...

(Printed Name)... ..........................

(Designation)... ..........................

(Common Seal) ..........................
Tender No. T18P080211


(Cost of withdrawal of deviations from critical provisions as per ITB clause 21.4.1)

Bidder’s Name and Address:                             To : Delhi Transco Ltd.  
                                                      Shakti Sadan, Kotla Road  
                                                      New Delhi – 110002

Dear Sir,

Following are the deviations proposed by us to critical provisions relating to clauses listed in ITB clause 21.4.1. We are also furnishing below the cost of withdrawal for the deviations proposed by us. We confirm that we shall withdraw the deviations proposed by us at the cost of withdrawal indicated in this Attachment, failing which our bid may be rejected and Bid security forfeited.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Clause No.</th>
<th>Deviation</th>
<th>Cost of Withdrawal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:...

(Signature)... ..................

Place:...

(Printed Name)... ..................

(Designation)... ..................

(Common Seal)  ..................

Note: Bidder may note that bids containing deviations without the cost of withdrawal shall be rejected.
Tender No. T18P080211


(Work Completion Schedule)

Bidder’s Name and Address:

To: Delhi Transco Ltd.
Shakti Sadan, Kotla Road
New Delhi – 110002

Dear Sirs,

We hereby declare that the following Work Completion Schedule shall be followed by us in furnishing and installation of the subject Package for the period commencing from the effective date of Contract to us:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description Work</th>
<th>Period in months from the effective date of Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Completion of detailed Engineering and drawing submission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Procurement of equipment/components &amp; assembly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Type Tests</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Shipments &amp; Delivery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Establishment of site office</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Erection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Testing &amp; Commissioning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commencement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Completion</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Commissioning</td>
<td></td>
</tr>
</tbody>
</table>

Date:...

(Signature)..................

Place:...(Printed Name)..................

(Designation)..................

(Common Seal) ..................

Note: Bidders to enclose a detailed network covering all the activities to be undertaken for completion of the project indicating key dates for various milestones for each phase constituent-wise.
Tender No. T18P080211


Bidder’s Name and Address:                                   To : Delhi Transco Ltd.
                                                                  Shakti Sadan, Kotla Road
                                                                  New Delhi – 110002

Dear Sir,

We declare that the equipment offered shall meet the rating and performance requirements stipulated in Technical specification for various equipment or indicated in Data requirement. Further the various parameter of the HTLS conductor, based on which average ohmic losses shall be evaluated in accordance with clause no. 1.10 of section-II of technical specification, Volume-II, are given herein below:

Further, the guaranteed AC resistance & Guaranteed Average Ohmic loss of the HTLS conductor, based on which differential price evaluation shall be evaluated in accordance with clause no. 1.10 of section-II of technical specification, Volume-II, are given herein below:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Guaranteed AC Resistance at 500 A (in Ohm/Km) (Rac)</th>
<th>Guaranteed Average Ohmic loss (in KW) = 1.698 \times 10^4 \times \text{Rac}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Signature)..............................................
(Printed Name)..........................................
(Designation).........................................
(Common Seal)..........................................
Tender No. T18P080211


(Information regarding Ex-employees of DTL in our Organization)

Bidder’s Name and Address:                             To: Delhi Transco Ltd.
                                                                 Shakti Sadan, Kotla Road
                                                                 New Delhi – 110002

Dear Sirs,

We hereby furnish the details of ex-employees of DTL who had retired/ resigned at the level of General Manager and above from DTL and subsequently have been employed by us:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of person with designation in DTL</th>
<th>Date of retirement/resignation from DTL</th>
<th>Date of joining and resignation in our organization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:...

(Signature)... 

Place:....

(Printed Name)... 

(Designation)... 

(Common Seal)

Note: The information in similar format should be furnished for each partner of joint venture in case of joint venture bid.
Tender No. T18P080211


(Integrity Pact)

Bidder’s Name and Address:

To:
Delhi Transco Ltd.
Shakti Sadan, Kotla Road
New Delhi – 110002

Dear Sir,

Two sets of Integrity Pact on a non-judicial stamp paper of Rs. 100, duly signed by our authorized representative on each page and stamped are annexed herewith.

Date:.............
(Signature)..........................

Place:...
(Printed Name).......................
(Common Seal).....................
(Designation).....................
INTEGRITY PACT

Between

Delhi Transco Limited

having its Registered Office at Shakti Sadan, Kotla Road, New Delhi -110 002

hereinafter referred to as

“DTL”

and

(Insert the name of the Sole Bidder/Lead Partner of Joint Venture)

having its Registered Office at ______________________________________________________

(Insert full Address)

and

(Insert the name of the Partner(s) of Joint Venture/agent, as applicable)

having its Registered Office at __________________________________________________

(Insert full Address)

hereinafter referred to as

“The Bidder/Contractor”

Preamble

DTL intends to award, under laid-down organisation procedures, contract(s) for

(Insert the name of the package) Package

and Specification Number _________________________ DTL values full compliance with all relevant

(Insert Specification Number of the Package) laws and regulations, and the principles of economical use of resources, and of fairness and

transparency in its relations with its Bidders/Contractors.

In order to achieve these goals, DTL and the above named Bidder/Contractor enter into this

agreement called ‘Integrity Pact’ which will form a part of the bid.

(Signature) ___________________________ (Signature) ___________________________

(For & On behalf of DTL) (For & On behalf of Bidder/Partner(s) of

Joint Venture/Contractor)

(Office Seal) (Office Seal)
It is hereby agreed by and between the parties as under:-

Section I – Commitments of DTL

(1) DTL commits itself to take all measures necessary to prevent corruption and to observe the following principles:

(a) No employee of DTL, personally or through family members or relative(s), will in connection with the tender, or the execution of the contract, demand, take a promise for or accept, for him/herself or third person, any material or other benefit which he/she is not legally entitled to.

(b) DTL will, during the tender process treat all Bidder(s) with equity and fairness. DTL will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or for the execution of contract.

(c) DTL will exclude from evaluation of Bids its such employee(s) who has any personnel interest in the Companies/Agencies participating in the Bidding/Tendering process.

The action stipulated in this Integrity Pact is without prejudice to any other Legal action that may follow in accordance with the provisions of the relevant law in force relating to any civil or criminal proceedings.

(2) If Managing Director obtains information on the conduct of any employee of DTL which is a criminal offence under the relevant Anti-Corruption Laws of India or illegal under the Indian Contract Act or Indian Laws, or if there be a substantive suspicion in this regard, he will inform its Chief Vigilance Officer and in addition can initiate disciplinary actions under its Rules.

Section II – Commitments of the Bidder/Contractor

(1) The Bidder/Contractor commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

(a) The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to DTL, or to any of DTL’s employees involved in the tender process or the execution of the contract or to any third person any material or other benefit

(Signature)_____________________________ (Signature) _______________________

(For & On behalf of DTL) (For & On behalf of Bidder/Partner(s) of Joint Venture/Contractor)

(Office Seal) (Office Seal)
which he/she is not legally entitled to, in order to obtain in exchange an advantage during the tender process or the execution of the contract.

(b) The Bidder/Contractor will not enter into any illegal agreement or understanding, whether formal or informal with other Bidders/Contractors. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or actions to restrict competitiveness or to introduce cartelization in the bidding process.

(c) The Bidder/Contractor will not commit any criminal offence under the relevant Anti-Corruption Laws of India, further, the Bidder/Contractor will not use for illegitimate purposes or for purposes of restrictive competition or personal gain, or pass on to others, any information provided by DTL as part of the business relationship, regarding plans, technical proposals and business details, including information of any type contained or transmitted electronically.

(d) The Bidder/Contractor of foreign origin shall disclose the name and address of the Agents/representatives in India, if any, involved directly or indirectly in the Bidding. Similarly, the Bidder/Contractor of Indian Nationality shall furnish the name and address of the foreign principals, if any, involved directly or indirectly in the bidding.

(e) The Bidder/Contractor will, when presenting his bid, disclose any and all payments he has made, or committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and/or with the execution of the contract.

(f) The Bidder/Contractor will not misrepresent facts or furnish false/forged documents/information in order to influence the bidding process or the execution of the contract to the detriment of DTL.

(2) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section III – Disqualification from tender process and exclusion from future contracts

(1) If the bidder, before contract award, has committed a serious transgression through a violation of Section II or in any other form such as to put his reliability or credibility as Bidder into question, DTL may disqualify the Bidder from the tender process or terminate the contract, if already signed, for such reason.

(Signature)_____________________________ (Signature) _______________________

(For & On behalf of DTL)                  (For & On behalf of Bidder/Partner(s) of
Joint Venture/Contractor)                  

(Office Seal)                                (Office Seal)
(2) If the Bidder/Contractor has committed a serious transgression through a violation of Section II such as to put his reliability or credibility into question, DTL may after following due procedures also exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder/Contractor and the amount of the damage. The exclusion will be imposed for a minimum of 12 months and maximum of 3 years and it has to be decided by the Competent authority.

(3) If the Bidder/Contractor can prove that he has restored/Recouped the damage caused by him and has installed a suitable corruption prevention system, DTL may revoke the exclusion prematurely with the approval of Competent Authority.

Section IV – Liability for violation of Integrity Pact

(1) If DTL has disqualified the Bidder from the tender process prior to the award under Section III, DTL may forfeit the Bank Guarantee under the Bid.

(2) If DTL has terminated the contract under Section III, DTL may forfeit the Contract Performance Guarantee of this contract besides resorting to other remedies under the contract.

Section V – Previous Transgression

(1) The Bidder shall declare in his Bid that no previous transgressions occurred in the last 3 years with any other Public Sector Undertaking or Government Department that could justify his exclusion from the tender process.

(2) If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section VI – Equal treatment to all Bidders/Contractors

(1) DTL will enter into agreements with identical conditions as this one with all Bidders.

(2) DTL will disqualify from the tender process any bidder who does not sign this Pact or violate its provisions.

Section VII – Punitive Action against violating Bidders/Contractors
If DTL obtains knowledge of conduct of a Bidder or a Contractor or his subcontractor or of an employee or a representative or an associate of a Bidder or Contractor or his Subcontractor which constitutes corruption, or if DTL has substantive suspicion in this regard, DTL will inform the Chief Vigilance Officer (CVO).

(*)Section VIII – Independent External Monitor/Monitors

(1) DTL has appointed a panel of Independent External Monitors (IEMs) for this Pact with the approval of Central Vigilance Commission (CVC), Government of India, out of which one of the IEMs has been indicated in the NIT/IFB.

(2) The IEM is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement. He has right of access to all project documentation. The IEM may examine any complaint received by him and submit a report to Managing Director, DTL at the earliest. He may also submit a report directly to the CVO and the CVC, in case of suspicion of serious irregularities attracting the provisions of the PC Act. However, for ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter shall be referred to the full panel of IEMs, who would examine the records, conduct the investigations and submit report to Managing Director, DTL, giving joint findings.

(3) The IEM is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Managing Director, DTL.

(4) The Bidder(s)/Contractor(s) accepts that the IEM has the right to access without restriction to all documentation of DTL related to this contract including that provided by the Contractor/Bidder. The Bidder/Contractor will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his documentation. The same is applicable to Subcontractors. The IEM is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Sub-Contractor(s) with confidentiality.

(5) DTL will provide to the IEM information as sought by him which could have an impact on the contractual relations between DTL and the Bidder/Contractor related to this contract.

(6) As soon as the IEM notices, or believes to notice, a violation of this agreement, he will so inform the Managing director, DTL and request the Managing Director, DTL to discontinue or take corrective action, or to take other relevant action. The IEM can in this regard submit non-binding recommendations. Beyond this, the IEM has no right

(Signature) ___________________________ (Signature) ___________________________

(For & On behalf of DTL) (For & On behalf of Bidder/Partner(s) of Joint Venture/Contractor)

(Office Seal) (Office Seal)
to demand from the parties that they act in a specific manner, refrain from action or tolerate action. However, the IEM shall give an opportunity to DTL and the Bidder/Contractor, as deemed fit, to present its case before making its recommendations to DTL.

(7) The IEM will submit a written report to the Managing Director, DTL within 8 to 10 weeks from the date of reference or intimation to him by DTL and should the occasion arise, submit proposals for correcting problematic situations.

(8) If the IEM has reported to the Managing Director, DTL a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Managing Director, DTL has not, within the reasonable time taken visible action to proceed against such offence or reported it to the CVO, the Monitor may also transmit this information directly to the CVC, Government of India.

(9) The word ‘IEM’ would include both singular and plural.

(*) This Section shall be applicable for only those packages wherein the IEMs have been identified in Section – I: Invitation for Bids and/or Clause 9 in Section –III : Conditions of Contract, Volume-I of the bidding documents.

Section IX – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor after the closure of the contract and for all other Bidder’s six month after the contract has been awarded.

Section X – Other Provisions

(1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the establishment of DTL. The Arbitration clause provided in the main tender document/contract shall not be applicable for any issue/dispute arising under Integrity Pact.

(2) Changes and supplements as well as termination notices need to be made in writing.

(3) If the Contractor is a partnership firm or a consortium or Joint Venture, this agreement must be signed by all partners, consortium members and Joint Venture partners.

(4) Nothing in this agreement shall affect the right of the parties available under the General conditions of Contract (CC/GCC) and Special Conditions of Contract (SCC).

(Signature) __________________________ (Signature) __________________________

(For & On behalf of DTL) (For & On behalf of Bidder/Partner(s) of Joint Venture/Contractor)

(Office Seal) (Office Seal)
(5) Views expressed or suggestions/submissions made by the parties and the recommendations of the CVO/IEM\(^n\) in respect of the violation of this agreement, shall not be relied on or introduced as evidence in the arbitral or judicial proceedings (arising out of the arbitral proceedings) by the parties in connection with the disputes/differences arising out of the subject contract.

# CVO shall be applicable for packages wherein IEM are not identified in Section IFB/BDS of Condition of Contract, Volume-I. IEM shall be applicable for packages wherein IEM are identified in Section IFB/BDS of Condition of Contract. Volume-I

(6) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
Tender No. T18P080211


**Indemnity Bond**

Bidder’s Name and Address:  

To: Delhi Transco Ltd.  
Shakti Sadan, Kotla Road  
New Delhi – 110002

Dear Sir,

One set of Indemnity Bond on non judicial stamp paper of Rs 100/-, duly signed by our authorized representative and stamped is annexed herewith for loss caused in case of legal proceedings w.r.t Infringement of Patent.

(Signature)................................................................
(Printed Name)...........................................
(Designation)...............................................
(Common Seal)...............................................

Date:......................
Place:......................
INDEMNITY BOND

By this bond M/s ___(Company Name)_____ having its registered office at ___(Address)________ hereinafter referred to as ‘Bidder’ binds himself to pay to Delhi Transco Limited (DTL) hereinafter referred to as ‘Principal’, the sum as determined by DTL as a consequence of infringement of patent by ___(Company Name), in the event any legal proceedings initiated or otherwise with respect to violation of the patent against DTL and/or the usage of product which infringes the patent in relation to the tender for HTLS Re-conducting Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories against Tender No T18P080211.

In witness whereof the Bidder put his hand on this _____ day of ______, 2018.

BIDDER

WITNESSES:-

1.

2.
Tender No. T18P080211


Checklist (To be filled by Bidder)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Particulars</th>
<th>Bidder’s Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>(A) Bid Validity:</strong> Whether Bid is valid for a period of 180 days as stipulated in ITB from the date of bid opening.</td>
<td>(Yes/No)</td>
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<td><strong>(B) Documents comprising the Bid:</strong></td>
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<td></td>
<td>Part-I (Techno-Commercial Bid):</td>
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<td>i. Whether Bid form duly completed, signed and submitted.</td>
<td>(Yes/No)</td>
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<td>ii. Attachments:</td>
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<td></td>
<td>a) Whether Attachment 1 – “Bid Security” submitted.</td>
<td>(Yes/No)</td>
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<td>b) Whether Attachment 2: “Power of Attorney” submitted.</td>
<td>(Yes/No)</td>
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<td></td>
<td>c) Whether Attachment 3: “Bidder’s (All members of Joint Venture) Eligibility and qualifications” submitted.</td>
<td>(Yes/No)</td>
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<td>d) Whether Attachment 4 &amp; 4 A: “Eligibility &amp; conformity of the Facilities” submitted.</td>
<td>(Yes/No)</td>
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<td>e) Whether Attachment 5: “Details of sub-contractors as proposed” submitted.</td>
<td>(Yes/No)</td>
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<td>f) Whether Attachment 6: “Deviations” submitted.</td>
<td>(Yes/No)</td>
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<td>g) Whether Attachment 6A: “Deviations with cost of withdrawal” submitted.</td>
<td>(Yes/No)</td>
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<td>h) Whether Attachment 7: “Alternative Bids” submitted.</td>
<td>(Yes/No)</td>
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<td></td>
<td>i) Whether Attachment 9: “Work Completion Schedule” submitted.</td>
<td>(Yes/No)</td>
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<td>j) Whether Attachment 10: “Guarantee Declaration” submitted.</td>
<td>(Yes/No)</td>
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<td>k) Whether Attachment 11: “Information regarding ex-employees of Employer in Bidder’s firm” submitted.</td>
<td>(Yes/No)</td>
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<td>l) Whether Attachment 12: “Unequivocal consent of the proposed Indian Associate for the purpose of executing the ‘Second</td>
<td>(Yes/No)</td>
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<tr>
<td>No.</td>
<td>Description</td>
<td>Status</td>
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<td>m)</td>
<td>Whether Attachment 13: “Capacity and Experience of Proposed Indian Associate(Applicable to Foreign Bidders)” submitted.</td>
<td>(Yes/No)</td>
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<td>n)</td>
<td>Whether Attachment 14: Whether Integrity Pact submitted in a separate sealed envelope.</td>
<td>(Yes/No)</td>
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<td>o)</td>
<td>Whether Attachment 15: Whether Indemnity Bond submitted.</td>
<td>(Yes/No)</td>
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<td><strong>Part-II (Price Bid):</strong></td>
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<tr>
<td>(a)</td>
<td>Whether Price Bid submitted in a separate sealed envelope.</td>
<td>(Yes/No)</td>
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<tr>
<td>(b)</td>
<td>Whether Bid Form duly completed, signed and submitted.</td>
<td>(Yes/No)</td>
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<tr>
<td>(c)</td>
<td>Price Schedules: Whether following schedules submitted :</td>
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<td></td>
<td><strong>Schedule 1</strong> Plant and Equipment (including mandatory Spares) to be supplied from abroad.</td>
<td>(Yes/No)</td>
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<tr>
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<td><strong>Schedule 2</strong> Plant and Equipment (including mandatory Spares) to be supplied from within India</td>
<td>(Yes/No)</td>
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<td></td>
<td><strong>Schedule 3</strong> Local Transportation, Insurance and other Incidental Services (including port clearance etc.).</td>
<td>(Yes/No)</td>
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<td></td>
<td><strong>Schedule 4</strong> Installation Charges</td>
<td>(Yes/No)</td>
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<td></td>
<td><strong>Schedule 5A &amp; 5B</strong> Type Test Charges for Type Tests</td>
<td>(NOT APPLICABLE)</td>
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<td><strong>Schedule 6A &amp; 6B</strong> Charges for Training to be imparted</td>
<td>(SHALL BE INCLUSIVE)</td>
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<tr>
<td></td>
<td><strong>Schedule 7</strong> Grand Summary of the Quoted Bid Price.</td>
<td>(Yes/No)</td>
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<td></td>
<td><strong>Schedule 8</strong> Deleted.</td>
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<td></td>
<td><strong>Schedule 9</strong> Deleted.</td>
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<td></td>
<td><strong>Schedule 10</strong> Details of recommended spare parts &amp; Recommended test equipment (in line with Technical specifications).</td>
<td>(Yes/No)</td>
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<td><strong>Bid Security:</strong></td>
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<td>i. Whether Bid security in amount and form as stipulated in ITB submitted.</td>
<td>(Yes/No)</td>
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<tr>
<td>ii. Validity: Whether bid security is valid for a period as stipulated in ITB.</td>
<td>(Yes/No)</td>
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<table>
<thead>
<tr>
<th><strong>Tender document issued by DTL</strong></th>
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</thead>
<tbody>
<tr>
<td>i. Whether Tender document alongwith all amendments issued by DTL, duly signed &amp; stamped on each page submitted.</td>
<td>(Yes/No)</td>
</tr>
</tbody>
</table>

(Signature of Bidder)………………

(Designation)……………………

(Stamp)…………………………

Note: Replies against each item should be complete without any ambiguity. Terms such as refer covering letter etc. shall not be acceptable unless the replies/ information are specific and complete.
SECTION-III

PRICE SCHEDULES

FOR

Instructions to Bidders for filling up this workbook of Price Schedule :-

1. Bidder to Fill price in only the green coloured cells
2. Do not re-format the cells.
3. Do not copy/Cut - paste the data between the cells
4. Certain data types have been restricted such as Numeric or limits.
5. Do not link any cells of the workbook.
6. Fill up unit rates for all the items in numeric values greater than 0(Zero). If unit rate is left blank the corresponding items shall be deemed to be included in the total price.
7. Total amount shall get calculated automatically.
Bidder's Name and Address:

To

Delhi Transco Limited
Shakti Sadan, Kotla Road
New Delhi-110002

Plant and Equipment (including Mandatory Spares Parts) to be supplied from abroad, including Type Test charges for Type Test to be conducted Abroad.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Item Description</th>
<th>HSN Code</th>
<th>Unit</th>
<th>Qty</th>
<th>Currency</th>
<th>Unit FOB Price</th>
<th>Unit CIF Price</th>
<th>Total CIF Price</th>
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<tr>
<td>1</td>
<td>High Temperature Low Sag (HTLS) conductor (as per Tech. Specification)</td>
<td>76149000</td>
<td>Km</td>
<td>140</td>
<td>INR</td>
<td></td>
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<td>2</td>
<td>Single suspension hardware fittings (except clamps)</td>
<td>73082011</td>
<td>Sets</td>
<td>320</td>
<td>INR</td>
<td></td>
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<tr>
<td>3</td>
<td>Double suspension hardware fittings (except clamps)</td>
<td>73082011</td>
<td>Sets</td>
<td>38</td>
<td>INR</td>
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<tr>
<td>4</td>
<td>Single &quot;I&quot; suspension Pilot hardware fittings (except clamps)</td>
<td>73082011</td>
<td>Sets</td>
<td>128</td>
<td>INR</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Single tension hardware fittings (except clamps)</td>
<td>73082011</td>
<td>Sets</td>
<td>305</td>
<td>INR</td>
<td></td>
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<tr>
<td>6</td>
<td>Double tension hardware fittings (except clamps)</td>
<td>73082011</td>
<td>Sets</td>
<td>62</td>
<td>INR</td>
<td></td>
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<td>7</td>
<td>Suspension Clamp suitable for suspension hardware fittings</td>
<td>85359090</td>
<td>Sets</td>
<td>358</td>
<td>INR</td>
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<td>8</td>
<td>Suspension Clamp suitable for Single &quot;I&quot; suspension pilot</td>
<td>85359090</td>
<td>Sets</td>
<td>128</td>
<td>INR</td>
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<td>9</td>
<td>Dead end clamp for tension hardware fittings</td>
<td>85359090</td>
<td>Sets</td>
<td>367</td>
<td>INR</td>
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Clamps for Hardware fittings suitable for HTLS conductor

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<th>S.No.</th>
<th>Item Description</th>
<th>HSN Code</th>
<th>Unit</th>
<th>Qty</th>
<th>Currency</th>
<th>Unit FOB Price</th>
<th>Unit CIF Price</th>
<th>Total CIF Price</th>
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<td>10</td>
<td>Mid span compression joint</td>
<td>76149000</td>
<td>Nos.</td>
<td>10</td>
<td>INR</td>
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<td>11</td>
<td>Repair Sleeve</td>
<td>76149000</td>
<td>Nos.</td>
<td>20</td>
<td>INR</td>
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<td>12</td>
<td>Vibration Damper</td>
<td>73082011</td>
<td>Nos.</td>
<td>1054</td>
<td>INR</td>
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Accessories for HTLS conductor

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<th>S.No.</th>
<th>Item Description</th>
<th>HSN Code</th>
<th>Unit</th>
<th>Qty</th>
<th>Currency</th>
<th>Unit FOB Price</th>
<th>Unit CIF Price</th>
<th>Total CIF Price</th>
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<tr>
<td>(II)</td>
<td>Total for Type Test Charges for Type Tests to be conducted Abroad (as per Schedule - 5a)</td>
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<td>(III)</td>
<td>Total CIF Price (I + II)</td>
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</table>

Note: Bidder is required to quote prices in this Schedule for all the individual items/sub-items. HSN Code shall be filled by Bidder. Bidder is required to quote prices in INR only. In case any additional equipment is required, the same should be included in the scope with no additional payment and the offer should be complete and comprehensive.

Signature: ___________________________
Printed Name: _______________________
Designation: ________________________
Date: _______________________________
Place: _____________________________

TENDER No. T18P080211


(Schedule of Rates and Prices)
### Table: Schedule of Rates and Prices

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Item Description</th>
<th>Plant and Equipment (including Mandatory Spares Parts) to be supplied from India, including Type Test charges for Type Test to be conducted in India.</th>
<th>QTY</th>
<th>CURRENCY</th>
<th>TAXES &amp; DUTIES (Not included in Ex Works Price Component)</th>
<th>UNIT</th>
<th>EX-WORKS PRICE</th>
<th>MODE OF TRANSACTION</th>
<th>TENDER NO. T18P080211</th>
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<td>1</td>
<td>High Temperature Low Sag (HTLS) conductor (as per Tech. Specification)</td>
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<td>5</td>
<td>Single &quot;I&quot; suspension pilot hardware fittings (except clamps)</td>
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<td><strong>Clamps for Hardware fittings suitable for HTLS conductor</strong></td>
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<td>Suspension Clamp suitable for suspension hardware fittings</td>
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<td>Suspension Clamp suitable for Single &quot;I&quot; suspension pilot hardware fittings</td>
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<td>Dead end clamp for tension hardware fittings</td>
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<td><strong>Accessories for HTLS conductor</strong></td>
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<td><strong>Total for Type Test Charges for Type Tests to be conducted in India (as per Schedule - 5b)</strong></td>
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</tr>
</tbody>
</table>

**Note:**
- Bidder is required to quote prices in this Schedule for all the individual items/sub-items.
- HSN Code shall be filled by Bidder.
- Bidder is required to quote prices in INR only.
- Specify amount of taxes, duties and levies as per GST Rules, payable on the transactions between contractor and employer as applicable for destination site/state on all items of supply including brought-out finished items (to be identified in the contract), which shall be dispatched directly from the Subvendor's works to the Employer's site (sale-in-transit) only.
- In case any additional equipment is required, the same should be included in the scope with no additional payment and the offer should be complete and comprehensive.

**Date:**

Signature: ___________________________

Printed Name: _______________________

Designation: _________________________

Common Seal: ________________________
## SCHEDULE-3

**Turnkey Package for HTLS Re-conductoring of 220KV D/C Gopalpur-Mandola ACSR Zebra Conductor Transmission line including Design, Supply, Erection, Testing & Commissioning of HTLS Conductor, Hardware fittings and Accessories.**

(Schedule of Rates and Prices)

**To,**

Delhi Transco Limited
Shakti Sadan, Kotla Road
New Delhi-110002

---

**Local Transportation, Insurance and other Incidental Services (including port clearance etc.)**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Item Description</th>
<th>Unit Qty</th>
<th>SAC Code</th>
<th>Whether SAC code is confirmed.</th>
<th>Unit Charges (INR)</th>
<th>Total Charges (INR)</th>
<th>GST</th>
<th>Whether rate of GST is confirmed.</th>
<th>Amount</th>
<th>SAC Code</th>
<th>Whether SAC code is confirmed.</th>
<th>Unit Charges (INR)</th>
<th>Total Charges (INR)</th>
<th>GST</th>
<th>Whether rate of GST is confirmed.</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Temperature Low Sag (HTLS) conductor (as per Tech. Specification)</td>
<td>Kms 140  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>2</td>
<td>Single suspension hardware fittings (except clamps)</td>
<td>Sets 320  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>3</td>
<td>Double suspension hardware fittings (except clamps)</td>
<td>Sets 38   996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>4</td>
<td>Single &quot;I&quot; suspension Pilot hardware fittings (except clamps)</td>
<td>Sets 128  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>5</td>
<td>Single tension hardware fittings (except clamps)</td>
<td>Sets 305  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>6</td>
<td>Double tension hardware fittings (except clamps)</td>
<td>Sets 62   996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>7</td>
<td>Clamps for Hardware fittings suitable for HTLS conductor</td>
<td>Sets 358  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>8</td>
<td>Suspension Clamp suitable for Single T&quot;suspension pilot hardware fittings</td>
<td>Sets 128  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>9</td>
<td>Dead end clamp for tension hardware fittings</td>
<td>Sets 367  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>10</td>
<td>Accessories for HTLS conductor</td>
<td>Nos. 10  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>11</td>
<td>Metal Split Compression Joint</td>
<td>Nos. 20  996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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<tr>
<td>12</td>
<td>Repair Sleeve</td>
<td>Nos. 1054 996519</td>
<td>included</td>
<td>18% 18% included</td>
<td>997136</td>
<td>included 18% 18% included</td>
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</tr>
</tbody>
</table>

**Note:** Bidder is required to quote the prices in this Schedule for all the individual items/sub-items.

**Date:**

**Place:**

---

**SAC Code shall be filled by Bidder**

In case any additional equipment is required, the same should be included in the scope with no additional payment and the offer should be complete and comprehensive.

**Signature:**

**Printed Name:**

**Designation:**

**Common Seal:**
SCHEDULE-4  


(Schedule of Rates and Prices)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Item Description</th>
<th>SAC Code</th>
<th>Unit</th>
<th>Qty</th>
<th>Unit Charges (INR)</th>
<th>Total Charges (INR)</th>
<th>Taxes &amp; Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Works associated with stringing of HTLS Conductor including fixing of Hardware required for HTLS conductor and accessories including following associated works</td>
<td>995461</td>
<td>Kms</td>
<td>140</td>
<td>Included</td>
<td>18%</td>
<td>Included</td>
</tr>
<tr>
<td>2</td>
<td>De-Stringing of 220KV D/C Gopalpur-Mandola T/L, dismantling of hardware and accessories of existing line and transportation of these items from site to DTL store or other site store along with proper stacking etc.</td>
<td>995461</td>
<td>LS</td>
<td>1</td>
<td>Included</td>
<td>18%</td>
<td>Included</td>
</tr>
</tbody>
</table>

Note: Bidder is required to quote prices in this Schedule for all the individual items / sub-items.

In case any additional equipment is required, the same should be included in the scope with no additional payment and the offer should be complete and comprehensive.

SAC Code shall be filled by Bidder

Date: ___________________________  
Signature: _______________________

Place: ___________________________  
Printed Name: _____________________

Common Seal: _______________________

---

Installation Charges

<table>
<thead>
<tr>
<th>Item Description</th>
<th>SAC Code</th>
<th>Unit</th>
<th>Qty</th>
<th>Unit Charges (INR)</th>
<th>Total Charges (INR)</th>
<th>Taxes &amp; Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation of necessary hardware, hoisting of insulator string, installing and stringing of HTLS Conductor including fixing of conductor accessories</td>
<td>995461</td>
<td>Kms</td>
<td>140</td>
<td>Included</td>
<td>18%</td>
<td>Included</td>
</tr>
<tr>
<td>De-Stringing of 220KV D/C Gopalpur-Mandola T/L, dismantling of hardware and accessories of existing line and transportation of these items from site to DTL store or other site store along with proper stacking etc.</td>
<td>995461</td>
<td>LS</td>
<td>1</td>
<td>Included</td>
<td>18%</td>
<td>Included</td>
</tr>
</tbody>
</table>

Total of (I) | 0.00 | 0.00 |
TENDER No. T18P080211


(Schedule of Rates and Prices)

Bidder's Name and Address:

Break-up of Type Test Charges for Type Tests to be conducted abroad

<table>
<thead>
<tr>
<th>S.No.</th>
<th>EQUIPMENT</th>
<th>DESCRIPTION OF TEST</th>
<th>Testing Location</th>
<th>TEST CHARGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Currency</td>
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<td>4</td>
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<td>6</td>
</tr>
</tbody>
</table>

NOT APPLICABLE

Note: Bidder shall conduct type test on equipments other than 220 kV XLPE cable system, if specified in their respective sections in Technical Specification Vol.-II without any cost implication to the purchaser.

Date: __________________________
Signature: ______________________

Place: _________________________
Printed Name: __________________
Designation: __________________
Common Seal: ___________________
Bidder's Name and Address:

Break-up of Type Test Charges for Type Tests to be conducted in India

<table>
<thead>
<tr>
<th>S.No.</th>
<th>EQUIPMENT</th>
<th>DESCRIPTION OF TEST</th>
<th>Testing Location</th>
<th>TEST CHARGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Currency</td>
</tr>
<tr>
<td>1</td>
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<td></td>
</tr>
</tbody>
</table>

**NOT APPLICABLE**

Note: Bidder shall conduct type test on equipments other than 220 kV XLPE cable system, if specified in their respective sections in Technical Specification Vol.-II without any cost implication to the purchaser.

Date: ___________________________  
Signature: _______________________

Place: ___________________________  
Printed Name _____________________  
Designation _______________________

Common Seal _______________________

---

TENDER No. T18P080211  
SCHEDULE 5(b)


(Schedule of Rates and Prices)
Bidder's Name and Address:
Training Charges for Training to be imparted abroad

<table>
<thead>
<tr>
<th>S.No</th>
<th>DESCRIPTION</th>
<th>Country where training is to be imparted</th>
<th>No. of Trainees</th>
<th>Training duration in days</th>
<th>Total Mandays</th>
<th>Training Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>1</td>
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<td></td>
</tr>
</tbody>
</table>

**NOT APPLICABLE**

**Note:** As per clause 4.0 Section IV Laying Jointing testing and commissioning, Vol-II, the training shall be provided at no extra cost to employer, the training charges shall be inclusive in the bid price.

**Date:**

**Signature:** ___________________________

**Printed Name:** _________________________

**Designation:** _________________________

**Common Seal:** _________________________

(Schedule of Rates and Prices)

**Bidder's Name and Address:**

<table>
<thead>
<tr>
<th>Training Charges for Training to be imparted in India</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.No</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**NOT APPLICABLE**

**Note:** As per clause 4.0 Section IV Laying Jointing testing and commissioning, Vol-II, the training shall be provided at no extra cost to employer, the training charges shall be inclusive in the bid price.

Date: ____________________________  
Signature: _________________________

Place: ____________________________  
Printed Name _______________________

Designation ________________________  
Common Seal ________________________

**Bidder’s Name and Address:**

---

### GRAND SUMMARY OF THE QUOTED BID PRICE.

#### SCHEDULE-7

<table>
<thead>
<tr>
<th>S.No</th>
<th>DESCRIPTION</th>
<th>Total Price (INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>TOTAL PRICE SCHEDULE-1</strong> Plant and Equipment (including Mandatory Spare Parts) to be supplied from Abroad, including Type Test Charges for Type Tests to be conducted Abroad.</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td><strong>TOTAL PRICE SCHEDULE-2</strong> Plant and Equipment (including Mandatory Spare Parts) to be supplied from within India, including Type Test Charges for Type Tests to be conducted in India</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td><strong>TOTAL PRICE SCHEDULE-3</strong> Local Transportation, Insurance and other Incidental Services (including port clearance etc.)</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td><strong>TOTAL PRICE SCHEDULE-4</strong> Installation Charges &amp; Civil Works</td>
<td>-</td>
</tr>
<tr>
<td>5.a</td>
<td><strong>TOTAL PRICE SCHEDULE-5A</strong> Break-up of Type Test charges for Type Tests to be conducted abroad. (Total of this schedule is included in PRICE Schedule - 1 above)</td>
<td>N/A</td>
</tr>
<tr>
<td>5.b</td>
<td><strong>TOTAL PRICE SCHEDULE-5B</strong> Break-up of Type Test charges for Type Tests to be conducted in India. (Total of this Schedule is included in PRICE Schedule - 2 above.)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**GRAND TOTAL 'A' = [ 1 + 2 + 3 + 4 ]**

We declare that the following are our quoted bid price in INR for the entire Scope of work as specified in the specifications and documents:

A. Quoted Bid Price Excluding taxes & duties (Grand Summary of the quoted Bid Price as in I above.):

1. In Figures: INR  
2. In Words: INR

B. Applicable Taxes & Duties and other levies, payable additionally, in respect of the transaction between the Owner and the Contractor:

1. GST (Total Amount to be mentioned)  
2. Custom Duty (Total Amount to be mentioned)  
3. Total taxes & duties (III)

C. Total Quoted Bid Price including Taxes and Duties and other levies, if contract is awarded to us i.e A+B above:

1. In Figures: INR  
2. In Words: INR

Date: ____________________________  
Signature: ____________________________

Place:  
Printed Name: ____________________________
Designation: ____________________________
Common Seal: ____________________________
TENDER No. T18P080211
(TAXES & DUTIES NOT INCLUDED IN BID PRICE)

Bidder's Name and Address:

Details of Taxes & Duties not included in the Bid Price (in line with clause CC 14.4, CC 14.5, CC 14.6 & CC 14.7 Volume I of Bidding Documents) is furnished below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description of Tax/Duty/Levy etc.</th>
<th>Rate of Tax/Duty/Levy (%)</th>
<th>Amount on which Tax/Duty/Levy Applicable</th>
<th>Tax/Duty/Levy Applicable Main Equipment</th>
<th>Tax/Duty/Levy Applicable Mandatory Spares</th>
<th>Total Tax/Duty/Levy Payable</th>
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</thead>
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<td>TOTAL</td>
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</table>

DELETED

DATE: ____________________________
PLACE: ____________________________

Signature: ____________________________
Printed Name: ____________________________
Designation: ____________________________
Common Seal: ____________________________
TENDER No. T18P080211  


(MINIMUM VALUE OF BOUGHT-OUT ITEMS FOR THE PURPOSE OF SALES TAX DECLARATION FORMS)

Bidder's Name and Address:

We indicate the minimum value of bought-out items only for the purpose of Sales-Tax declaration form.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description of bought-out items</th>
<th>Minimum value for the purpose of sales tax declaration form</th>
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</table>

DELETED

Date: 

Signature: ___________________________

Place: 

Printed Name _________________________

Designation _________________________

Common Seal _________________________

(SCHEDULE OF RATES AND PRICES)

Bidder's Name and Address:

Details of recommended spare parts & recommended test equipment (in line with Technical specifications) is furnished below:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Name &amp; Description of Parts</th>
<th>Name of Original Manufacturer</th>
<th>Part No.</th>
<th>Number of Units in each Set</th>
<th>Total No. of Sets to be provided</th>
<th>Unit Price</th>
<th>Total Price</th>
<th>Remarks</th>
</tr>
</thead>
</table>

Date:  
Place:  

Signature: ___________________________

Printed Name: _________________________  
Designation: _________________________  
Common Seal: _________________________