

SECTION-I

**TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(INVITATION OF DOMESTIC COMPETITIVE BIDDING)**

Notice Inviting Tender for the Work:-

“Construction of 1X100 KVA Sub-station for newly constructed building of "BMR commerce & concepts Pvt. Ltd." for 12 nos. flat at Ramnagar Road No. 4 (near Ramnagar Boys H/s School), Agartala under the jurisdiction of ESD-IV, TRTC complex, Agartala.”

INTRODUCTION: A requisition has been received from Mr. Badal kumar Saha, Director, BMR commerce and concept Pvt. Ltd., Agartala for above mentioned work. After getting the requisition the concerned Senior Manager (ESD-IV, TRTC complex, Agartala) has visited the site and prepared an estimate. Accordingly, the necessary fund to execute the work has been deposited by the Applicant. The work in nature related to construction of 11/0.433 KV Sub-station for power supply to newly constructed building.

1.0 SCOPE OF WORK:

Scope of work given above is only indicative. The detailed scope has been described in the **Schedule of Work / Price Schedule** attached with this bidding document.

▶ Bid receipt date & time	: 28 /06/2022 up to 2:00 p.m.
▶ Bid opening Date & time (Pre-qualification, Techno Commercial Bid & Price Bid)	: 28/06/2022 at 4:00 p.m., (if possible)
▶ Cost of Bid document	: Rs. 1,000.00
▶ Estimated Cost	: Rs. 4, 62,594.00
▶ Earnest Money	: Rs. 9,252.00
▶ Completion Period	: 45 (Forty five) Days.

2.0 QUALIFYING REQUIREMENTS FOR BIDDERS

To be qualified to bid for the package, the bidder shall have to meet the following minimum criteria:

- 2.1 The Bidder must have successfully executed similar nature of work prior to submission of bid.
- 2.2 Bids may be submitted by an individual firm (proprietorship entity) with relevant experience or registered partnership firm or companies registered under companies act .
- 2.3 A single firm of proprietorship entity or registered partnership firms or companies registered under Companies Act, which meets the requirements, indicated in para 2.1 & 2.2 above.

- 2.3 Notwithstanding anything contained here-in above, TSECL reserves the right to assess the “capacity and capability” of the bidder to execute the work eligibility.”
- 2.4 The bidder shall furnish the following documentary evidences in support of mandatory qualifying requirements.
- (i) Photocopy of GST Registration certificate.
 - (ii) Photocopy of PAN card of bidder.
 - (iii) Labor Registration Certificate.
 - (iv) Photocopy of Electrical contractor license issued by the appropriate authority.
 - (v) Photocopy of Electrical enlistment.
 - (vi) Work Experience certificate/LOA, not below the rank of Executive Engineer/DGM.
- 2.5 Photocopies of all documents furnished shall be self-authenticated and duly stamped.
- 2.6 TSECL reserves the right to check the originals, if required.
- 2.7 The bidder shall bear all **cost and expenses** associated with purchase and submission of its bid including post bid discussions, technical; & other presentation etc., and **TSECL** will in no case be responsible or liable for those cost, regardless of the conduct or outcome of the bidding process.
- 3.0** The bidder shall furnish documentary evidence in support of the qualifying requirements stipulated above as **per clause 2.0** (above) along with their bid. Bid received without such documents shall be summarily rejected.
- 4.0** (i) **EARNEST MONEY** : The bidder shall deposit earnest money as mentioned in clause no.1(above), in favor of **TRIPURA STATE ELECTRICITY CORPORATION LIMITED** to the below mentioned bank account details:

Bank Account No. 38313285901

Bank: SBI

Branch: TLA House, Agartala.

IFSC CODE: SBIN0005559

- (ii) **COST OF BID DOCUMENT / TENDER FEE**: The bidder shall deposit **cost of Bid document/ Tender fee as mentioned in clause no.1(above)**, in favor of **TRIPURA STATE ELECTRICITY CORPORATION LIMITED** to the below mentioned bank account details:

Bank Account No. 31829890332

Bank: SBI

Branch: TLA House, Agartala.

IFSC CODE: SBIN0005559

- 4.1 **The bidder shall have to submit bank deposit document / statement as documentary evidence in respect of EMD and Tender fee along with the Bid in a separate sealed envelopes.**

Bid not accompanied with bank deposit document/statement as documentary evidence of earnest money and tender fee deposit in a separate sealed envelopes shall not be entertained and shall be declared informal.

- 5.0 The bidding documents are not transferable and cost of bidding document is not refundable under any circumstances.

The original bidding document shall be signed by the bidder (s) on all pages and will be enclosed with the COMMERCIAL / PRICE bidding schedule. All corrections to rates and items in the Bid(s) should be initialed by bidders. Every Page of the Schedule Price Bidding Shall is signed in full by the Bidder(s).

- 6.0 **The Bidder(s) shall have to give a DECLARATION that he/they have gone through the details of the Bidding Document(s) as per format appended with the Bidding Document.**

- 7.0 **Address for Communication.**

Deputy General Manager, Electrical Division No-I,
Tripura State Electricity Corporation Limited
Banamalipur, Agartala – 799001, West Tripura.
E-mail: dgm.ed1agt@gmail.com

8.0 SPECIAL TERMS & CONDITIONS WITH BIDDERS

- 1. Quoted rates should be inclusive of all charges.**
- 2. All the quoted rates should be inclusive of all taxes (GST also). Whatever the price quoted by the agency, it will be considered as inclusive of all taxes.**
3. The successful Agency shall have to enter into an agreement in TSECL format within 15 (Fifteen) days from the date of issue of LOA. If the agency fails to carry out the agreement within the prescribed format, earnest money will be forfeited and action will be taken as per TSECL norms.
4. Rate should be inclusive of all taxes and duties and FOR destination.
5. Item(s) for which no rate or price has been entered by the authorized dealer/agency shall not be paid for and shall be deemed covered by other rates/prices in the contract.
6. When there is a difference between the rates in figures and in words, the rates in words by the contractor shall be taken as correct.
7. All corrections to rates and amount in the tender document shall be initiated by the contractor. Every page including the blank pages of the bid documents shall be signed by the contractor.
8. Payment will be made as per norms of TSECL.
9. Rate should be quoted for each item in Figure & Words inclusive of GST.
10. No articles as mentioned in the Bid Document will be received below standard quality in any shape.
11. The TSECL reserves the right to reject the materials which will found below standard quality, if concerned Senior Manager reports.
12. The TSECL reserves the right to cancel the LOA if Bidder failed to complete the work with stipulated time without further Notice

SECTION-II

INSTRUCTION TO BIDDERS

1.0 GENERAL INSTRUCTIONS

“The bidders are to satisfy themselves by visiting to the ‘site of work’ as regards the prevailing condition of proposed site, its approaches, transportation facilities, availability of laborers and other availabilities etc. before submission of bid. No claim or excuse on this account will be entertained at any stage later on.

The location of the work falls within the jurisdiction of **Electrical Division No. I, Agartala, Tripura.**

2.0 COST OF BIDDING

The Bidder shall bear all the costs and expenses associated with preparation and submission of its Bid including pre bid/post-bid discussions, technical and other presentation etc. and the TSECL shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

3.0 LOCAL CONDITIONS

3.1. It shall be imperative on each bidder to fully inform him of all local conditions and factors, which may have any effects on the execution of the contract covered under these documents and specifications. **The Owner shall not entertain any request for clarification from bidders, regarding such local conditions.**

3.2. It must be **understood and agreed that such factors as above have properly been investigated and considered while submitting the proposals.** No claim for financial adjustment to the Contract awarded under these specifications and documents shall be entertained by TSECL. Neither any change in the **time schedule** of the Contract nor any **financial adjustments** arising thereof shall be permitted by TSECL.

4.0 DOCUMENTS COMPRISING THE BID

The Bids shall be submitted in 2(two) parts in separate sealed envelopes properly superscribing Tender No, Name of Work, and bid opening date as follows:

4.1 Part-I: Pre-qualification Bid Data and Techno Commercial Bid :

1. Containing documentary evidence (bank deposit document/statement) of **Earnest money** deposit as per the stipulation of the Bid Document in a separate sealed envelope.

2. Containing documentary evidence (bank deposit document/statement) of **Cost of Bid Document/Tender fee** deposit as per the stipulation of the Bid Document in a separate sealed envelope.

3. Containing Documentary Evidence of the Bidder fulfilling the **Qualifying Requirements** stipulated in the **NIT / Bid Document (clause-2.4 of Section-I)**. The document to be submitted shall include copies of the **relevant work order / purchase order** /Award letters / Agreements etc. and corresponding completion certificates issued by the concerned clients. ~~The Bidder shall also furnish copies of the audited balance sheet and Profit and Loss Accounts for the last three financial years (w.r.t. the bid opening date) In support of their meeting the financial qualifying requirement ,if required. The Bidder shall also have to submit professional tax clearance certificate & sales tax clearance certificate and all such other documents deemed necessary in support of their meeting the stipulated qualifying requirement and its credentials , if required.~~

3. Containing Bidder's **Technical Proposal / Guaranteed Technical particular, drawings** etc. along with his **Commercial Terms, Payment Terms** in conformity with the Bid Documents.

4.2 Part-II: Price Bid:

The price schedule as per the format indicated in the Bid Price Schedule. **The price should be quoted both in figures and words (in Rupees only)** . Quoted Prices shall be FIRM and inclusive of all cost of labour, insurance, EPF charges, spares, T&Ps, all consumables & materials and all applicable tax and duties.

The Bidder **shall quote unit rates** in the appropriate schedule of the Bid Form.

5.0 PRICE BASIS

The Bidder shall quote in the appropriate schedule of the Bid Form, “in Rupees only” for the entire Scope of Work (covered under the Bidding Documents) and also the unit quoted rates shall be firm.

6.0 TAXES AND DUTIES:

6.1. GST and other levies payable by the bidders in respect of the transactions between the bidder and their vendors /sub suppliers while procuring any components, sub-assemblies, raw materials and equipment shall be included in the bid price and no claim on this behalf shall be entertained by TSECL .The bid price shall be **Inclusive of GST**.

6.2. **Concessional Sales Tax declaration forms, as admissible**, shall be issued to the Contractor, on request, for all items (as identified in the price schedule of the Bid) to be supplied directly

by the Contractor as well as for the items to be supplied by the Sub- suppliers **as sale-in-transit.**

- 6.3. As regards the Income Tax surcharge or Income Tax and other corporate taxes, the Bidder shall be responsible for such payment to the concerned authorities.

7.0 TIME SCHEDULE

- 7.1. The basic consideration and the essence of the Contract shall be strict adherence to the time schedule for performing the specified works.
- 7.2. The requirement of completion schedule for the works is mentioned in Clause – 1 (Section – I) of this document.
- 7.3. The completion schedule as stated in Clause – 1 (Section – I) shall be one of the major factors in consideration of the Bids.
- 7.4. TSECL reserves the right to request for a change in the work schedule during post bid discussion with successful bidder.
- 7.5. The successful Bidder shall be required to submit detailed BAR CHART and finalize the same with TSECL, as per the requirement of completion schedule.

8.0 BID GUARANTEE:

- 8.1. The Bidder shall furnish, as part of its Bid, **earnest money** for an amount as specified in the **Notice inviting Tender (NIT)** as per clause no.4.0 (section –I)
- 8.2. The earnest money is required to protect TSECL against the risk of Bidder's conduct, which would warrant the **earnest money forfeiture pursuant to Para 8.7.**
- 8.3. The earnest money shall be deposited in Indian rupees only.
- 8.4. Any bid not secured in accordance with para 8.1 and 8.3 above, shall be rejected by TSECL as non-responsive.
- 8.5. **The earnest money of the unsuccessful Bidders shall be discharged / returned as promptly as possible as but not later than 60 days after the expiration of the period of bid validity prescribed by the Owner.**
- 8.6. The earnest money of the successful Bidder will be released with the performance guarantee required to be furnished on receipt of award of contract / Letter of Award.

8.7. The earnest money shall be forfeited:

- a. If a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the bid form; or
- b. In case of a successful Bidder fails:
 - i) to sign the contract; or
 - ii) to furnish the ‘**Contract Performance Guarantee**’.

8.8. No interest shall be payable by TSECL on the above earnest money.

9.0 PERIOD OF VALIDITY OF BIDS:

- 9.1. Bids shall remain valid for **6 (six) calendar** months after the date of **bid opening** prescribed by TSECL, unless otherwise specified in the accompanying Special Conditions of Contract. A Bid valid for a shorter period shall be rejected by TSECL **as non-responsive**.
- 9.2. In exceptional circumstances, TSECL may solicit the Bidder’s consent to an extension of the period of Bid validity. The request and the response thereto shall be made in writing (including cable or fax). The Earnest money provided shall also be retained up to the extended period. No interest shall be payable by TSECL for retaining the earnest money up to the extended period. A Bidder may refuse the request without forfeiting the earnest money deposited by him. A Bidder granting the request shall

SUBMISSION OF BIDS

10.0 FORMAT OF BID:

- 10.1. The Bidder shall deposit hard copy of uploaded documents of the Bid to the tendering authority of TSECL during opening of Price Bid.
- 10.2. The hard copy of uploaded documents of the Bid shall be signed by the Bidder or a person or persons duly authorized by the bidder to sign the bidding document. The **letter of authorization** shall be indicated by written **power-of-attorney** accompanying the Bid. All pages of the Bid, except for un-amended printed literature, shall be initialed by the person or persons signing the Bid.
- 10.3. The Bid shall be uploaded / submitted **in two parts** as described in **clause no. 4 (Section – II)**.

11.0 SIGNATURE OF BIDS:

- 11.1. The Bid must contain the name, residence and place of business of the person or persons making the Bid and shall be signed and sealed by the Bidder with his usual signature. The names of all persons signing shall also be typed or printed below the signature.

- 11.2. Bids not conforming to all the above requirements of **clause 4.0 (section-II)** may be disqualified.
- 11.3. The original bidding document shall be signed by the bidder(s) on all pages and will be enclosed with the COMMERCIAL/PRICE bidding schedule and all corrections to rates and items in the bid(s) should be initials by the bidder(s). Every page of the schedule price bidding shall be signed in full by the bidder(s).

12.0 SEALING AND MARKING OF BIDS:

- 12.1. The Bidders shall sealed the “**Original**” and “**Copy of Bid**” in an inner and outer envelope, duly marking the envelopes as “Original” and “Copy”.
- 12.2 The Inner and Outer envelope shall be:

a. Address for Communication.

Dy. General Manager, Electrical Division No-I,
Tripura State Electricity Corporation Limited
Banamalipur ,Agartala – 799001, West Tripura.

b. Bear (the NIT NO, Name of Work & Date of opening).

The Inner envelope shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared "Late" or Rejected".

- 12.3 The earnest money must be submitted in a separate sealed envelope.

13.0 LATE BIDS:

- 13.1. Any Bid received by TSECL after the time & date fixed or extended for submission of Bids prescribed by TSECL, shall be rejected and /or return and opened to the Bidder.

BID OPENING AND EVALUATION

14.0 OPENING OF BIDS BY TSECL:

- 14.1. First the cover containing Earnest money and Cost of Bid Documents as per clause 3.1 of Section – I, documents shall be opened and then documents of qualifying requirement as per clause 2.0 of Section-I shall be opened. Only those Bidders whose Bid contains Earnest money and documents of qualifying requirements as per the stipulations of Section - I shall be considered eligible for opening of **Techno Commercial** Bid which shall also be opened on the same day. The Price Bid (**Part-II**) of the eligible bidders on the **basis of evaluation of Part-I**. Bid shall be opened on a subsequent date. **The date of opening of the price Bid (Part-II) shall be notified in writing or by Fax to all qualified Bidders.**

In case the above schedule date of opening of Bid is declared holiday by the State / Central Govt. the Bid will be opened on the following working day keeping time unaltered.

15.0 DEFINITIONS AND MEANINGS:

15.1. For the purpose of the evaluation and comparison of bids, the following meanings and definition shall apply: -

a. **‘Bid Price’** shall mean the base price quoted by each Bidder in his proposal for the complete scope of works.

b. **“Cost Compensation for Deviations”** shall mean the Rupee value of deviations from the Bidding Documents, as determined from the Bidder’s proposal.

c. **“Evaluated Bid Price”** shall be the summation of ‘Bid Price’, ‘Differential Price’ and ‘Cost Compensation for Deviations’.

15.2. Calculation of Differential Price & Cost Compensation for Deviations.

16.0 Deviations from the Bidding Documents in so far as practicable shall be converted to a Rupee value and added to the Bid Price to compensate for the deviation from the Bidding Documents while evaluating the Bids. In determining the Rupee value of the deviations, TSECL shall use parameters consistent with those specified in the specifications and documents and/or other information as necessary and available to TSECL.

AWARD OF CONTRACT

17.0 AWARD CRITERIA:

17.1. TSECL shall award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as technically acceptable and lowest evaluated Bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily. TSECL shall be the sole judge in this regard.

17.2. Further, TSECL reserves the right to award separate Contracts to two or more parties in line with the terms and conditions specified in the accompanying Technical Specifications.

18.0 OWNER’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS:

18.1. TSECL 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 such action.

19.0 NOTIFICATION OF AWARD:

- 19.1. Prior to the expiration of the period of bid validity and extended validity period, if any, TSECL shall notify the successful Bidder in writing by registered letter or by telex or FAX, to be confirmed in writing by registered letter, that his Bid has been accepted.
- 19.2. The Notification of Award / Letter of Award shall constitute the formation of the Contract.
- 19.3. **Upon the successful Bidder's furnishing of Contract Performance Guarantee pursuant to Clause 21.0(of Section-II). TSECL shall promptly notify each unsuccessful Bidder and will discharge its bid guarantee, pursuant to Clause 8.5 (of Section – II)**

20.0 SIGNING OF CONTRACT:

- 20.1. At the same time as TSECL notifies the successful Bidder that its bid has been accepted, TSECL shall send the Bidder the detailed Letter of Award.
- 20.2. **Within 15(Fifteen) days** of receipt of the detailed Letter of Award, the successful Bidder shall convey in writing unconditional acceptance of the Letter of Award and shall attend the **respective office of TSECL for signing the contract agreement.**

21.0 CONTRACT PERFORMANCE GUARANTEE:

- 21.1. Within **15(Fifteen) days** of receipt of letter of award , the successful bidder shall have to deposit a **Contract Performance Guaranty** equivalent to @10% of the LOA Value as a contract performance security in the shape of **Demand Draft** in favor of **TRIPURA STATE ELECTRICITY CORPORATION LIMITED** from any schedule bank guaranteed by Reserve Bank of India payable at Agartala. The contract performance guarantee submitted shall be valid up to **90(ninety) days from the date of successful and satisfactory commissioning / completion of work.**
- 21.2. **The contract performance Guarantee shall be forfeited: -**
- a) **If the contractor fails to start the work as per approved BAR CHART for reasons solely rest on him.**
 - b) **If the contractor left / suspends the work without prior written intimation to the owner's Engineer in charge of the work stating the reasons for such suspension of work.**
 - c) **If the contractor left /suspends the work for reasons which are not acceptable to TSECL.**

SECTION-III

GENERAL TERMS & CONDITIONS OF CONTRACT

A. INTRODUCTION:

1.0 DEFINITION OF TERMS:

- 1.1** 'The Contract' means the agreement entered into between Tripura State Electricity Corporation Limited and Contractor as per the Contract Agreement signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.2** 'Owner' shall mean **TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL)** and shall include their legal representatives, successors and assigns.
- 1.3** 'Contractor' or 'Manufacturer' shall mean the Bidder whose bid shall be accepted by TSECL for award of the Works and shall include such successful Bidder's legal representatives, successors and permitted assigns.
- 1.4** 'Sub-contractor' shall mean the person named in the Contract for any part of the Works or any person to whom any part of the Contract has been sublet by the Contractor with the consent in writing of the owner's Engineer in charge of the work and shall include the legal representatives, successors and permitted assigns of such person.
- 1.5** 'Consulting Engineer'/'Consultant' shall mean Power Grid Corporation of India Ltd. or any firm or person duly appointed as such from time to time by TSECL ..
- 1.6** The terms 'Equipment', 'Stores' and 'Materials' shall mean and include equipment, stores and materials to be provided by the Contractor under the Contract.
- 1.7** 'Works' shall mean and include the furnishing of equipment, labour and services, as per the Specifications and complete erection, testing and putting into satisfactory operation including all transportation, handling, unloading and storage at the Site as defined in the Contract.
- 1.8** 'Specifications' shall mean the Specifications and Bidding Documents forming a part of the Contract and such other schedules and drawings as may be mutually agreed upon.
- 1.9** 'Site' shall mean and include the land and other places on, into or through which the works and the related facilities are to be erected or installed and any adjacent land, paths, street or reservoir which may be allocated or used by TSECL or Contractor in the performance of the Contract.

- 1.10** The term ‘**Contract Price**’ shall mean the item wise price / lump-sum price quoted by the Contractor in his bid with additions and/or deletions as may be agreed and incorporated in the Letter of Award, for the entire scope of the works.
- 1.11** The term ‘**Equipment Portion**’ of the Contract price shall mean the ex-works value of the equipment.
- 1.12** The term ‘**Erection Portion**’ of the Contract price shall mean the value of field activities of the works including erection, testing and putting into satisfactory operation including successful completion of performance and guarantee tests to be performed at Site by the Contractor including cost of insurances.
- 1.13** ‘**Manufacturer’s Works**’ or ‘**Contractor’s Works**’, shall mean the place of work used by the manufacturer, the Contractor, their collaborators/associate or sub-contractors for the performance of the Contract.
- 1.14** ‘**Inspector**’ shall mean TSECL or any person nominated by TSECL from time to time, to inspect the equipment; stores or Works under the Contract and/or the duly authorized representative of TSECL.
- 1.15** ‘**Notification of Award of Contract**’/‘**Letter of Award**’/‘**Telex of Award**’ shall mean the official notice issued by TSECL notifying the Contractor that his bid has been accepted.
- 1.16** ‘**Date of Contract**’ shall mean the date on which Notification of Award of Contract/Letter of Award/Telex of Award has been issued.
- 1.17** ‘**Month**’ shall mean the calendar month. ‘Day or ‘Days’, unless herein otherwise expressly defined, shall mean calendar day or days of 24 hours each.
- 1.18** A ‘**Week**’ shall mean continuous period of seven (7) days.
- 1.19** “Writing” shall include any manuscript, type written or printed statement, under or over signature and/or seal as the case may be.
- 1.20** When the words ‘Approved’. Subject to Approval’, ‘Satisfactory’, ‘Equal to’, ‘Proper’, ‘Requested’, ‘As Directed’, ‘Where Directed’, ‘When Determined by’, ‘Accepted’, ‘Permitted’, or words and phrases of like importance aroused, the approval, judgment, direction etc. is understood to be a function of TSECL.
- 1.21** “**Test on Completion**” shall mean such tests as prescribed in the Contract to be performed by the Contractor before the work is Taken Over by TSECL.
- 1.22** ‘**Start Up**’ shall mean the time period required to bring the equipment covered under the Contract from an inactive condition, when construction is essentially complete, to the state

ready for trial operation. The startup period shall include preliminary inspection and checkout of equipment and supporting sub-system, initial operation of the complete equipment covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action, shut down, inspection and adjustment prior to the trial operation period.

- 1.23 “Initial Operation”** shall mean the first integral operation of the complete equipment covered under the Contract with the sub-system and supporting equipment in service or available for service.
- 1.24 ‘Trial Operation’, ‘Reliability Test’, ‘Trial Run’, ‘Completion Test’** shall mean the extended period of time after the startup period. During this trial operation period, the unit shall be operated over the full load range. The length of Trial Operation shall be as determined by the Engineer of TSECL unless otherwise specified elsewhere in the Contract.
- 1.25 ‘Performance and Guarantee Test’** shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency and operating characteristics as specified in the Contract Documents.
- 1.26** The term **‘Final Acceptance / Taking Over’** shall mean written acceptance of the Works performed under the Contract by TSECL, after successful commissioning/completion of Performance and Guarantee Tests, as specified in the accompanying Technical Specification or otherwise agreed in the Contract.
- 1.27 “Commercial Operation”** shall mean the Conditions of **Operation in which the complete equipment covered under the Contract is officially declared by TSECL to be available for continuous operation at different loads up to and including rated capacity**. Such declarations by TSECL, however, shall not relieve or prejudice the Contractor of any of his obligations under the Contract.
- 1.28 ‘Guarantee period’/‘Maintenance Period’** shall mean the period during which the Contractor shall remain liable for repair or replacement of any defective part of the works performed under the contract.
- 1.29 ‘Latent Defects’** shall mean such defects caused by faulty designs, material or workmanship which cannot be detected during inspection, testing etc, based on the technology available for carrying out such tests.
- 1.30 ‘Drawings’, ‘Plans’** shall mean all:
- a) Drawing furnished by TSECL as a basis for Bid Proposals.
 - b) Supplementary drawings furnished by TSECL to clarify and define in greater detail the intent of the Contract.

c) Drawings submitted by the Contractor with his Bid provided such drawings are acceptable to TSECL.

d) Drawings furnished by TSECL to the Contractor during the progress of the Work; and

e) Engineering data and drawings submitted by the Contractor during the progress of the Work provided such drawings are acceptable to the DGM in charge of the work.

1.31 “Codes” shall mean the following including the latest amendments and / or replacement, if any:

a) A.S.M.E. Test Codes.

b) A.I.E.E. Test Codes.

c) American Society of Testing Materials Codes.

d) Standards of the Indian Standards Institutions.

e) I.E.E.E. standards.

f) I.E.C. standards.

g) Other Internationally approved standards and / or Rules and **Regulations touching the subject matter of the Contract.**

1.32 Words imparting ‘Person’ shall include firms, companies, corporation and association or bodies of individuals.

1.33 Terms and expressions not herein defined shall have the same meaning as are assigned to them in the **Indian Sale of Goods Act (1930)**, failing that in the **Indian Contract Act (1872)** and failing that in the **General Clauses Act (1897)** including amendments thereof if any.

1.34 In addition to the above the following definitions shall also apply.

a) ‘All equipment and materials’ to be supplied shall also mean ‘Goods’.

b) ‘Constructed’ shall also mean ‘erected and installed’

c) ‘Contract Performance Guarantee shall also mean ‘Contract Performance Security’

2.0 JURISDICTION OF CONTRACT:

The laws applicable to the Contract shall be the laws in force in India. The Courts of **Agartala** shall have exclusive jurisdiction in all matters arising **under this Contract.**

3.0 MANNER OF EXECUTION OF CONTRACT:

3.1 The contractor should attend the concerned office of TSECL within 15(fifteen) days from the date of issue of the Letter of Award to the Contractor for signing the contract agreement. The

Contractor shall provide for signing of the Contract, Performance Guarantee, appropriate power of attorney and other requisite materials.

3.2 The Agreement shall be signed in two originals and the Contractor shall be provided with one signed original and the rest shall be retained by TSECL.

3.3 The Contractor shall provide **free of cost to TSECL** all the engineering data, drawings, and descriptive materials submitted with the Bid, in at least 03 (three) copies to form a part of the contract immediately after issue of Letter of Award.

3.4 Subsequent to signing of the Contract, the Contractor, at his own cost, shall provide TSECL with at least 5 (five) true copies of Agreement within seven (7) days after the signing of the Contract.

4.0 COMPLETION OF CONTRACT:

4.1 Unless otherwise terminated under the provisions of any other relevant clause, this Contract shall be deemed to have been completed on the date stipulated in the NIT.

5.0 LIQUIDATED DAMAGES:

5.1 If the Contractor fails to successfully complete the commissioning within the time fixed under the Contract, the Contractor shall pay to TSECL as liquidated damages and not as penalty a sum specified for each specified period of delays.

The details of such liquidated damages are brought out in the accompanying Special Conditions of Contract.

5.2 Equipment and materials will be deemed to have been delivered only when all its components, parts are also delivered. If certain components are not delivered in time, the equipment and materials will be considered as delayed until such time the missing parts are also delivered.

5.3 The total amount of liquidated damages for delay under the Contract will be subject to a maximum of 5% of the Contract price.

6.0 CO-OPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEERS:

The Contractor shall agree to cooperate with the TSECL's Consulting Engineers and freely exchange with them such technical information, as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts. The owner's Engineer in charge of the work shall be provided with three copies of all correspondence addressed by

the Contractor to the consulting Engineers of TSECL in respect of such exchange of technical information.

7.0 INSPECTION & TESTING OF EQUIPMENTS / MATERIALS:

7.1. All equipments/ materials shall be dispatched by the Contractor along with test report certificate of materials. No inspection shall be conducted at manufacturer's works for Power cable (of quantity) less than **500 meter** / other petty materials. However, field inspection at site shall be conducted by the representative of TSECL officials. No such materials will be accepted without test report certificate.

7.2 Testing of equipments / materials as specified above shall be conducted at worksite at risk and cost of the contractors. The contractor shall arrange accordingly.

8.0 EXTENSION OF TIME:

TSECL may consider granting **time extension** for completion of the work, as per fulfillment of following conditions:

a) A written application in prescribed Performa of TSECL by the contractor/Agency to the Senior Manager,ESD Concerned, **within maximum 60(sixty) days after occurrence of Hindrance attributable to TSECL or force majeure conditions** along with authenticated documentary evidences of such Hindrance attributable to TSECL or force majeure conditions (specified in 12.0,Section-III) which hindered the normal performance of the contract/agreement within the time as stipulated in the contract/agreement.

b) The **Engineer-in charge** must be of the opinion that the grounds shown for the extension of time are reasonable and without extension of such time completion of the work is practically impossible.

c) **The Engineer-In- Charge** will have full powers, but the orders on the application of the Contractor accepted by the Authorities higher than the Engineer-In-Charge shall be issued by him only after written approval from the concerned authority higher than Engineer-In-Charge.

d) The decision in writing by assigning cogent reasons by the competent authority of TSECL, whether the grounds shown for the extension of time on account of Hindrance attributable to TSECL or Force Majeure conditions are reasonable or not, may be challenged before the next higher authority.

e) The decision in writing by assigning reasons of Appellate authority, shall be final and conclusive and the supplier/contractor/service provider seeking time extension under this clause shall be bound by the decision of the Appellate authority

CONTRACT SECURITY AND PAYMENTS

8.0 CONTRACT PERFORMANCE GUARANTEE:

The Contractor shall furnish Contract Performance Guarantee as specified in **Clause -21.0 of Section -II** for the proper fulfillment of the Contract within **Fifteen (15) days** of “Notice of Award of Contract.”

9.0 CONTRACT PRICE ADJUSTMENT:

“All prices / price components of the contract shall remain firm and no adjustment of price, whatsoever, shall be applicable during the currency of contract”

10.0 TERMS OF PAYMENT

The terms of payments for various activities under the contract are as under.

10.1 Price of Supply and Erection

A) Supply of Equipments / materials (except spares, tools & plants):-

i) **90%** of cost of Equipment / materials after:

a) Acknowledgement of Letter of Award.

b) Submission of contract performance guarantee as per clause 3.1 (Section – I) in the shape of demand draft in favour of Tripura State Electricity Corporation Limited payable at SBI, TLA House Branch, Agartala, West Tripura..

c) Submission of a detailed Bar Chart based on the work schedule stipulated in the Bid document and its approval by TSECL.

d) Signing of contract agreement.

e). On production of dispatch documents including the material inspection clearance certificate (MICC) issued by the inspecting officer / team of TSECL, if required.

f). Finally, on receipt of materials at site.

ii) **Balance 10%** after successful commissioning.

B) Erection :-

100% on successful erection of Cable/ equipments / materials as per lay-out drawing / Erection Schedule submitted by the bidder and approved by TSECL. On establishing your office at site preparatory to mobilization of your erection establishment including posting of site engineer.

C) Spares, tools and plants:

100% on receipt of the Spares and T& Plants in full and good condition.

- 10.2 All further payments under the Contract shall be made as stipulated in the Contract document after signing the Contract Agreement. The adjusted contract price as per relevant clauses of the contract document shall be made by TSECL or adjusted from the progressive bill of the contractor on submission of price adjustment invoices with supporting documents by the contractor and on final acceptance by TSECL.

10.3 Price adjustment / Contract Variation

Quoted Prices shall be FIRM. No variation of the quoted prices will be allowed within the Scheduled Completion period or within any extended period as approved by Engg. in Charge / TSECL authority

10.4 Spares

The Ex-works price components including packing and forwarding charges of spares shall be paid as indicated below: -

- a) On receipt and storage at Site and on physical verification by the owner's Engineer in charge of the work.

11.0 LIABILITY FOR ACCIDENTS AND DAMAGES

Under the Contract, the Contractor shall be responsible for loss or damage to the equipment until the successful completion of commissioning as defined else-where in the Bidding Documents.

12.0 FORCE MAJEURE :

- 12.1 Force majeure shall mean Act of God & Nature like , Earthquake, Deluge, Flood, Epidemic, unexpected events like War, Strike, Curfew, Civil & Military Emergencies.

In Tripura State, routine and normal Gale, storm, hurricane, thundering etc. regularly lashing the state will not be considered as Force-majeure events.

- 12.2 The Contractor or TSECL shall not be liable for delays in performing his obligations resulting from any force-majeure cause as referred to and/or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time.

SECTION-IV: ERECTION CONDITIONS OF CONTRACT

1.0 GENERAL

- 1.1 The following shall supplement the conditions already contained in the other parts of these specifications and document and shall govern the portion of the work of this Contract to be performed at Site.
- 1.2 The Contractor upon signing of the Contract shall, in addition to a Project Coordinator, nominate another responsible officer as his representative at Site suitably designated for the purpose of overall responsibility and co-ordination of the works to be performed at Site. Such person shall function from the Site Office of the Contractor.

2.0 REGULATION OF LOCAL AUTHORITIES

- 2.1 The Contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities. He shall also comply with the Minimum Wages Act, 1948 and the Payment of Wages Act (both of the Government of India) and the rules made there-under in respect of any employee or workman employed or engaged by him or his Sub-Contractor.
- 2.2 All registration and statutory inspection fees, if any, in respect of his work pursuant to this Contract shall be to the account of the Contractor. However, any registration, statutory inspection fees lawfully payable under any statutory laws and its amendments from time to time during erection in respect of the equipment ultimately to be owned by the Owner, shall be to the account of TSECL. Should any such inspection or registration need to be re-arranged due to the fault of the Contractor or his Sub-Contractor, the additional fees to such inspection and/or registration shall be borne by the Contractor.

3.0 CO-OPERATION WITH OTHER CONTRACTORS

- 3.1 The Contractor shall co-operate with all other Contractors or tradesmen of TSECL, who may be performing other works on behalf of TSECL and the workmen who may be employed by TSECL and doing work in the vicinity of the Works under the Contract. The Contractor shall also so arrange to perform his work as to minimize, to the maximum extent possible, interference with the work of other Contractors and their workmen. Any injury or damage that may be sustained by the employees of the other Contractors and TSECL, due to the Contractor's work shall promptly be made good at the Contractor's own expense. The site Engineer of TSECL shall determine the resolution of any difference or conflict that may arise between the Contractor and other Contractors or between the Contractor and the workmen of TSECL in regard to their work. If the work of the Contractor is delayed because of any acts of omission of another Contractor, the Contractor shall have no claim against TSECL on that account other than an extension of time for completing his Works.

3.2 The Site Engineer of TSECL shall be notified promptly by the Contractor of any defects in the other Contractor's works that could affect the Contractor's Works. The Engineer shall determine the corrective measures if any required rectifying this situation after inspection of the works and such decisions by the Engineer shall be binding on the Contractor.

4.0 DISCIPLINE OF WORKMEN

The Contractor shall adhere to the disciplinary procedure set by the site Engineer of TSECL in respect of his employees and workmen at Site. The Engineer shall be at liberty to object to the presence of any representative or employee of the Contractor at the Site, if in the opinion of the Engineer such employee has misconduct himself or is incompetent or negligent or otherwise undesirable and then the Contractor shall remove such a person objected to and provide in his place a competent replacement.

5.0 EMPLOYMENT OF LABOUR

5.1 The Contractor shall be expected to employ on the work only his regular skilled employees with experience of this particular work. No female labour shall be employed after darkness. No person below the age of eighteen years shall be employed.

5.2 All traveling expenses including provisions of all necessary transport to and from Site, lodging allowances and other payments to the Contractor's employees shall be the sole responsibility of the Contractor.

5.3 The hours of work on the Site shall be decided by the site Engineer of TSECL and the Contractor shall adhere to it. Working hours shall normally be Eight (8) hours per day – Monday through Saturday and may have to be extended in the interest of work.

5.4 The Contractor's employees shall wear identification badges while on work at Site.

5.5 In case TSECL becomes liable to pay any wages or dues to the labour or any Government agency under any of the provisions of the Minimum Wages Act, Workmen Compensation Act, Contract Labour Regulation Abolition Act or any other law due to act of omission of the Contractor, TSECL may make such payments and shall recover the same from the Contractor's bills.

6.0 PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY

6.1 The Contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of TSECL and the employees of other Contractors and Subcontractors and all public and private property including structures, building, other plants and equipment and utilities either above or below the ground.

6.2 The Contractor shall ensure provision of necessary safety equipment such as barriers, signboards, warning lights and alarms, etc. to provide adequate protection and safety to persons and property.

7.0 INSURANCE

7.1 In addition to the conditions covered under the Clause entitled “Insurance” in General Terms and conditions of Contract, the following provisions shall also apply to the portion of works to be done beyond the Contractor’s own or his Sub-contractor’s manufacturing Works.

7.2 Workmen’s Compensation Insurance This insurance shall protect the Contractor against all claims applicable under the Workmen’s Compensation Act, 1948. This policy shall also cover the Contractor against claims for injury, disability, disease or death of his or his Sub-Contractor’s employee, which for any reason are not covered under the Workmen’s Compensation Act, 1948. The liabilities shall not be less than:

Workmen’s Compensation: As per statutory Provisions.

Employee’s liability : As per statutory Provisions

7.3 Comprehensive Automobile Insurance This insurance shall be in such a form to protect the Contractor against all claims for injuries, disability, disease and death to members of public including the employees of TSECL and damage to the property of other arising from the use of motor vehicles during on or off the Site operations, irrespective of the ownership of such vehicles.

7.4 Comprehensive General Liability Insurance

7.4.1 This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the Contractor, his agents his employees, his representatives and Sub-contractors or from riots, strikes and civil commotion. This insurance shall also cover all the liabilities of the Contractor arising out of the Clause stipulated in the General Terms and Conditions of Contract.

7.4.2 The hazards to be covered will pertain to all the works and areas where the Contractor, his Sub-contractors, his agents and his employees have to perform work pursuant to the Contract.

7.5 The above are only illustrative list of insurance covers normally required and it shall be the responsibility of the Contractors to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the Contract.

8.0 UNFAVOURABLE WORKING CONDITIONS

The Contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects during inclement weather conditions, like monsoon, storms, etc. and during other unfavorable construction conditions. No field activities shall be performed by the Contractor under conditions which might adversely affect the quality and efficiency thereof, unless special precautions or measures are taken by the Contractor in a proper and satisfactory manner in the performance of such Works and with the concurrence of the Site Engineer of TSECL. Such unfavorable construction conditions shall in no way relieve the Contractor of his responsibility to perform the Works as per the Schedule.

9.0 WORK & SAFETY REGULATION

- 9.1 The Contractor shall ensure proper safety of all the workmen, materials plant and equipment belonging to him or to owner or to others, working at the Site. The Contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislations and also by the Site Engineer as he may deem necessary.
- 9.2 The Contractor shall notify well in advance to the Site Engineer of his intention to bring to the Site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals, which may involve hazards. The Site Engineer shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the Contractor shall strictly adhere to and comply with such instructions. The Site Engineer shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its use. No claim due to such prohibition shall be entertained by TSECL.
- 9.3 Further, any such decision of the Site Engineer shall not, in any way, absolve the Contractor of his responsibilities and in case, use of such a container or entry thereof into the Site area is forbidden by the Site Engineer, the Contractor shall use alternative methods with the approval of the Deputy General Manager in charge of the work without any cost implication to TSECL or extension of work schedule.
- 9.4 Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying-out such provision and/or storage in accordance with the rules and regulations laid down in the Petroleum Act 1934, Explosives Act, 1948, and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the Site Engineer of TSECL. In

case, any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the Contractor shall be responsible for obtaining the same.

- 9.5 All equipment used in construction and erection by Contractor shall meet Indian/International Standards and where such standards do not exist, the Contractor shall ensure these to be absolutely safe. All equipments shall be strictly operated and maintained by the Contractor in accordance with manufacturer's operation Manual and safety instructions and as per Guidelines/Rules of TSECL in this regard.
- 9.6 Periodical Examinations and all tests for all lifting/hoisting equipment & tackles shall be carried-out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated Laws/Rules in force from time to time. A register of such examinations and tests shall be properly maintained by the Contractor and shall be promptly produced as and when desired by the Site Engineer of TSECL or by the person authorized by TSECL.
- 9.7 The Contractor shall be fully responsible for the safe storage of his and his subcontractor's radio-active sources in accordance with BARC/DAE Rules and other applicable provisions. All precautionary measures stipulated by BARC/DAE in connection with use, storage and handling of such material shall be taken by Contractor.
- 9.8 The Contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need, as may be directed by Site Engineer of TSECL who shall also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.
- 9.9 Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the Code of Practices/Rules framed under the Indian Explosives Act pertaining to handling, storage and use of explosives.
- 9.10 The Contractor shall provide safe working conditions to all workmen and employees at the Site including safe means of access, railings, stairs, ladders, scaffoldings, etc. The scaffoldings shall be erected under the control and supervision of an experienced and competent person. For erection, good and standard quality material only shall be used by the Contractor.
- 9.11 The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to TSECL or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by Site Engineer of TSECL to handle such fuses, wiring or electrical equipment.
- 9.12 Before the Contractor connects any electrical appliances to any plug or socket belonging to TSECL, he shall :

- a) Satisfy the Site Engineer of TSECL that the appliance is in good working condition :
 - b) Inform the site Engineer of the maximum current rating, voltage and phases of the appliances;
 - c) Obtain permission of the Site Engineer detailing the sockets to which the appliances may be connected.
- 9.13 The Site Engineer shall not grant permission to connect until he is satisfied that;
- a) The appliance is in good condition and is fitted with suitable plug;
 - b) The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.
- 9.14 No electric cable in use by the Contractor/TSECL shall be disturbed without prior permission. No weight of any description shall be imposed on any cable and no ladder or similar equipment shall rest against or attached to it.
- 9.15 No repair work shall be carried out on any live equipment. The equipment must be declared safe by the Site Engineer before any repair work is carried out by the Contractor. While working on electric lines/equipment whether live or dead, suitable type and sufficient quantity of tools shall have to be provided by Contractor to electricians/workmen/officers.
- 9.16 The Contractors shall employ necessary number of qualified, full time electricians/Electrical Supervisors to maintain his temporary electrical installations.
- 9.17 In case any accident occurs during the construction/erection or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to the Site Engineer of TSECL and also to all the authorities envisaged under the applicable laws.
- 9.18 The Site Engineer of TSECL shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipment. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove short-comings promptly. The Contractor after stopping the specific work can, if felt necessary, appeal against the order of stoppage of work to the Deputy General Manager in charge of the work within 3 days of such stoppage of work and the decision of the Deputy General Manager in charge of the work in this respect shall be conclusive and binding on the Contractor.
- 9.19 The Contractor shall not be entitled for any damages/compensation for stoppage of work due to safety reasons as provided in para 27.18 above and the period of such stoppage of work shall

not be taken as an extension of time for completion of work and shall not be the ground for waiver of levy of liquidated damages.

9.20 It is mandatory for the Contractor to observe during the execution of the works, the requirements of safety rules which would generally include but not limited to the following :

Safety Rules:

- a) Each employee shall be provided with initial indoctrination regarding safety by the Contractor, so as to enable him to conduct his work in a safe manner.
- b) No employee shall be given a new assignment of work unfamiliar to him without proper introduction as to the hazards incident thereto, both to himself and his fellow employees.
- c) Under no circumstances shall an employee hurry or take unnecessary chance when working under hazardous conditions.
- d) Employees must not leave naked fires unattended. Smoking shall not be permitted around fire prone areas and adequate fire fighting equipment shall be provided at crucial locations.
- e) Employees under the influence of any intoxicating beverage, even to the slightest degree shall not be permitted to remain at work.
- f) There shall be a suitable arrangement at every work site for rendering prompt and sufficient first aid to the injured.
- g) The staircases and passageways shall be adequately lighted.
- h) The employees when working around moving machinery must not be permitted to wear loose garments. Safety shoes are recommended when working in shops or places where materials or tools are likely to fall. Only experienced workers shall be permitted to go behind guard rails or to clean around energized or moving equipment.
- i) The employees must use the standard protection equipment intended for each job. Each piece of equipment shall be inspected before and after it is used.
- j) Requirements of ventilation in underwater working to licensed and experienced divers, use of gum boots for working in slushy or in inundated conditions are essential requirements to be fulfilled.
- k) In cases or rock excavation blasting shall invariably be done through licensed blasters and other precautions during blasting and storage/transport of charge material shall be observed strictly.

9.21 The Contractor shall follow and comply with all relevant Safety Rules, relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of

any discrepancy between statutory requirement and relevant Safety Rules referred above, the later shall be binding on the Contractor unless the statutory provisions are more stringent.

- 9.22 If the Contractor does not take all safety precautions and/or fails to comply with the Safety Rules as prescribed by Consortium or under the applicable law for the safety of the equipment and plant and for the safety of personnel and the Contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or Employees of TSECL or any other person who are at Site or adjacent thereto, the Contractors shall be responsible for payment of compensation to Consortium members as per the compensation order issued by the appropriate authority of Government of Tripura / verdict issued by court. The compensation mentioned above shall be in addition to the compensation payable to the workmen / employees under the relevant provisions of the Workmen's Compensation Act and rules framed there under or any other applicable laws as applicable from time to time. In case TSECL is made to pay such compensation then the amount of such compensation shall be deducted from the progressive bills / contract performance guaranty of the contractor.

10.0 CODE REQUIREMENTS

The erection requirements and procedures to be followed during the installation of the equipment shall be in accordance with the relevant Codes and accepted good engineering practice, the Engineering Drawings and other applicable Indian recognized codes and laws and regulations of the Government of India.

11.0 FOUNDATION DRESSING & GROUTING

- i. The surfaces of foundations shall be dressed to bring the top surface of the foundations to the required level, prior to placement of equipment / equipment bases on the foundations.
- ii. All the equipment bases and structural steel base plates shall be grouted and finished as per these specifications unless otherwise recommended by the equipment manufacturer
- iii. The concrete foundation surfaces shall be properly prepared by chipping, grinding as required to bring the type of such foundation to the required level, to provide the necessary roughness for bondage and to assure enough bearing strength. All laitance and surface film shall be removed and cleaned.

12.0 Grouting Mix

12.1 The Grouting mixture shall be composed of Portland cement, sand and water. The Portland cement to be used shall conform to ISI No. 269 or equivalent. Sand shall conform to ISI No. 383/2386

or equivalent. All grouts shall be thoroughly, mixed for not less than five minutes in an approved mechanical mixer and shall be used immediately after mixing.

12.2 Placing of Grout

12.2.1 After the base has been prepared, its alignment and level has been checked and approved and before actually placing the grout a low dam shall be set around the base at a distance that shall permit pouring and manipulation of the grout. The height of such dam shall be at least 25 mm. above the bottom of the base. Suitable size and number of chains shall be introduced under the base before placing the grout, so that such chains can be moved back and forth to push the grout into every part of the space under the base.

12.2.2 The grout shall be poured either through grout holes provided or shall be poured at one side or at two adjacent sides giving it a pressure head to make the grout move in a solid mass under the base and out in the opposite side. Pouring shall be continued until the entire space below the base is thoroughly filled and the grout stands at least 25 mm. higher all around than the bottom of the base. Enough care should be taken to avoid any air or water pockets beneath the bases. Vibrator shall be used to avoid any air or water pockets.

12.3 Finishing of the Edges of the Grout

The poured grout should be allowed to stand undisturbed until it is well set. Immediately thereafter, the dam shall be removed and grout which extends beyond the edges of the structural or equipment base plates shall be cut off, flushed and removed. The edges of the grout shall then be pointed and finished with 1:6 cement mortar pressed firmly to bond with the body of the grout and smoothened with a tool to present a smooth vertical surface. The work shall be done in a clean and scientific manner and the adjacent floor spaces, exposed edges of the foundations, and structural steel and equipment base plates shall be thoroughly cleaned of any spillage of the grout.

12.4 Checking of Equipment After Grouting

After the grout is set and cured, the Contractor shall check and verify the alignment of equipments, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings, etc. as applicable and the like items to ensure that no displacement has taken place during grouting. The values recorded prior to grouting shall be used during such post grouting checkup and verifications. Such pre and post grout records of alignment details shall be maintained by the Contractor in a manner acceptable to the site Engineer of TSECL.

13.0 CHECK OUT OF CONTROL SYSTEMS

After completion of wiring, cabling, the contractor shall check out the operation of all control systems for the equipment furnished and installed under these specifications and documents.

14.0 CABLING

- 14.1 All cables shall be supported by conduits or cable trays run in air or in cable channels. These shall be installed in exposed runs parallel or perpendicular to dominant surface with right angle turn made of symmetrical bends for fittings. When cables are run on cable trays, they shall be clamped at minimum intervals of 2000 mm. or otherwise as directed by the site Engineer.
- 14.2 Each cable, whether power or control, shall be provided with a metallic or plastic tag of an approved type, bearing a cable reference number indicated in the cable and conduit list (prepared by the contractor), at every 5 meter run or part thereof and at both ends of the cable adjacent to the terminations. Cable routing is to be done in such a way that cables are accessible for any maintenance and for easy identification.
- 14.3 Sharp bending and kinking of cables shall be avoided. Installation of cables high voltage, coaxial, screened, compensating, mineral insulated shall be in accordance with the cable manufacturer's recommendations. Wherever cables cross roads and water, oil, sewage or gas lines, special care should be taken for the protection of the cables in designing the cable channels.
- 14.4 In each cable run some extra length shall be kept at a suitable point to enable one or two straight through joints to be made, should the cable develop fault at a later date.
- 14.5 Control cable terminations shall be made in accordance with wiring diagrams, using identifying codes subject to approval of Engineer in charge of the work. Multi-core control cable jackets shall be removed as required to train and terminate the conductors. The cable jacket shall be left on the cable, as far as possible, to the point of the first conductor branch. The insulated conductors from which the jacket is removed shall be neatly twined in bundles and terminated. The bundles shall be firmly but not tightly tied utilizing plastic or nylon ties or specifically treated fungus protected cord made for this purpose. Control cable conductor insulation shall be secure and even.
- 14.6 The connectors for control cables shall be covered with a transparent insulating sleeve so as to prevent accidental contact with ground or adjacent terminals and shall preferably be terminated at the connecting end of the equipments. The insulating sleeve shall be fire resistant and shall be long enough to over pass the conductor insulation. All control cables shall be fanned out and connection made to terminal blocks and test equipment for proper operation before cables are corded together.

15.0 AVAILABILITY OF SHUTDOWN.

Installation & Commissioning of distribution sub-station / 11 KV Line may require Shut-Down (to be arranged by the Owner) in the proposed route. Such shut down will be provided by the Owner as per Owner's convenience on receiving written requisition informing about his programme from the contractor at least one week before such requirement. The Contractor shall have to arrange during execution everything necessary for complete installation & Commissioning of all equipment and the entire requirement as specified in the work schedule.

16.0 DEFENCE OF SUITS:

If any action in court is brought against TSECL for the failure, omission or neglect on the part of the Contractor to perform any acts, matters, or things under the Contract, or for damage or injury caused by the alleged omission or negligence on the part of the Contractor, his agents, representatives or his Sub-Contractors, or in connection with any claim based on lawful demands of Sub-Contractors, workmen, suppliers or employees, the Contractor shall in all such cases indemnify and keep TSECL, from all losses, damages, expenses or **decrees arising of such action.**

17.0 INSURANCE

17.1 In addition to the conditions covered under the Clause entitled “Insurance” in General Terms and conditions of Contract, the following provisions shall also apply to the portion of works to be done beyond the Contractor’s own or his Sub-contractor’s manufacturing Works.

17.2 Workmen’s Compensation Insurance: This insurance shall protect the Contractor against all claims applicable under the Workmen’s Compensation Act, 1948. This policy shall also cover the Contractor against claims for injury, disability, disease or death of his or his Sub-Contractor’s employee, which for any reason are not covered under the Workmen’s Compensation Act, 1948. The liabilities shall not be less than:

Workmen’s Compensation: As per statutory Provisions.

Employee’s liability : As per statutory Provisions

17.3 Comprehensive Automobile Insurance :

This insurance shall be in such a form to protect the Contractor against all claims for injuries, disability, disease and death to members of public including the employees of TSECL and damage to the property of other arising from the use of motor vehicles during on or off the Site operations, irrespective of the ownership of such vehicles.

17.4 Comprehensive General Liability Insurance :

17.4.1 This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the Contractor, his agents his employees, his representatives and Sub-contractors or from riots, strikes and civil commotion. This insurance shall also cover all the liabilities of the Contractor arising out of the Clause stipulated in the General Terms and Conditions of Contract.

17.4.2 The hazards to be covered will pertain to all the works and areas where the Contractor, his Sub-contractors, his agents and his employees have to perform work pursuant to the Contract.

17.5 The above are only illustrative list of insurance covers normally required and it shall be the responsibility of the Contractors to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the Contract

SECTION V: TECHNICAL SPECIFICATIONS:

A. EARTHING AND EARTHING G.I PIPE (40mm Dia):

1.0 Scope

GI earthing pipe should be made of 40 mm diameter ISI marked C- class GI Pipe. 12 mm dia suitable holes on its circumference shall be made as per approved drawing. The pipe should be in one piece. No joints or welding would be allowed on its length. Clamps made of 50x6mm GI flat duly drilled with 12 mm size holes should be welded at the top end for connection of earth conductor. Pipe used shall be 40mm NB diameter, ISI marked Galvanized Mild Steel Tubes continuously welded Electric Resistance Welded ERW/High Frequency Induction welded (HFIW)/Hot finished welded (HFW) type, conforming to IS-554-1985 with latest amendment of Heavy-duty quality (Class C).

2.0 MANUFACTURE

GI earth pipe (40 mm diameter & 2.5-meter-long) shall be made of tubes which shall be made from tested quality steel manufactured by any approved process as follows:

- a) Electric Resistance Welded (ERW).
- b) High Frequency Induction Welded (HFIW) and
- c) Hot finished Welded (HFW).

Tubes made by manual welding are not acceptable.

3.0 DIMENSIONS

The dimensions and weights of tubes shall be in accordance with Table-I and Table-II of IS: 1239 (Part-I)/1990 with latest amendments, subject to tolerance permitted therein. Necessary 12 mm diameter holes across the circumference shall be provided as per approved drawing. Drawings shall be approved by the owner before start of the manufacturing work. The tube, earthing pipe shall be provided with 50x6mm GS clamps on one end, one clamp is to be welded with the pipe and another is removable to enable measurement of earth resistance of the pit. Other end of the earth pipe should be cut half in slop to make it a sharp.

4.0 GALVANIZING

Tubes shall be galvanized in accordance with IS-4736-1986 with latest amendment for not dip zinc coating of Mild Steel Tubes. The minimum mass of zinc coating on the tubes shall be in accordance with clause 5.1 of IS-4736-1986 (specification for hot dip zinc) and when determined on a 100mm long test piece in accordance with IS: 6745:1972 shall be 400 g/m². The zinc coating shall be uniform adherent reasonably smooth and free from such

imperfections as flux, ash and dross inclusions, bare patches, black spots, pimples, lumpiness, rust, stains, bulky white deposits and blisters.

5.0 HYDRAULIC TEST

(Before applying holes) Each tube shall withstand a test pressure of 5 M Pa maintained for at least 3 seconds without showing defects of any kind. The pressure shall be applied by approved means and maintained sufficiently long for proof and inspection. The testing apparatus shall be fitted with an accurate pressure indicator.

6.0 TESTS ON FINISHED TUBES AND SOCKETS

The following tests shall be conducted by the manufacturer of finished tubes and sockets.

- i. The tensile strength of length of strip cut from selected tubes when tested in accordance with IS-1894-1972, (Method for tensile testing of steel tubes), shall be at least 320N/mm².
- ii. The elongation percentage on a gauge length of 5.65/s₀ (where s₀ is the original cross sectional area of test specimen) shall not be less than 20%.
- iii. When tested in accordance with IS-2329-1985 (Method for Bend test on Metallic tubes) the finished tube shall be capable of with standing the bend test without showing any sign of fracture or failure. Welded tubes shall be bent with the weld at 90 degree to the plane of bending. The tubes shall not be filled for this test.
- iv. Galvanized tubes shall be capable of being bent cold without cracking of the steel, through 90 degree round a former having a radius at the bottom of the groove equal to 8 times the outside diameter of tube.
- v. Flattening Test on Tubes above 50 mm Nominal Bore: Rings not less than 40 mm in length cut from the ends of selected tubes shall be flattered between parallel plates with the weld, if any, at 90 degree (point of maximum bending) in accordance with IS-2328- 1983. No opening should occur by fracture in the weld unless the distance between the plate is less than 75 percent of the original outside diameter of the pipe and no cracks or breaks in the metal elsewhere than in the weld shall occur, unless the distance between the plates is less than 60% of the original outside diameter. The test rings may have the inner and outer edges rounded.

7.0 GALVANIZING TEST

- i. Weight of zinc Coating: For tubes thickness upto 6 mm the minimum weight of zinc coating, when determined on a 100 mm long test piece in accordance with IS-4736-1986 shall be 400 grm / m².

- ii. The weight of the coating expressed in gram/m² shall be calculated by dividing the total weight of the zinc (inside plus outside) by the total area (inside plus outside) of the coated surface.
- iii. Test specimen for this test shall be cut approximately 100 mm in length from opposite ends of the length of tubes selected for testing. Before cutting the test specimen, 50 mm from both ends of the samples shall be discarded.
- iv. Free Bore Test: A rod 230mm long and of appropriate diameter shall be passed through relevant nominal bore of the sample tubes to ensure a free bore.
- v. Uniformity of Galvanized Coating: The galvanized coating when determined on a 100 mm long test piece [see V (a) (iii)] in accordance with IS-2633-1986 (Method for testing uniformity of coating on zinc coated articles) shall with stand 4 one minute dips.

8.0 WORKMANSHIP

The tubes shall be cleanly finished and reasonably free from injurious defects. They shall be reasonably straight, free from cracks, surface flaws, laminations, and other defects, both internally and externally. The screw tubes and sockets shall be clean and well-cut. The ends shall be cut cleanly and square with the axis of tube.

9.0 MARKING

- i. The medium class of tubes shall be distinguished by Blue colour bands which shall be applied before the tubes leaves the manufacturers' works.
- ii. Tubes shall be marked with the standard mark.

10.0 EARTHING ARRANGEMENT OF DISTRIBUTION TRANSFORMERS

- 10.1** The earth pits should be located as per REC Construction Standard F-5 (Annexure VI).
- 10.2** Pipe earth electrodes should be provided in each earth pit as per REC construction standard J-1 and J-2 (Annexure VII & VIII).
- 10.3** 4 mm (8 S.W.G), G.I. wire should be used for earth leads.
- 10.4** One of the earth electrodes on either side of D.P. structure should be connected with;
 - (a) On direct connection from the L.T. Lightning arresters and cross-arm.
 - (b) One direct connection with Lightning arrester on H.T. side (11KV) and cross-arm.
- 10.5** To each of the remaining two earth electrodes, the following should be connected: -
 - (a) One separate connection from the neutral (on medium voltage side) of the transformer.
 - (b) One separate connection from the transformer body and the handle of 11KV A.B. switch.

(c) One separate connection from the earthing terminal of the poles.

B. HEAT SHRINKABLE TYPE END TERMINATIONS FOR 11 KV XLPE CABLES:

1.0 SCOPE:

This section covers the standard technical requirements of design, manufacturing, testing at works, and transportation to site, insurance, storage, erection and commissioning of heat shrinkable type terminations suitable for 11 KV 3-core XLPE insulated, screened, armored, with aluminum conductor cables suitable for earthed system and conforming to IS:7098 (Part-II)-1985 with latest amendment or the equivalent International Standards.

2.0 STANDARD:

The performance as well as type test requirements of all type of kits referred under scope shall conform to stipulations of IS:13573/1992 or the equivalent International Standards with latest amendments. All the electrical & physical parameters of terminations should also conform to the corresponding parameters of XLPE cables referred under 'SCOPE' of this specification, as per IS: 7098 (Part-II)-1985 (with latest amendments, if any) or equivalent international standards

3.0 CLIMATIC CONDITIONS:

Moderately hot and humid tropical climate, conducive to rust and fungus growth.

4.0 REQUIREMENT:

The heat shrinkable / push on type terminations offered shall be of proven design and make, which have already been extensively used and fully type tested.

5.0 GENERAL REQUIREMENT:

The purpose of this specification is to specify the performance requirements of termination kits for the use on 50 c/s 3 phase system with earthed neutral for working voltage of 11 kV up to 33kV. Earthing arrangement shall be as per relevant standard and details of earthing arrangement offered shall be submitted along with the inspection offer. The material to be used should be inert and capable of resisting degradation during the service of cable system. The kit shall be provided with protection against rodents and termite attack.

5.1 Heat Shrinkable Type (Terminations) :

The term heat shrinkable refers to extruded or moulded polymeric materials which are cross-linked to develop elastic memory and supplied in expanded or otherwise deformed size / shape, subsequently heated in an un-constrained state to a temperature above the shrink temperature resulting in the material recovering or shrinking to its original shape.

- 5.1.1 Since the sealant or adhesives (to be used for environment sealing) between the heat shrinkable materials and XLPE cables shall be exposed to high electrical stresses, they must be track resistant.
- 5.1.2 The heat shrinkable polymer materials being used for external leakage insulation between the high voltage of conductors and grounds should be weather resistant.
- 5.1.3 All cuts/nicks inadvertently occurred to XLPE insulation must be rendered discharge free by using suitable discharge suppression compound.
- 5.1.4 The heat shrinkable tubing may be either extruded or moulded type.
- 5.1.5 Higher thickness of heat shrinkable sleeves shall be preferable to counter erosion due to pollution.

5.2 Other Requirements:

- 5.2.1 Proper stress control, stress grading and non-tracking arrangement in the terminations shall be offered by means of proven methods, details of which shall be elaborated in the bid. Detailed sectional view of assemblies shall be submitted along with the bid.
- 5.2.2 The kits offered shall provide the total environment sealing, the details of which shall be offered along with the bid.
- 5.2.3 Provision for effective screening over each core be made and contractors shall categorically conform this aspect in their bid.
- 5.2.4 The material and components not specifically stated in the specification, but which are essential for satisfactory operation of the equipments shall be included without any extra cost.
- 5.2.5 The terminations shall be of good tracking resistant properties and fully reliable earthing system to maintain continuous contact with screening / armouring as the case may be.
- 5.2.6 The armour earthing arrangement shall form part of the termination.
- 5.2.7 Terminations shall have provision for shield connections and earthing.
- 5.2.8 The kits shall be suitable for storage without deterioration at a temperature up to 50oC for more than 5 years.
- 5.2.9 The fault level (as well as duration) withstand capability of terminations should be strictly matching with these parameters of cables for which the kits are intended to be used.
- 5.2.10 The words 'TSECL' along with trade name of manufacturer, month/year of manufacturer, size etc. shall be embossed/engraved or suitably marked with indelible ink/paint for the purpose of identification.

- 5.2.11 Suitable creepage extension/rain protection sheds for outdoor termination shall be provided.
- 5.2.12 The adequate provisions for eliminating the chances of entrapment of air at the steps formed by semicon screen shall be made.
- 5.2.13 The gripping tubing (termination boot) for the cable where trifurcation takes place, shall also be part of kit and covered under scope of supply of this specification.
- 5.2.14 Name of sub-supplier for the raw material and standard according to which their raw material are tested, must be furnished along with the bid.
- 5.2.15 Detailed kit contents, whether manufactured by the contractor or bought from outside (with name of sub Contractor) for each component must be indicated in the bid.
- 5.2.16 The terminations shall be supplied in kit forms. All insulating and sealing materials, consumable items, conductor fittings, earthing arrangements and lugs etc. shall be included in the individual kit.
- 5.2.17 An instruction manual in English indicating the complete method/procedure to be adopted for installation of kits, preferably with more and more diagrams/pictorial presentation shall be supplied with each kit. Various items/ quantity thereof against each kit must be indicated in the instruction manual.

6.0 GUARANTEED TECHNICAL PARTICULARS:

The terminations shall have same electrical and thermal characteristics as those of cables with which these are intended to be used. The bidders must furnish the guaranteed technical particulars for each type/size of kit .

- 7. DRAWINGS:** Complete detailed dimensional drawings showing all details of kit contents/bill of material for each size type.

8.0 TESTS :-

- 8.1 **Type tests:** The termination kits offered shall be fully type tested as per the standards certified by an accredited laboratory

- 8.2 **Acceptance Tests:**

Initially the following tests shall constitute as acceptance tests :-

- i) Dimensional checking as per approved drawings.
- ii) Volume resistivity test for various components.
- iii) AC High voltage test after installation of terminations (as per IS : 13573/1992 or VDE-0278) on appropriate cable.

- iv) Dielectric strength of major components.
- v) D.C. High voltage test.
- vi) Tracking resistance.
- vii) Ultimate elongation.

The scope to include more type tests as acceptance tests shall be decided after processing the offers of various contractors/after knowing the details of testing facilities for type tests available with various bids

8.3 ROUTINE TESTS :-The following tests shall constitute routine test :

- i) Dielectric strength.
- ii) Density.
- iii) Heat shock.
- iv) Shrinkage ratio.

The contractor must specify the details of routine tests (being conducted at their works) along with the standard applicable, in their offer. The routine test certificates shall be furnished along with the inspection call for each offered lot.

9.0 INSPECTION:

- 9.1 All test and inspection shall be made at the place of manufacture unless otherwise especially agreed upon by the manufacturer and purchaser at the time of purchase. The manufacturer shall afford the inspector representing the purchaser all reasonable facilities without charge to satisfy him that the material is being furnished in accordance with specification.
- 9.2 The purchaser reserves the right to have the test carried at the cost of the supplier by an independent agency whenever there is dispute regarding the quality of supply.

- 10.0 **PACKING AND TRANSPORT:** The supplier shall be responsible for suitable packing of all the kits of material and marking on the consignment, so as to avoid any damage during transport and storage and to ensure correct dispatch to the destination.

C. TECHNICAL SPECIFICATION FOR 11KV(E) XLPE HT POWER CABLE:

1.0 SCOPE:

This Section of the Specification covers design, manufacturing, testing, packing, supply & delivery, transportation at site, insurance and lying of 3Core, 11 KV(E), FRLS , XLPE insulated power cable for effectively earthed primary distribution system.

2.0 STANDARDS:

2.1 Unless otherwise specified, the cable shall conform in all respect to IS: 7098 (Part-II)-1985 with latest amendment thereof.

3.0 CLIMATIC CONDITIONS:

a. Maximum ambient temperature in open air(°C)	: 50
b. Maximum ambient temperature in shade (°C)	: 45
c. Minimum temperature in shade (°C)	: 3
d. Relative humidity (%)	: 10 to 100
e. Maximum annual rainfall (mm)	: 1450
f. Maximum wind pressure (Kg/ Sq.mtr.)	: 150
g. Maximum altitude above mean sea level (Mtrs):	1000
h. Isoceraunic level (days/year)	: 50
i. Seismic level (Horizontal acceleration)	: 0.3 g.
j. General nature of climate	: Moderately hot and humid tropical climate, conducive to rust and fungus growth.

4.0 PRINCIPAL PARAMETERS:

4.1 11 KV (E) Grade XLPE, 3-Core, power cable shall be of high conductivity, stranded compacted, H.D. aluminum circular shaped conductor with XLPE (cross linked Poly Ethylene) Dry/Gas cured insulation provided with shielding of extruded semi-conducting materials over conductor and XLPE insulation. Each insulated core shall have copper tape screen, laid together and provided with common covering of PVC Inner Sheath (Extruded). Overall galvanized steel strip armour and PVC outer sheath shall be provided. The specification for manufacture of cable shall be conforming to IS: 7098 (Part-II) 1985 (latest edition) for 11KV (E), 3-phase, 50 Hz. Earthed systems. Word “**FRLS**” shall also be embossed on it at every **5 (Five) meter** distance.

FRLS properties – All cable shall be Flame Retardant, Low Smoke (FRLS) type. Outer sheath shall have the following properties -

Oxygen Index – Min 29 (As per ASTM D 2863)

Acid Gas Generation	Max 20% (as per IEC 7541)
Smoke Density Rating	60% (as per ASTM D 2843)
Flammability Test –	As per Swedish chimney test F3 (as per SEN 4241475)
	As per IEC 332 Part-3 (Category-B)

Minimum bending radius shall be 15 D

Repaired cables shall not be acceptable

4.2 Outer sheath shall be designed to afford high degree of mechanical protection and shall also be heat, oil, chemical and weather resistant, Common acid, alkalis and sealing solution shall not have adverse effect on material of PVC sheath.

4.3 Cable shall be suitable for laying in covered trenches and / or buried under-ground in outdoor.

4.4 Cable Parameters :

(i) Voltage grade (U _o / U) kV	: 6.35 / 11
(ii) Cores (Nos)	: 3
(iii) Nominal system voltage kV	: 11
(iv) Highest system voltage kV	: 12
(v) System frequency Hz	: 50
(vi) Variation in frequency %	: ± 3
(vii) (a) Maximum allowable temp. of conductor during continuous normal operation at rated full load current. °C	: 90
(b) Maximum allowable temp. under short circuit condition °C	: 250
(viii) 1.2/50 microsecond lightning impulse withstand voltage wave value. kVp	: 75
(ix) 5 Min, Power frequency withstand voltage kV rms	: 17
(x) System earthing	: Effectively earthed.

5.0 GENERAL TECHNICAL REQUIREMENTS:

- 5.1 **Conductor:** The cable conductor shall be made from high conductivity stranded High Density aluminum to form compacted circular shaped conductor having resistance within limits specified in IS: 8130/1984 and any latest amendment to it.
- 5.2 **Conductor shield:** The conductor having semi-conducting screen shall ensure perfectly smooth profile & avoid concentration of stress. The conductor screen shall be extruded in the same operation as the insulation. The semi-conducting polymer shall be cross linked.
- 5.3 **Insulation:** The XLPE insulation shall be suitable for 11 kV system voltage and should be manufactured with Dry / Gas curing process. The bidder shall submit the description of dry / gas curing process, with the clear inclusion of equipments / parameters involved. The manufacturing process shall ensure that the insulation shall be free of voids. The insulation shall withstand mechanical and thermal stress under steady state and transient operating conditions. The extrusion method should give very smooth interface between semi-conducting screen and insulation. The insulation of the cable shall be of high standard quality generally conforming to IS: 7098 (Part – II) – 1985 and any latest amendment to it.
- 5.4 **Insulation shield:** Non-metallic semi-conducting shield shall be provided over the insulation to confine electrical field to the insulation. The insulation shield shall be extruded in the same operation as the conductor shield and the insulation by suitable extrusion process. The XLPE insulation shield shall be of tanded type. The copper metallic overlapped tape shield shall be provided.
- 5.5 **Filler and Inner-Sheath:** The sheath shall be suitable to withstand the site conditions and the desired temperature. It shall be of adequate thickness, consistent quality and free from all defects. The PVC sheath shall be extruded. The material of fillers and inner-sheath shall be compatible with the temperature ratings of the cable and shall have no deterious effect on any other component of the cable. Central PVC filler shall also, be provided with other peripheral PVC fillers to have proper circular section.
- 5.6 **Armour:** Armouring of galvanized steel strip shall be provided. The dimensions of steel strips shall be as per latest edition of IS: 3975 – 1979.
- 5.7 **Outer-Sheath:** Extruded type ST-2 PVC outer-sheath, conforming to IS: 5831- (1984) (latest edition) over armouring with suitable additives (to prevent attack by redents & termites), shall be provided.
- 5.8 Construction:**
- 5.8.1 The cable shall have suitable PVC fillers laid up with insulation cores to have subsequently circular cross-section before the inner sheath is applied. The fillers shall be suitable for operating temperature of the cable.

5.8.2 All materials used in manufacturing of cable shall be new, unused and of finest quality. All materials should comply with the requirements / tests as per applicable IS / IEC specification, Indian Electricity Rules and any other statutory provision of rules & regulations.

5.8.3 The PVC material used in the manufacture of cable shall be of reputed manufacturer. No recycling of PVC is permitted. The Owner reserves the right to ask for documentary evidence of the purchase of various materials, (to be used for the manufacture of cable) as per checking of quality control.

Quality Assurance plans shall be submitted.

5.9 Current Rating:

5.9.1 The value of Normal current carrying capacities of the various sizes of the cables are given below:

Sl. No	Size of 3 Core Cable (Sq.mm)	Current Carrying Capacity in Amp		
		In Ground	In Duct	In Air
1	70	160	140	190
2	95	190	165	230
3	120	220	190	260
4	150	245	210	295
4	185	275	240	335
5	240	315	275	395
6	300	355	310	450

5.9.2 Short circuit ratings of various sizes of 3 core cable calculated for duration of 1(one) second are given below:

Sl. No	Size of 3 Core Cable (Sq.mm)	Conductor short circuit rating in kA (rms)
1	70	6.58

2	95	8.93
3	120	11.28
4	150	14.10
4	185	17.39
5	240	22.56
6	300	28.20

5.9.3 The current rating shall be based on maximum permissible temperature of 90 degree C for XLPE insulation with ambient site condition specified for continuous operation at the rated current.

5.10 Operation :

5.10.1 Cable shall be suitable for operation under frequency variation of +3% and voltage variation of +10% to -15% and combined frequency - voltage variation of 10% (absolute sum).

5.10.2 Cable shall be suitable for laying in duct or buried underground.

5.10.3 Cable shall have heat & moisture resistance properties. These shall be of type & design with proven record on distribution network service.

5.10.4 Length: The cable shall be supplied in standard drum length of 500 mtrs. 5% tolerance

for all the sizes of cable except for 3 C x 240 mm² and 3 C x 300 mm² size cable. The drum length for 3 C x 240 mm² and 3C x 300 mm² cable shall be 250 mtrs. Over all tolerance in total quantity of ordered cables shall be + 2%.

5.10.5 Identification Mark :

(i) The cable drum shall be printed with information as per cl. 21; 2 of IS and ISI Certification mark. Bidder shall submit xerox copy of valid ISI Licenses with technical bid.

(ii) For identification of cores, colored strip of Red, Yellow and Blue colors shall be used for identification of phases.

Following details of identification shall be embossed at intervals of length of one meter of cable outer sheath.

(iii) (a) Name of manufacturer (b) year of manufacture (c) voltage grade (d) Name of Owner "TSECL".

6.0 TESTS:

6.1(A) Type Tests:

All the cable sizes i.e. items offered should have been fully type tested as per the relevant standards at any Govt. recognized Laboratory. The bidder shall furnish three sets of type test reports along with the offer. The Type test reports shall not be older than FIVE years and shall be valid upto the expiry of validity of offer.

For any change in design/type, already type tested and the design / type offered against this specification, the Owner reserves the right to demand repetition of type tests without any extra cost.

The Owner also reserves the right to have tests carried out at his own cost by an independent agency, whenever there is a dispute regarding the quality of supply.

6.1(B) The following type test reports shall be furnished with the offer:

- (a) Tests on conductor :
 - (i) Tensile test:
 - (ii) Resistance test:
- (b) Tests for armouring strips / wires. :
- (c) Tests for thickness of insulation and sheath. :
- (d) Physical tests for insulation. :
 - (i) Tensile strength and elongation at break:
 - (ii) Ageing in air oven:
 - (iii) Hot set:
 - (iv) Shrinkage test:
 - (v) Water absorption:
- (e) Physical tests on outer sheath :
 - (i) Tensile strength and elongation at break:
 - (ii) Ageing in air oven:
 - (iii) Shrinkage test:
 - (iv) Hot deformation:
 - (v) Bleeding and blooming test:
- (f) Partial discharge test:
- (g) Bending test:
- (h) Dielectric power factor test:

- i) as a function of voltage:
- ii) as a function of temperature:
- (i) Insulation resistance test (volume resistivity):
- (j) Heating cycle test:
- (k) Impulse withstand test:
- (l) High voltage test:
- (m) Flammability test:

6.2 Acceptance Test:

6.2.1 The selection of sample pieces for acceptance test shall be from 10% drums of each lot offered for inspection or part thereof. The minimum shall be one drum.

6.2.2 The following acceptance tests shall be carried out on the selected samples as per IS: 7098 (Part-II) – 1985.

- (a) Annealing test (for copper)
- (b) Tensile test (for aluminum)
 - (c) Wrapping test (for aluminum)
 - (d) Conductor resistance test.
 - (e) Test for thickness of insulation and sheath
 - (f) Hot set test for insulation
 - (g) Tensile strength and elongation at break test for insulation and sheath.
 - (h) Partial discharge test (for screened cables only)
 - (i) High voltage test for 4 hours (as per cl. No. 19.7.1)
 - (j) Insulation resistance (volume resistivity) test.

6.2.3 All the acceptance tests shall be carried out by the contractor, in the presence of Owner's representative at their works. The contractor shall give at least 15 days' advance notice to the Owner to enable him to depute the engineer for witnessing the tests. The test certificates for acceptance tests witnessed by inspecting officer/ engineer shall be submitted for approval before dispatch of material.

6.3 Tests:

6.3.1 The bidder shall have to submit, well in advance, the test certificates for the following routine test for approval prior to inspection of the materials for the complete lot offered for inspection at a time.

(a) Conductor resistance test

(b) Partial discharge test

(c) High-voltage test for 5 minutes [as per Clause 19.7.2 of IS: 7098 (Part-II) –1985].

7.0 INSPECTION

7.1 All test and inspection shall be made at the place of manufacture unless otherwise especially agreed upon by the manufacturer and purchaser at the time of purchase. The manufacturer shall afford the inspector representing the purchaser all reasonable facilities without charge to satisfy him that the material is being furnished in accordance with specification.

7.2 The purchaser reserves the right to have the test carried at the cost of the supplier by an independent agency whenever there is dispute regarding the quality of supply.

7.3 The contractor shall keep the Owner informed in advance about the program of manufacturing of cables so that arrangement can be made for inspection.

7.4 The Owner reserves the right to insist for witnessing the acceptance / routing tests of

8.0 DOCUMENTATION:

8.1 The bidder shall furnish following documents along with his offer.

8.1.1 Sectional view, showing the General constructional feature with conductor / conductor screen / insulation / armouring / inner and outer sheath etc.

8.1.2 Drawing of cable drums with details of material dimension and paint etc shall be submitted.

8.1.3 All the required type test reports for offered items tested at any Government recognized Laboratory.

8.1.4 Literature, pamphlets for the record items.

9.0 PACKING AND FORWARDING:

9.1 The cable shall be wound on wooden drums as per IS: 10418 – 1972 and packed in drums suitable for vertical / horizontal transport, as the case may be and shall be suitable to withstand rough handling during transport and outer storage. The outer surface of the drum shall be painted with white aluminum pint. Similarly, the inside surface of drum shall have the protective layer of varnish / paint to protect it from white ants.

9.2 The wooden drums shall be reinforced with steel bends and strips for better protection.

9.3 The ends of the cable shall be sealed by means of non-hygroscopic sealing materials.

9.4 The following information may be stenciled on the drum with either water proof ink or oil paint:

- i. Reference of IS / IEC standard.
- ii. Manufacturer's name or trademark.
- iii. Type of cable and voltage grade.
- iv. No. of cores.
- v. Nominal cross-sectional area of conductor.
- vi. Cable code.
- vii. Length of cable on the drum
- viii. No. of lengths on the drum (if more than one)
- ix. Direction of rotation of drum (by means of an arrow)
- x. Position of outer end of cable
- xi. Gross weight
- xii. Country of manufacture
- xiii. Year of manufacture
- xiv. Reference of A/T No. & date
- xv. Property of TSECL
- xvi. Name of consignee and the destination.

The drum may also be marked with ISI Certification Mark. Over and above, name plate of aluminum of suitable size and thickness, containing all the above information, shall be fixed on the drum in addition to the painting.

9.5 The contractor shall be responsible for any damage to the cables during transit due to improper and inadequate packing. Wherever necessary, proper arrangement for lifting, such as lifting hooks, shall be provided. Any cable found short inside the packing cases shall be supplied by the contractor, without any extra cost.

9.6 Each consignment shall be accompanied by a detailed packing list, containing the following information:

- (a) Name of consignee

- (b) Details of consignment
- (c) Destination
- (d) Total weight of consignment
- (e) Handling and unpacking instruction
- (f) Bill of materials, indicating contents of each package.

D. HDPE PIPE:

1.0 SCOPE:

This section covers design, manufacture, testing, packing, transportation at site, insurance, supply & delivery F.O.R destination, and laying of **ISI Marked HDPE pipes**

2.0 SERVICE CONDITIONS:

HDPE to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

- a. Maximum ambient temperature (deg C) : 50
- b. Maximum temperature in shade (deg C) : 45
- c. Minimum temperature in air (deg C) in shade : 3.5
- d. Relative Humidity (%) : 10 to 100
- e. Maximum annual Rainfall (mm) : 1450
- f. Maximum Wind Pressure (kg/mm²) : 150
- g. Maximum altitude above mean sea level (Meters : 1000
- h. Isoceraunic level (days/year) : 50
- i. Seismic level (Horizontal acceleration) : 0.3 g.
- j. Moderately hot and humid tropical climate, conducive to rust and fungus growth.

3.0 STANDARD: -

A. TYPE

- (i) The HDPE pipe shall be of PE-100 Grade, PN-8(SDR17) of standard make suitable for laying 3-core, 70 sqmm, XLPE insulated power cable .
- (ii) The HDPE pipe shall be ISI marked and complying to technical requirement of IS4984/IS 14333.

(a). Size: -

(i) The HDPE pipe shall have Outer diameter as 110 mm and have standard length of 6 meters.

(ii) The HDPE pipe shall have wall thickness: minimum- 6.5 mm and maximum- 7.3 mm

(b). Fitting and Assembly.

The scope of work shall include all fittings and accessories namely End Caps, Bends, Tees etc required for the successful execution of laying work of the HDPE pipe.

(c.) Non-flame propagating properties.

The HDPE pipe shall be of non-flame propagating type.

(d.) Antirodancy

The HDPE pipe shall have anti rodancy property to prevent damage caused due to rodents.

4.0 MARKING

Each pipe shall bear the following permanent marking on a place just at the middle section of the pipe.

- | | |
|----------------------------------|---------|
| a. Manufacturer's name | : |
| b. Manufacturer's Trade mark | : |
| c. Designation of Pole | : |
| d. Year of manufacture | : |
| e. Client | : TSECL |
| g. ISI certification mark if any | : |

DECLARATION

I / We hereby declare that I/We have personally gone through the Bid- Document containing general terms and conditions incorporated in the Notice Inviting Competitive Bidding for the works /supply and I/We do agree to abide by all the rules and regulation of TSECL, Agartala, Tripura.

SIGNATURE OF THE TENDERER / BIDDER

ANNEXURE-II

PROFORMA OF BANK GUARANTEE FOR
CONTRACT PERFORMANCE
(To be stamped in accordance with stamp Act)

Ref. Bank Guarantee No.
Date

To

Tripura State Electricity Corporation Limited
Bidyut Bhavan, North Banamalipur,
Agartala – 799001,
Wes, Tripura.

Dear Sir,

In consideration of Tripura State Electricity Corporation Limited (hereinafter referred to as the 'Owner', which expression shall unless repugnant to the contest or meaning thereof include its successors, administrators and assigns) having awarded to M/s with its registered / Head office at(hereinafter referred to as 'Contractor' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a Contract by issued of Owner's Letter of Award No.....dated.....and the same having been acknowledged by the Contractor, resulting in a Contract bearing No.datedvalued atfor(scope of contract) and the Contactor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent tobeing .(%) per cent) of the said value of the Contract to the Owner.

We, (Name & Address) having its Head Office at.....(hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators , executors and assigns) do hereby guarantee and undertake to pay the Owner, on demand any or all monies payable by the Contractor to the extent ofas aforesaid at any time up to ** (see in note below) (days/month/year) without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor.

Any such demand made by the Owner on the bank shall be conclusive and binding notwithstanding any difference between the Owner and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Owner and further agrees that the guarantee herein contained shall continue to be enforceable till the Owner discharges this guarantee.

The Owner shall have the fullest liberty without affecting in any way the liability of the Bank under the guarantee, from time to time to extend the time for performance or the Contract by the Contractor. The Owner shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to for bear to enforce any covenants, contained or implied, in the Contact between the Owner and the Contractor or any other course or remedy or security available to the Owner. The Bank shall not be released to its obligations under these presents by any exercise by the Owner of its liberty with reference to the matters aforesaid or any of them or by reason of any other act of omission or commission on the part of the Owner or any other indulgences shown by the Owner or by any other matter or thing what so ever which under law would, but for this provision have the effect of relieving the Bank.

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A GOVT. OF TRIPURA ENTERPRISE)

NIT No. DGM/ED-I/TSECL/2022-23/05, Dated: 13/06/2022

The bank also agrees that the Owner at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and not withstanding any security or other guarantee the Owner may have in relation to the Contractor's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted toand it shall remain in force upto and includingand shall be extended from time to time for such period (not exceeding one year), as may be desired M/son whose behalf this guarantee has been given.

Dated this day of20 ____..... At

WITNESS

.....
(Signature) (Signature)

.....
(Name) (Name)

.....
(Official Address) (Official Address)

Attorney as per Power
of Attorney No.

Date

NOTES:

- The sum shall be 'ten per cent (10 %)' of the Contact Price.
- The claim date will be ninety (90) days after the end of date of 'Warranty Period' as specified in the Contract.
- The Stamp Papers of appropriate value shall be purchased in the name of issuing Bank.

ANNEXURE – III

APPLICATION FOR EXTENSION OF TIME

(Part – I)

1. Name of Contractor _____
2. Name of work (as given in the contract) _____

3. Agreement no. _____
4. Contract amount _____
5. Date of Commencement of work as per agreement _____
6. Period allowed for completion of work (as per agreement) _____
7. Date of completion stipulated in the agreement _____
8. Actual date of completion _____
9. Period for which extension of time has been given previously if any _____
 - a) 1st extension vide No. _____
 - b) 2nd extension vide No. _____
 - c) 3rd extension vide No. _____
 - d) 4th extension vide No. _____
10. Period for which extension have been previously given (Copies of the previous application should be attached).
11. Hindrances on account of which extension is applied for with date on which hindrances occurred.

Sl. No.	Nature of hindrances	Date of occurrence	Period of which hindrances is likely to last	Extension of time applied for by the contractor	Overlapping period, if any, giving reference to items which overlap	Period for which extension is applied for.	Remarks as to why the hindrances occurred and justification for extension of time

12. Total period for which extension is now applied for on account of hindrances mentioned above.

13. Extension of time required for extra work: - _____ Months. _____ days.

14. Detailed for extra work and the amount involved: -

15.

a) Total value of extra work: -

b) Proportionate period of extension of time based on estimated amount put to tender on account of extra work: -

16. Total extension of time required for 11 & 12: -

Signature of Contractor

APPLICATION FOR EXTENSION OF TIME

(Part – II)

(To be filled in by TSECL)

1. Date of receipt of application from _____ contractor

for the work of

in the Sub-Divisional

_____.

2. Acknowledgement issued by the Sr. Manager, vide his No.

_____ Dated _____.

3. Recommendation of Sr. Manager, in – charge of the Sub-Division is to whether the reasons given by the Contractor are correct and what extension, if any, recommended by him, if he does not recommended the extension, reasons for rejection should be given

Dated	Signature of the Sr. Manager in-charge of Sub-Division.
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APPLICATION FOR EXTENSION OF TIME

(Part – III)
(To be filled in by TSECL)

1. Date of receipt in the Divisional office: _____
2. Report of DGM, in-charge of the Division regarding hindrances mentioned by the contractor

Sl. No	Nature of hindrances	Date of occurrence	Period for which hindrances is likely to last	Extension of time applied for by the contractor	Overlapping period, if any, giving reference to items which overlap	Net extension applied for	Remarks as to why the hindrances occurred and justification for extension recommender

3. Recommendation / Approval of the DGM, in-charge of the Division: -

(The present progress of work should be stated and whether the work is likely to be completed by the date upto which extension is applied for, if extension of time is not recommended, what compensation is proposed to be levied under clause 13 of section - III.

Signature of DGM

4. Recommendation / Approval of the AGM, in-charge of the Circle: -

Signature of AGM

5. Recommendation / Approval of the GM (Technical): -

Signature of GM (Technical)

6. Recommendation / Approval of the CMD: -

Signature of CMD

ANNEXURE – IV

(N.J. Stamp of Rs.30/-)
BEFORE THE NOTARY
TRIPURA.
INDEMNITY BOND

THIS INDEMNITY BOND IS EXECUTED ON THE _____ DAY
OF _____ 20__ A. D. By Shri _____,
S/O. Shri / Late _____, Vill. _____ P.S.

_____, District _____, aged about _____
years, a citizen of India (Here-in-after called the Contractor indemnifier) in favour of Tripura
State Electricity Corporation Ltd. (TSECL) (Here-in-after called the Corporation) under the
terms and conditions here-in-after mentioned : -

WHEREAS, I am a Class __ Government Contractor and the Corporation awarded me to execute
the work namely _____

I agree to indemnify the corporation that in the event of any accident of any workman, arising out
of and in course of employment, during execution of the work I shall be liable to pay full
compensation to the workmen employed by me for execution of the work.

I also agree to indemnify and save harmless the corporation that, the lives & bodies of my
workmen(s), employed by me for execution of this work, are duly insured with the
Insurance _____

Company _____ Branch under _____ Act / Scheme.

I further agree to indemnify and save harmless the corporation that the corporation or any of its
Director (s) or Officer(s) or Manager(s) shall not be made liable to pay any compensation to any
workmen in the event of death or bodily injury, arising out of their course of employment under
me, _____ employed by me for execution of the work
namely _____

IN WITNESS WHERE OF I SIGN THIS INDEMNITY BOND TODAY, THE DAY, MONTH,
YEAR FIRST ABOVE WRITTEN IN PRESENCE OF FOLLOWING WITNESSES.

Witnesses 1. 2. Identified by me Advocate	 Full Signature of Contractor (INDEMNIFIER)
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To,
The Deputy General Manager
Electrical Division No-I,
Tripura State Electricity Corporation Limited.
Banamalipur, Agartala, Tripura (West).

Sub:- “No Deviation Statement.”

Ref:- NIT No:

Dated:

Sir/ Madam

I/We hereby accept and abide by the scope & terms and conditions of NIT document unconditionally and on the scope of work or any related area there are no deviations in this response. (.....Name of Bidder.....) has adhered to all the qualification requirements as well as other items listed in the NIT.

Yours faithfully

Signature:-.....

Full Name:-.....

Address:-.....

.....

.....