

## **DRAFT -NIT**

**Office of the Deputy General Manager,**

**Capital Complex Electrical Division, 79 Tilla, Agartala**

**NIT No : - DGM/ EDCC/ 2022-23/8      dated 22.11.2022.**

**Name of Work :** - Extension of L.T U.G Cable of 3 phase, 3½ Core, 1.1KV, 50 sqmm L.T XLPE and Up gradation of 25 KVA to 63 KVA Distribution Transformer for providing power supply of individual Electric Service Connection at BSNL staff qtrs at Kunjaban under ESD- Capital Complex.

**Estimated Cost: - ₹1, 52,685.00**

**Earnest Money: - ₹3054.00**

**Cost of Bid Document: - ₹ 236.00 (Including GST)**

**Time for Completion: -3(three) Month.**

The document contains **92 (Ninety Two)** pages excluding back Cover Pages.

Deputy General Manager  
Electrical Division – Capital Complex  
TSECL, Agartala. West Tripura.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
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**SECTION-I**

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

NOTICE INVITING TENDER FOR “Extension of L.T U.G Cable of 3 phase, 3½ Core, 1.1KV, 50 sqmm L.T XLPE and Up gradation of 25 KVA to 63 KVA Distribution Transformer for providing power supply of individual Electric Service Connection at BSNL staff qtrs at Kunjaban under ESD- Capital Complex.”

**INTRODUCTION:-**

The GM, BSNL, Agartala Tripura approached TSECL for Extension of L.T U.G Cable of 3 phase, 3½ Core, 1.1KV, 50 sqmm L.T XLPE and Up gradation of 25 KVA to 63 KVA Distribution Transformer for providing power supply of individual Electric Service Connection at BSNL staff qtrs at Kunjaban under ESD- Capital Complex.

The work involves supply of 3 Core XLPE Cable, LT Kiosk, GI Pipe and erection work as required.

**SCOPE OF WORK:**

The Scope of work covered under this package includes for “Clearance of the site for Cryogenic Oxygen Tank of AGMC & GBP Hospital, Agartala / Supply, laying of 1.1 KV, 3.5 Core, 120 Sq.mm underground XLPE cable for site clearance in connection with construction of "Cryogenic Oxygen Tank" at AGMC & GBP Hospital, Agartala under ESD-V, GB, 79 Tilla, Agartala”.

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

<b>Bid Receipt time and date</b>	<b>: 06/12/2022 (up to 3:00 p.m.)</b>
<b>Bid opening time and date (Price Bid)</b>	<b>: 06/12/2020 (at 3:30 p.m.)(If possible)</b>
<b>Cost of bidding document</b>	<b>: ₹ 236.00 (Including GST)</b>
<b>Estimated Cost</b>	<b>: ₹1, 52,685.00</b>
<b>Earnest Money</b>	<b>: ₹3054.00</b>
<b>Completion Period</b>	<b>: 3 (three) month.</b>

**2.0 QUALIFYING REQUIREMENTS FOR BIDDERS :-**

**2.1** The bidder must have laid and commissioned minimum **installation of 50 meters HT UG**



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- XLPE Cable a single award and which is in successful operation for at least 1 (One) year from prior to submission of bid as per NIT.**
- 2.2 The minimum average annual turnover of the bidder for the last three years shall be not less than 30% of the estimated cost put to tender and the bidder must have his GST Registration.**(proof in respect to GST ID & GSTN address to be provided along with Part-I bid).
- 2.3** Bids may be submitted by an individual firm ( proprietorship entity ) with relevant experience or registered partnership firm or companies registered under companies act or joint ventures of registered firms/companies/ proprietorship entity with two constituents only as one of the following.
- 2.4** 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.
- 2.5** A joint venture of two registered firms/companies/ proprietorship entity, wherein all registered firm/company/ proprietorship entity shall meet any one, both or all the requirements of para 2.1 & 2.2 above.
- 2.6** The figures of average annual turnovers for each registered firm/company/ proprietorship entity shall be added together to determine the bidder's compliance with the minimum average annual turnover requirement for the package as given at Para 2.3 above.
- 2.7** All partners of Joint Venture shall be **liable jointly and individually / severally** for the execution of the contract in accordance with the contract terms.
- 2.8** The Contractor shall mandatorily obtain the registration under GST Law at Central level and / or in respective state as may be required. Further the Contractor shall mandatorily file returns under GST before their due date & comply with the requirement of the law. TSECL will ensure that the contractor has complied with all the required statutory requirements under GST.
- 2.9** Notwithstanding anything contained herein above, TSECL reserves the right to assess the "capacity and capability" of the bidder to execute the work.
- 2.10** In addition to the mandatory requirements as specified in Para 2.1, & 2.2 the following criteria must need to be fulfilled for the Bidder / Lead Partner for this package.  
"The bidders who are engaged in TSECL and other Power Utilities in different works or who have completed the works within 5 year or less, they shall submit the performance for each recent ongoing works and work completed within 5 years. The bidder who have done work in TSECL and other Power Utilities before 5 years but they are not doing any similar works within any Power Utilities, they are not eligible for submitting the bid. The bidder must submit the certificate from the respective controlling Officer not below the rank of DGM/ Ex. Engg and submission of which is mandatory along with bid or before Pre bid discussion date. Any unsatisfactory performance report will be treated as disqualification of bid". **Experience certificate of sub-contract work under any contractor shall not be accepted.**
- 2.11** The bidder's offer must include the following documents to be submitted with technical bid,
- (i) Copies of original documents defining the constitution or legal status, place of registration and principal place of business, Authorization / Power of attorney in favour of authorized signatory for signing of documents and submission of bid with the following information:-
- 1 Name & address of authorized signatory.
  - 2 Telephone no / Fax no, Mobile No and E mail ID.
  - 3 Copy of Partnership deed in case of partnership firm, Memorandum and Article of



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

Association in case of limited company, Ownership certificate in case of sole or proprietary firm and Power of Attorney in favour of authorized signatory in case the firm is not a proprietary firm.

(ii) **Photocopy of Current Income-tax challan / Return, GST registration No; PAN No, Labor License Declaration and EPF Registration no of bidder / all partners of joint venture.**

(iii) Successful completion certificate issued by an Engineer not below rank of Executive Engineer/Deputy General Manager in charge along with supporting photocopies of work order /LOA for the work executed in any 1(one) year out of last 5 financial years. Bidders shall provide details of work of similar nature executed or under execution during last 1 year in the following format.

Sl.	Description of work of similar nature	Client Name with LOA Ref. No. & Date	LOA Value (in Lakhs)	Amount obtained till date (in Lakhs)	Schedule completion time	Actual Completion time	Brief Reason of delay

(iv) Major items of construction equipment proposed to carry out the contract.

(v) Details of proposed manufacturers of material/equipment and erection agencies are to be submitted with the bid.

(vi) Qualifications and experience of key site management and technical personal proposed for the contract.

(vii) Reports on the financial standing of the bidder, such as Profit and loss account & balance sheets and Auditor's reports etc. for the financial years **2020-21 and 2021-22**

(viii) Evidence of adequacy of working capital and access to line(s) of credit and availability of other financial resources from the scheduled commercial Bank.

(ix) Authority to seek reference from the Bidder's Bankers (as per format enclosed).

(x) Financial Turnover should be as per the published audited annual report of the company/ bidder/partners of joint venture along with PAN card (individual / organization).

(xi) Contractor's license & supervisory certificate of competency for requisite parts.

(xii) The bidder shall not have been debarred from business by any PSU /Govt Deptt during the last 3 years. Self-declaration in this regard to be provided along with the bid.

(xiii) Bidder shall be liable to follow the terms and condition of the NIT otherwise the bid shall be summarily rejected.

(xiv) Photocopies of all documents furnished shall be self-authenticated and duly stamped.

**2.12 TSECL reserves the right to check the originals, if required.**

**3.0** The Bid Document complete with **general condition of contract, technical specification, schedule of quantities & drawings of equipment foundation & bill of materials for equipment support structures etc.** may be seen in the office of the **Deputy General Manager, Capital Complex Electrical Division, 79 tilla, Agartala, Tripura (W)**, on all working days during office hours up to the date fixed for sale of bid documents.

**4.0** 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.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- 5.0** The bidder shall furnish documentary evidence in support of the qualifying requirements stipulated above along with their bid. Bid received without such documents shall be summarily rejected.
- 6.0** The bidder shall be required to deposit earnest money @ **2.0 %** of the estimated cost put to tender subject to maximum of **Rs.5.00 lakh** in the shape of **demand draft** or Banker Cheque from any scheduled bank guaranteed by Reserve Bank of India favoring **TRIPURA STATE ELECTRICITY CORPORATION LIMITED** payable at **Agartala** along with the bid in a separate sealed envelope. The earnest money deposited is adjustable with **Contract Performance Guaranty**.
- The successful bidder on award of work shall have to deposit a **Contract Performance Guaranty** equivalent to **10% of LOA** value, from any scheduled bank guaranteed by Reserve Bank of India payable at Agartala or **in the shape of Bank Guarantee (BG)** from a **Public Sector / Scheduled Indian Bank guaranteed by Reserve Bank of India as per normal format** in favour of **TRIPURA STATE ELECTRICITY CORPORATION LIMITED** in the shape of **Bank guarantee**.
- BID NOT ACCOMPANIED WITH REQUISITE BID EARNEST MONEY IN A SEPARATE SEALED ENVELOPE SHALL NOT BE ENTRTAINED AND SHALL BE RETURNED TO THE BIDDER WITHOUT BEING OPENED.**
- 7.0** The bidding documents are not transferable and cost of bidding document is not refundable under any circumstances.
- 8.0** The original Bidding document shall be signed by the bidder(s) on all pages and will be enclosed with the Price bid containing “Schedule of Quantity & Prices” (**Schedule-A**). All corrections to rates and items in the Bid(s) should be initialed by the Bidder(s).
- 9.0** 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.

**10.0** Address for Communication / Purchase of Bid Document.

Deputy General Manager  
Capital Complex Electrical Division  
79 tilla, Agartala, Tripura (W)

**2.0 Submission of Tender at the following address.**

Deputy General Manager  
Capital Complex Electrical Division  
79 tilla, Agartala, Tripura (W)



## **SECTION-II**

### **INSTRUCTION TO BIDDERS**

#### **1.0 GENERAL INSTRUCTIONS**

“The bidders are to satisfy themselves by visiting to the ‘sites of work’ as regards the prevailing condition of the existing 11KV primary distribution network, LT secondary distribution network proposed for bifurcation, conversion into AB Cable lines, and Distribution Substations require augmentation, construction of new DT(s) for system strengthening and renovation & reorientation of existing DT(s) and their approaches, transportation facilities, availability of laborers and availability of sundry materials, tools and tackles 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 **Capital Complex Electrical Division .**

#### **2.0 COST OF BIDDING**

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

#### **3.0 THE BIDDING DOCUMENT**

##### **3.1 CONTENTS OF BIDDING DOCUMENTS**

The goods and services required, bidding procedures and contract terms are as prescribed in the Bidding Documents.

In addition to the Invitation for Bids, the Bidding Documents is a compilation of the following sections:

- a. **Instructions to Bidders**
- b. **General Conditions of Contract**
- c. **Erection Conditions of Contract**
- d. **Standard Technical Specification & Guaranteed Technical Particulars.**
- e. **Schedule of Bid.**

**3.2 UNDERSTANDING OF BIDDING DOCUMENTS:** - A prospective Bidder is expected to examine all instructions, forms, terms and conditions, specifications in the Bidding Documents and fully inform himself as to all the conditions and matters which may in any way affect the scope of work or the cost thereof. Failure to furnish all information required by the Bidding Documents or submission of a Bid not **substantially responsive** to the Bidding Documents in every respect shall be at the Bidder’s risk and may result **in the rejection of its Bid.**

#### **4.0 CLARIFICATIONS ON BIDDING DOCUMENTS**

4.1. If prospective Bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part or requires any clarification on Bidding Documents should make the request / notify the **Tender inviting Authority** of TSECL in writing. The concerned authority of TSECL shall respond in writing to any request for such clarification of the Bidding Documents, which it **receives not later than fifteen (15) days prior to the deadline for submission**





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

of bids stipulated in tender notice. Written copies of the response (including an explanation of the query but without identifying its source) shall be sent to all prospective bidders who purchased the tender document.

**4.2. Verbal clarification and information given from any offices of TSECL or its employee(s) or representative (s) shall not in any way be binding on TSECL.**

**5.0 AMENDMENT TO BIDDING DOCUMENTS**

5.1. At any time prior to the deadline for submission of bids, TSECL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by amendment (s).

5.2. The amendment shall be notified in writing or by Fax or Post or Email to all prospective Bidders, who have received the Bidding Documents at the address contained in the letter of request for issue of Bidding Documents from the Bidders. TSECL shall bear no responsibility or liability arising out of non-receipt of the same in time or otherwise.

5.3. In order to afford prospective bidders reasonable time to take the amendment into account in preparing their bids, TSECL may, at its discretion, extend the deadline for submission of bids.

5.4. Such amendments, clarifications, etc shall be binding on the bidders and shall be given due consideration by the bidders while they submit their bids and invariably enclose such documents as a part of the Bid.

**6.0 PREPARATION OF BIDS:-** The Bid prepared by the Bidders and all correspondences and documents relating thereto, exchanged by the Bidder and TSECL, shall be written in English language, provided that any printed literature furnished by the bidder may be written in another language so long as accompanied by an English translation of its pertinent passages. Failure to comply with this may disqualify a bid. For purposes of interpretation of the bid, the English translation shall govern.

**7.0 LOCAL CONDITIONS**

7.1 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.**

7.2 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.**

**8.0 DOCUMENTS COMPRISING THE BID**

The Bid shall be submitted in **2(two) parts** in **separate sealed envelopes** properly **super scribing tender no., name of work and bid opening date** as follows:

**8.1 Part-I: Bid Earnest Money, Pre-Qualification Bid and Techno-Commercial Bid/ Proposal**

- a) Containing **Bid earnest money** as per the stipulations of the Bid Documents in a separate sealed envelope.
- b) Containing Documentary Evidence of the Bidder fulfilling the **QUALIFYING REQUIREMENTS FOR BIDDERS** stipulated in Sl no-2 of Part-I of the Bid Document and **Technical Proposal, drawings** etc. along with his **Commercial Terms, Payment Terms** in conformity with the Bid Documents.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**8.2 Part-II: Price Bid**

- a) Prices shall be quoted in figures & words in Rupees only, in the “**Schedule of Quantity & Prices**” (**Schedule-A**) attached to the Bid document. **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.**
- b) **GST** as applicable on twenty eight (28) days prior to deadline for submission of bids, shall be mentioned in the **Schedule-A**.
- c) **Applicable GST as per clause 8.2 (b) above shall be paid / reimbursed by TSECL on actual against tax invoices raised by the contractor.**
- d) Statutory variation in Taxes & duties after twenty eight (28) days prior to deadline for submission of bids and during the scheduled completion period will be adjusted / reimbursed against production of documentary evidence.
- e) Income Tax as admissible will be deducted at source for which necessary TDS certificate will be issued”

**9.0 SCOPE OF THE PROPOSAL**

The scope of the proposal shall cover erection of all the equipments, equipment foundation, over ground lines & cables as well as underground cable lines as per drawing & specification in the bidding document, Galvanized Steel lattice structures, insulators and fitting fixtures etc. specified under the accompanying Technical Specification & **Bidding Schedule / ANNEXURES**.

9.1 It shall include the following:

- i. Detailed design of the **1.1 KV XLPE cable, 1.1 KV XLPE cable jointing KITS, and HDPE pipe** etc. as applicable for the proposed work.
- ii. Complete manufacture including shop testing of all kinds of Hardware.
- iii. Providing engineering drawing, design & schematic of proposed underground 1.1 KV line etc. for approval by TSECL.
- iv. Packing and transportation from the Manufacturer’s works to the Site.
- v. Receipt, storage, preservation and conservation of equipment and materials at Site.
- vi. Pre-assembly, if any, Erection, Testing and Commissioning of all the equipment.
- vii. Reliability & Performance Test on completion & Commissioning of erected finished job.
- viii. Providing **Guaranteed Technical Particulars** of Equipment / Materials as per format enclosed.

9.2 Bids containing deviations from provisions relating to the following clauses shall be considered as ‘**non-responsive**’:

- a) Prices and Taxes & duties, (Clause 10.0 (Section-II,) & 32.0 (Section-III,))
- b) Bid Guarantee: - Clause 6.0, Section-I
- c) Contract Performance Guarantee:- Clause 6.0, Section-I
- d) Liquidated Damages: **Clause 13.0**, General Condition of Contract (Section-III)
- e) Guarantee: **Clause 14.0**, Section-III
- f) Payment: **Clause 33.0**, Section-III.





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

9.1 Bids not covering the above entire Scope of Work shall be treated as incomplete and hence rejected.

**10.0 PRICES AND TAXES & DUTIES.**

10.1 Prices shall be quoted in figures & words in Rupees only, in the “Schedule of Quantity & Prices” (Schedule-A) attached to the Bid document. **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 except GST.**

10.2 **Goods and Services Tax (GST)** as applicable on twenty eight (28) days prior to deadline for submission of bids, shall be mentioned in the **Schedule-A.**

10.3 **Applicable GST as per clause 8.2 (b) above shall be paid / reimbursed by TSECL on actual against documentary proof based on tax invoices raised by the contractor.**

10.4 **Statutory** variation in Taxes & duties after twenty eight (28) days prior to deadline for submission of bids and during the scheduled completion period will be adjusted / reimbursed against production of documentary evidence.

10.5 **Income Tax** as admissible will be deducted at source for which necessary TDS certificate will be issued”

**11.0 TIME SCHEDULE**

11.1 The basic consideration and the essence of the Contract shall be strict adherence to the time schedule for performing the specified works.

11.2 The requirement of **completion schedule** for the works is mentioned in **Clause – 1** (Section – I) of this document.

11.3 The **completion schedule** as stated in Clause – 1 (Section – I) shall be one of the major factors in consideration of the Bids.

11.4 **TSECL reserves the right to request for a change in the work schedule during post-bid discussion with successful bidder.**

11.5 The successful Bidder shall be required to submit detailed **BAR CHART** and finalize the same with TSECL, as per the requirement of completion schedule.

**12.0 CONTRACT QUALITY ASSURANCE**

12.1 The Bidder shall include in his proposal, the **quality assurance programme**

Containing the overall **quality management and procedures** which he proposed to follow in the performance of the works during various phases, as detailed in relevant clause of the General Technical Conditions.

12.2 At the time of award of Contract, the detailed **quality assurance programme** to be followed for the execution of the contract shall be mutually discussed and agreed to and such agreed programme shall form part of the contract.

**13.0 INSURANCE:-** The bidder’s insurance liabilities pertaining to the Scope of Work is detailed out in clauses titled insurance in General Terms & Conditions of Contract and in Erection Conditions of Contract. Bidder’s attention is specifically invited to these clauses. The bid price shall include all the cost in pursuance of fulfilling all the insurance liabilities under the Contract.

**14.0 BRAND NAMES**

**All the equipments/ materials/ Hardware /Spares shall be supplied from the ‘list of the makes / manufacturers’ as stipulated in the attached technical specification. Any deviation in this regard shall not be entertained and bids having such deviation shall be rejected.** In case brand



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

names are not specified in the attached technical specification, standard equipments / materials of reputed manufacturer acceptable to TSECL shall be supplied.

#### **15.0 BID GUARANTEE**

**15.1** The Bidder shall furnish, as part of its Bid, earnest money for an amount as specified in the Notice Inviting Tender (NIT) in the shape of **demand draft** only in favour of **Tripura State Electricity Corporation Limited** payable at **SBI, TLA House Branch, Agartala, and West Tripura.**

**15.2** 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 18.7.**

**15.3** The earnest money shall be deposited in **Indian rupees only.**

**15.4** Any bid not secured in accordance with para 18.1 and 18.3 above shall be rejected by TSECL as non-responsive.

**15.5** **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.**

**15.6** The earnest money of the successful Bidder will be adjusted with the performance guarantee required to be furnished on award of contract as per **Clause 6.0 of Section – I.**

**15.7** **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'.

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

#### **16.0 PERIOD OF VALIDITY OF BIDS**

**16.1** 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.**

**16.2** 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 under **Clause 6.0 of Section – I** shall also be retained upto the extended period. No interest shall be payable by TSECL for retaining the earnest money upto the extended period. A Bidder may refuse the request without forfeiting the earnest money deposited by him. A Bidder granting the request shall not be required or permitted to modify his Bid.

### **SUBMISSION OF BIDS**

#### **17.0 FORMAT OF BID**

**17.1** The Bidder shall prepare two copies of the Bid, clearly marking the **“Original Bid”** and **“Copy of Bid”.** In the event of any discrepancy between them, the original shall prevail.

**17.2** The “original” and “copy of bid” shall be typed or written in indelible ink and 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



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

pages of the Bid, except for un-amended printed literature, shall be initialed by the person or persons signing the Bid.

17.3 The Bid shall be submitted **in two parts** as described in clause no. 8 of Section – II.

17.4 The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

### **18.0 SIGNATURE OF BIDS**

18.1 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.

18.2 Bid by a partnership must be furnished with full names of all partners and be signed with the partnership name, followed by the signature(s) and designation(s) of the authorized partner(s) or other authorized representative(s).

18.3 Bids by Corporation / Company must be signed with the **legal name of the Corporation/Company** by the President, Managing Director or by the Secretary or other person or persons authorized to Bid on behalf of such Corporation / Company in the matter.

18.4 A Bid by a person who affixes to his signature the word ‘President’, ‘Managing Director’, ‘Secretary’, ‘Agent’, or other designation without disclosing his principal shall be rejected.

18.5 Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the Bid.

18.6 The Bidder’s name stated on the proposal shall be exact legal name of the firm.

18.7 Bids not conforming to all the above requirements of para 21 above may be disqualified.

18.8 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 initialed by the Bidder(s). Every Page of the **Schedule Price Bidding** shall be signed in full by the Bidder(s).

### **19.0 SEALING AND MARKING OF BIDS**

19.1 The Bidders shall seal the “**Original**” and “**Copy of Bid**” in an inner and an outer envelope, duly marking the envelopes as “Original” and “Copy”.

19.2 The inner and outer envelopes shall be:

19.3 Addressed to TSECL at the following address:-

Deputy General Manager  
Capital Complex Electrical Division  
79 tilla, Agartala, Tripura (W)

19.4 Bear (the NIT No., Name of work & date of opening) in 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”.

19.5 If the outer envelope is not sealed and marked as required by para 22.2 (b), TSECL shall assume no responsibility for the Bid’s misplacement or premature opening.

19.6 The earnest money must be submitted a separate sealed envelope.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**20.0 DEADLINE FOR SUBMISSION OF BIDS**

- 20.1 The Bidders have the option of sending the Bid by registered post or submitting the Bid in person. **Bids submitted by Telex/Telegram/Fax shall not be accepted.** No request from any Bidder to TSECL to collect the Bid from airlines, cargo agents etc. shall be entertained.
- 20.2 Bids shall be received by TSECL at the address specified under para 22.2(a) of Section - II, not later than the time & date mentioned in the Invitation to Bid.
- 20.3 TSECL may, at its discretion, extend this deadline for the submission of Bids, in which case all rights and obligations of TSECL and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

**21.0 LATE BIDS:-** Any Bid received by TSECL after the time & date fixed or extended for submission of Bids prescribed by TSECL, shall be rejected and /or returned unopened to the Bidder

**22.0 MODIFICATION AND WITHDRAWAL OF BIDS**

- 22.1 **The Bidder may modify or withdraw its Bid after the Bid's submission provided that written notice of the modification or withdrawal is received by TSECL prior to the deadline prescribed for submission of Bids.**
- 22.2 **The** Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of clause 22 of section – II.
- 22.3 **No** Bid shall be modified / withdrawn in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Bid Form. Withdrawal/modification of a Bid during this interval shall result forfeiture of the earnest money deposited by the bidder.

**23.0 INFORMATION REQUIRED WITH THE PROPOSAL**

- 23.1 The Bids must clearly indicate the name of the manufacturer, the type of model of each principal item of equipment proposed to be furnished and erected. The Bid shall also contain drawings and descriptive materials indicating general dimensions, principles of operation, the extent of pre-assembly involved, major construction equipment proposed to be deployed, method of erection and the proposed erection organizational structure. **the above information shall be provided by the Bidder in the form of separate sheets, drawings, catalogues, etc. in five copies.**
- 23.2 Any bid not containing sufficient descriptive material to describe accurately the equipment proposed, shall be treated as incomplete and hence rejected. Such descriptive materials and drawings submitted by the Bidder shall be retained by TSECL. Any major departure from these drawings and descriptive material submitted shall not be permitted during the execution of the Contract without specific written permission of TSECL.
- 23.3 Oral statements made by the Bidder at any time regarding quality, quantity or arrangement of the equipment or any other matter shall not be considered.
- 23.4 Standard catalogue pages and other documents of the Bidder may be used in the Bid to provide additional information and data as deemed necessary by the Bidder.

**24.0 In case the proposal information contradicts specification requirements; the specification requirements shall govern, unless otherwise brought out clearly in the technical / commercial deviation schedule.**



**BID OPENING AND EVALUATION**

**25.0 OPENING OF BIDS BY TSECL**

- 25.1 First the cover containing Earnest money as per clause 6.0 of Section - I 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 Part-I of the Bid which shall also be opened on the same day if possible. 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.**
- 25.2 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.
- 25.3 The Bid and its all parts shall be opened in the presence of Bidders' representatives (up to 2 persons) who choose to attend at the date and time for opening of bids indicated in the NIT or in case any extension has been given thereto, on the extended bid opening date and time notified to all the Bidders, who have purchased the Bidding Documents. The Bidders' representatives who are present shall sign a register evidencing their attendance.
- 25.4 No person / agent shall be allowed to be present during opening of Bid without valid authorization from the concerned bidder.
- 25.5 The Bidders names, bid prices, modifications, bid withdrawals and the presence or absence of the requisite earnest money and such other details as TSECL, at its discretion, may consider appropriate shall be announced at the opening.
- 25.6 No electronic recording devices shall be permitted during bid opening.

**26.0 CLARIFICATION OF BIDS:-** To assist in the examination, evaluation and comparison of Bids, TSECL may, at its discretion, ask the Bidder for a clarification of its Bid. The request for clarification and the response shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

**27.0 PRELIMINARY EXAMINATION**

- 27.1 TSECL shall examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed and whether the Bids are generally in order.
- 27.2 Arithmetical errors shall be rectified on the following basis: If there is a discrepancy between **the unit price** and the **total price** that is obtained by multiplying the unit price and quantity, **the unit price shall prevail** and total price shall be corrected. If there is a discrepancy between words and figures, the **amount in words** shall prevail. If the Bidder does not accept the correction of the errors as above, his bid shall be rejected and the amount of earnest money shall be forfeited.
- 27.3 The Bidder shall ensure that the prices furnished by him are complete. **Total amount against each item as well as grand total of bid shall be computed and worked out both in figures and words, failing which bid shall be treated as cancelled/ rejected.** In the case of not quoting of rates of any item (**supply / erection / inspection**) in the specified price schedules of the Bid Form, TSECL shall be entitled to consider the highest price of the tender for the purpose of evaluation and for the purpose of award of the Contract, use the lowest prices of the tender.





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- 27.4 Prior to the detailed evaluation, TSECL shall determine the substantial responsiveness of each Bid w.r.t. Bidding Documents. For purpose of these Clauses, a substantially responsive Bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations. A material deviation is one which affects in any way the prices, quality, quantity or delivery period of the equipment or which limits in any way the responsibilities or liabilities of the Bidder or any right of TSECL as required in these specifications and documents. TSECL determination of a Bid's responsiveness shall be based on the contents of the Bid itself without recourse to extrinsic evidence.
- 27.5 A Bid determined as not substantially responsive shall be rejected by TSECL and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- 27.6 TSECL may waive any minor non-conformity or irregularity in a Bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

**28.0 EVALUATION OF BIDS:-**

- 28.1 During bid evaluation, TSECL may ask the bidder for clarification of its bid. The request for clarification and the response shall be in writing, and no change in the price or substance of the bid shall be sought, offered or permitted.
- 28.2 The total evaluated prices shall be considered for comparison of prices of different bidders and the evaluation of the bids shall be done on total quoted price for the total Package as per Schedule-A: Schedule of Quantities & Prices. In case the bidder has not quoted for any of the items, the price of all such item(s) against which bidder has not quoted rates/amount (viz. items left blank or against which '-' is indicated) in the schedules will be deemed to have been included in other item(s)/ Total quoted amount.
- 28.3 All applicable taxes, duties and levies as mentioned in Schedule-A Schedule of Quantities & Prices shall be considered for the purpose of evaluation of bid.
- 28.4 Evaluated bid prices of all the bidders shall be compared among themselves to determine the lowest evaluated Bid and, as a result of this comparison, the lowest Bid shall be selected for consideration of award of the Contract.

**29.0 CONTACTING THE OWNER**

Bids shall be deemed to be under consideration immediately after they are opened and until such time official intimation of award/rejection is made by TSECL to the Bidders. While the bids are under consideration, Bidders and/or their representatives or other interested parties are advised to refrain from contacting by any means, the Owner and/or his employees/representatives on matters relating to the bids under consideration. TSECL, if necessary, shall obtain clarifications on the bids by requesting for such information from any or all the Bidders, either in writing or through personal contacts as may be necessary. Bidders shall not be permitted to change the substance of the bids after the bids have been opened.

**AWARD OF CONTRACT**

**30.0 AWARD CRITERIA**

**30.1** 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.





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**30.2** 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.

**30.3 OWNER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

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.

**31.0 NOTIFICATION OF AWARD**

**31.1** 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.

**31.2** The Notification of Award / Letter of Award shall constitute the formation of the Contract.

**31.3** Upon the successful Bidder's furnishing of Contract Performance Guarantee pursuant to Clause 6.0 of Section – I. TSECL shall promptly notify each unsuccessful Bidder and will discharge its bid guarantee, pursuant to Clause 18 (Section – II)

**32.0 SIGNING OF CONTRACT**

**32.1** 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.

**32.2** 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.

**33.0 CONTRACT PERFORMANCE GUARANTEE**

As a Contract Performance Security, the successful Bidder, on award of work, shall have to deposit a

**Contract Performance Guaranty equivalent to 10% of LOA value, from any scheduled bank guaranteed by Reserve Bank of India payable at Agartala or in the shape of Bank Guarantee (BG) from a Public Sector / Scheduled Indian Bank guaranteed by Reserve Bank of India as per normal format in favour of TRIPURA STATE ELECTRICITY CORPORATION LIMITED.** The contract performance guarantee submitted in the shape of Bank guarantee shall be valid up to guarantee period (18 months from the date of commissioning) as per **Clause – 14 of section – III.**

**33.1** The Performance Guarantee shall cover additionally the following guarantees to TSECL:

- a. The successful Bidder guarantees the successful and satisfactory operation of the equipment supplied and erected under the Contract, as per the specifications and documents.
- b. The successful Bidder further guarantees that the equipment provided and installed by him



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
*(A Govt. of Tripura Undertaking)*

shall be free from all defects in design, material and workmanship and shall upon written notice from TSECL fully remedy free of expenses to TSECL such defects as developed under the normal use of the said equipment within the period of guarantee specified in the relevant clause of the General Terms and conditions.

**33.2** The Contract Performance Guarantee is intended to secure the performance of the entire contract. However, it is not to be construed as limiting the damages under clause entitled “**Equipment Performance Guarantee**” in Technical Specifications and damages stipulated in other clauses in the Bidding Documents.

**33.3** The Contract performance Guarantee submitted in the shape of demand draft shall be returned to the Contractor without any interest at the end of successful completion and commissioning of the work against a Bank Guarantee of equivalent amount from any Public Sector / scheduled Indian Bank valid upto the Guarantee period. The Bank Guarantee such deposited shall be discharged after expiry of Guarantee period.

**33.4 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.**

**34.0 CORRUPT OR FRAUDULENT PRACTICES:-** TSECL expects the bidders / suppliers / contractors to observe the highest standards of ethics during the procurement and execution of such contracts. In pursuance of this policy, TSECL defines, for the purpose of this provision, the terms set forth below as follows;

- I. **“Corrupt practice”** means offering, giving, receiving or soliciting of anything of value to influence the action of an official in the procurement process or in contract execution, and
- II. **“Fraudulent practice”** means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the owner, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the owner from the benefits of free and open competition.
  - a. Will reject a proposal for award if it determines the bidder recommended for award has engaged a corrupt or fraudulent practice in competing for the contract in question.
  - b. Will declare a firm ineligible, either indefinitely or for a stated period of time, if TSECL at any time determines that the firm has engaged in corrupt / fraudulent practices in competing for, or in executing the contract.

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## **SECTION-III**

### **GENERAL TERMS & CONDITIONS OF CONTRACT**

#### **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 or Purchaser' 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. '**Engineer in Charge**:- The term "**Engineer in Charge**" shall mean the TSECL's nominated representative for the purpose of carrying out the work.
- 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



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

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 are used, 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 start up 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 start up 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 declaration by TSECL, however, shall not relieve or prejudice the Contractor of any of his obligations under the Contract.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- 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 Executive Engineer 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. standards.
  - f) I.E.C. standards.
  - g) Other Internationally approved standards and / or Rules and **Regulations touching the subject matter of the Contract.**
  - h) Indian Electricity Rules.
- 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 APPLICATION**



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

These General Conditions shall apply to the extent that they are not **superseded by provisions in other parts of the Contract.**

### **3.0 STANDARDS**

The Goods supplied under this Contract shall conform to the standards mentioned in the Various Technical Specifications and when no applicable standard is mentioned to the authoritative standard appropriate to the Goods and such standards shall be the latest issued by the concerned institution.

### **4.0 LANGUAGE AND MEASURES**

All documents pertaining to the Contract including specification, Schedules, notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The Metric System of measurement shall be used exclusively in the Contract.

### **5.0 CONTRACT DOCUMENTS**

5.1. The term "Contract Documents" shall mean and include the following which shall be deemed to form an integral part of the Contract:

- a) Invitation of Bid including letter forwarding the Bidding Documents, Instructions to Bidders, General Terms and Conditions of Contract, Erection Conditions of Contract and all other documents included under the Special Conditions of Contract and various other sections.
- b) Specifications of the equipment to be furnished and erected under the Contract as brought out in the accompanying Technical Specification.
- c) Contractor's Bid proposal and the documents attached there-to including the letter of clarifications thereto between the Contractor and TSECL prior to the Award of Contract.
- d) All the materials, literature, data and information of any sort given by the Contractor along with his bid, subject to the approval of TSECL.
- e) Letter of Award and any agreed variations of the conditions of the documents and special terms and conditions of contract if any.

### **6.0 USE OF THE CONTRACT DOCUMENTS AND INFORMATION**

The Contractor shall not communicate or use in advertising, publicity, sales releases or in any other medium, photographs or other reproduction of the Works under this contract, or descriptions of the site, dimensions, quantity, quality, or other information, concerning the Works unless prior written permission has been obtained from TSECL.

### **7.0 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.**





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**8.0 MANNER OF EXECUTION OF CONTRACT**

8.1. 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.

8.2. **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.**

8.3. The Contractor shall provide **free of cost to TSECL** all the engineering data, drawings, and descriptive materials submitted with the Bid, in at least six (6) copies to form a part of the contract immediately after issue of Letter of Award.

8.4.

8.5. Subsequent to signing of the Contract, the Contractor, at his own cost, shall provide TSECL with at least five (5) true copies of Agreement and one soft copy including 3(three) hard copies of the **approved drawings within fifteen (15) days after the signing of the Contract.**

**9.0 ENFORCEMENT OF TERMS**

9.1. The failure of either party to enforce at any time any of the provisions of this Contract or any rights in respect thereto or to exercise any option therein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in anyway to affect the validity of the Contract. The exercise by either party of any of its rights herein shall not prejudice either party from exercising the same or any other right it may have under the **Contract.**

**10.0 COMPLETION OF CONTRACT**

10.1. 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.

**GUARANTEE & LIABILITIES**

**11.0 TIME – THE ESSENCE OF CONTRACT**

11.1. The time and the date of completion of the Contract as stipulated in the Contract by TSECL without or with modifications, if any, and so incorporated in the Letter of Award, shall be deemed to be the essence of the Contract. The Contractor shall so organize his resources and perform his Work as to complete it not later than the date agreed to.

11.2. The Contractor shall submit a detailed **BAR CHART / PERT NETWORK** consisting of adequate number of activities covering various key phases of the Work such as design, procurement, manufacturing, shipment and field erection activities within fifteen (15) days of the date of Notice of Award of Contract. This Bar Chart shall also indicate the interface facilities to be provided by TSECL and the dates by which such facilities are needed. The Contractor shall discuss with TSECL for finalization and approval of the Bar Chart by TSECL. The agreed Bar Chart shall form part of the contract documents. During the performance of the Contract, if in the opinion of the owner's Engineer in charge of the work, proper progress is not maintained, suitable changes shall be made in the Contractor's operations to ensure proper progress without any cost implication to TSECL. The interface facilities to be provided by TSECL in accordance with the agreed Bar Chart shall also be reviewed while reviewing the progress of the Contractor.

11.3. Based on the agreed Bar Chart fortnightly reports shall be submitted by the Contractor as directed by the owner's Engineer in charge of the work.

11.4. Subsequent to the finalization of the Bar Chart, the Contractor shall make available to the owner's Engineer in charge of the work a detailed manufacturing programme in line with the agreed Contract Bar



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

Chart. Such manufacturing programme shall be reviewed, updated and submitted to the owner's Engineer in charge of the work once in every month thereafter.

- 11.5. The above Bar Charts/manufacturing programme shall be compatible with TSECL computer environment and furnished to TSECL on such media as may be desired by TSECL.

**12.0 EFFECTIVENESS OF CONTRACT**

The Contract shall be considered as having come into force from the date of the Notification of Award, unless otherwise provided in the Notification of Award.

**13.0 LIQUIDATED DAMAGES.**

**13.1. For Equipment and erection work**

- 13.1.1. 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.

**Date on which erection of line / lines (Over Ground or Underground) with all allied accessories, equipments and Sub-Station structure etc. in full respect and up to satisfaction of Engineer in charge will be done shall be treated as date of completion of erection. However warranty and liability for completing and commissioning of materials, devices, equipment etc. considered for supplying in this NIT within scope of supply of bidders shall be regulated as per provisions already contained in the document.**

- 13.1.2. 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.

- 13.1.3. The liquidated damages for delay in supply & erection beyond the dates stipulated under shall be 0.5% (**point five percent**) of the contract value, per week or part thereof subject to a maximum of 5% of the Contract price.

**14.0**

- 14.1. **GUARANTEE:-** The Contractor shall warrant that the equipment shall be new, unused and in accordance with the contract documents and free from defects in material and workmanship for a period of **Eighteen (18) calendar months commencing immediately upon the satisfactory commissioning**. The Contractor's liability shall be limited to the replacement of any defective parts in the equipment of his own manufacture or those of his sub-contractors under normal use and arising solely from faulty design, materials and/or workmanship provided always that such defective parts are repairable at the site and are not in the meantime essential in the commercial use of the equipment. Such replaced/defective parts shall be returned to the Contractor unless otherwise arranged. No repairs or replacement shall normally be carried out by owner's Engineer in charge (**Deputy General Manager / Senior Manager**) of the work when the equipment is under the supervision of the



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

Contractor's supervisory engineer.

- 14.2. In the event of any emergency, where in the judgment of the owner's Engineer in Charge of work, delay would cause serious loss or damages, repairs or adjustment may be made by him or a third party chosen by him without advance notice to the Contractor and the cost of such work shall be paid by the Contractor. In the event such action is taken by the **Deputy General Manager / Senior Manager** in Charge of work, the Contractor shall be notified promptly and he shall assist wherever possible in making necessary corrections. This shall not relieve the Contractor of his liabilities under the terms and conditions of the Contract.
- 14.3. If it becomes necessary for the Contractor to replace or renew any defective portions of the Works, the provision of this clause shall apply to portion of the Works so replaced or renewed until the **expiry of Twelve (12) months** from the date of such replacement or renewal. If any defects are not remedied within a reasonable time, the **Deputy General Manager / Senior Manager** in Charge of work may proceed to do the work at the Contractor's risk and cost, but without prejudice to any other rights which TSECL may have against the Contractor in respect of such defects.
- 14.4. The repaired or new parts shall be furnished and erected free of cost by the Contractor. If any repair is carried out on his behalf at the site, the Contractor shall bear the cost of such repairs.
- 14.5. The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the equipment or defective work carried out by the Contractor shall be borne by the Contractor.
- 14.6. The acceptance of the equipment by the **Deputy General Manager / Senior Manager in Charge of work** shall in no way relieve the Contractor of his obligation under this clause.
- 14.7. In the case of those defective parts, which are not repairable at site but are essential for the commercial operation of the equipment, the Contractor and the Owner's Engineer in Charge of work shall mutually agree to a programme of replacement or renewal, which shall minimize interruption to the maximum extent in the operation of the equipment.
- 14.8. At the end of the guarantee period, the Contractor's liability ceases except for latent defects. For latent defects, the Contractor's liability as mentioned in clause nos. 14.1 through 14.7 above shall remain till the end of 5 years from the date of commissioning.
- In respect of goods supplied by sub-contractors to the Contractor, where a longer guarantee (more than 12 months) is provided by such sub-contractor, TSECL shall be entitled to the benefits of such longer guarantee.

- 14.9. The provisions contained in this clause shall not be applicable:
- a) If TSECL has not used the equipment according to the generally approved industrial practice and in accordance with the conditions of operations specified and in accordance with operating manuals, if any.
  - b) In cases of normal wear and tear of the parts to be specifically mentioned by the Contractor in the offer.

### **15.0 TAXES, PERMITS & LICENCES**

The Contractor shall be liable and pay all non-Indian taxes, duties, levies lawfully assessed against TSECL or the Contractor in pursuance of the Contract. In addition, the Contractor shall be responsible for payment of all Indian duties, levies and taxes lawfully assessed against this contract.

### **16.0 REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS**

- 16.1. during the performance of the Contract, owner's Engineer in charge of the work shall decide



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

and inform in writing to the Contractor that the Contractor has manufactured any equipment, material or part of equipment unsound and imperfect or has furnished any equipment inferior to the quality specified, the Contractor on receiving details of such defects or deficiencies shall at his own expense within Seven (7) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good, proceed to alter, reconstruct or remove such works and furnish fresh equipment/materials upto the standards of the specifications. In case, the Contractor fails to do so, the Owner's Engineer in charge of the work may on giving the Contractor Seven (7) days notice in writing of his intentions to do so, proceed to remove the

portion of the works so complained of and at the cost of the Contractor perform all such work or furnish all such equipment/materials.

- 16.2. The Contractor's full and extreme liability under this clause shall be satisfied by the payment to TSECL of the extra cost, of such replacement procured including erection as provided for in the Contract, such extra cost being the ascertained difference between the price paid by TSECL for such replacements and the Contract Price by portion for such defective equipment/materials/works and repayments of any sum paid by TSECL to the Contractor in respect of such defective equipment/material. Should TSECL not so replace the defective equipment/materials, the Contractor's extreme liability under this clause shall be limited to repayment of all sums paid by TSECL under the Contract for such defective equipment/materials.

**17.0 PATENT RIGHTS AND ROYALTIES**

**Royalties and fees for patents** covering materials, articles, apparatus, devices, equipment or processes used in the Works shall be deemed to have been included in the Contract Price. The Contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep TSECL indemnified in that regard. The Contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted for alleged infringement of any patents involved in the Works, and, in case of an award of damages, the Contractor shall pay for such award. In the event of any suit or other proceedings instituted against TSECL, the same shall be defended at the cost and expense of the Contractor who shall also satisfy/comply with any decree, order or award made against TSECL. But it shall be understood that no such machine, plant, work, material or thing has been used by TSECL for any purpose or any manner other than that for which they have been furnished and installed by the Contractor and specified under these specifications. Final payment to the Contractor by TSECL shall not be made while any such suit or claim remains unsettled. In the event any apparatus or equipment, or any part thereof furnished by the Contractor, is in such suit or proceedings held to constitute infringement, and its use is enjoined, the Contractor shall at his option and at his own expense, either procure for TSECL, the right to continue the use of said apparatus, equipment or part thereof, replace it with non-infringing apparatus or equipment or modify it, so it becomes non-infringing.

**18.0 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.**



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**19.0 LIMITATION OF LIABILITIES**

The final payment by TSECL in pursuance of the Contract shall mean the release of the Contractor from all his liabilities under the Contract. Such final payment shall be made only at the end of the Guarantee/Warranty Period, and till such time as the contractual liabilities and responsibilities of the Contractor, shall prevail. All other payments made under the Contract shall be treated as on-account payments.

**20.0 POWER TO VARY OR OMIT WORK**

20.1. No alterations, amendments, omissions, suspensions or variations of the Works (hereinafter referred to as 'variation') under the Contract as detailed in the Contract Documents, shall be made by the Contractor except as directed in writing by owner's Engineer in charge of the work, but he shall have full powers subject to the provisions hereinafter contained, from time to time during the execution of the Contract, by notice in writing to instruct the Contractor to make such variation without prejudice to the Contract. The Contractor shall carry out such variation and be bound by the same conditions as far as applicable as though the said variations occurred in the Contract Documents. If any suggested variations would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the Contract, he shall notify the Engineer thereof in writing and the Engineer shall decide forthwith whether or not, the same shall be carried out and if the Engineer confirm his instructions, the Contractor's obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such variation shall be added to or deduced from the Contract Price as the case may be.

20.2. In the event of the Engineer requiring any variation, a reasonable and proper notice shall be given to the Contractor to enable him to work his arrangement accordingly, and in cases where goods or materials are already prepared or any design, drawings or pattern made or work done requires to be altered, a reasonable and agreed sum in respect thereof shall be paid to the Contractor.

20.3. In any case in which the Contractor has received instructions from the **Deputy General Manager / Senior Manager** in charge of the work as to the requirement of carrying out the **alterations or additional or substituted work** which either then or later on, shall in the opinion of the Contractor, involve a claim for additional payment, the Contractor shall immediately and in no case later than Thirty (30) days, after receipt of the instructions aforesaid and before carrying out the instructions, advise the Owner's Engineer in charge of the work to that effect. But the Owner's Engineer in charge of the work shall not become liable for the payment of any charges in respect of any such variations, unless the instructions for the performance of the same shall be confirmed in writing by the **Deputy General Manager** in charge of the work.

20.4. If any variation in the Works results in reduction of Contract Price, the parties shall agree, in writing, to the extent of any change in the price, before the Contractor proceeds with the change.

20.5. In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of owner's Engineer in charge of the work shall prevail.

20.6. Notwithstanding anything stated above in this clause, owner's Engineer in charge of the work shall have the full power to instruct the Contractor, in writing, during the execution of the Contract to vary the quantities of the items or groups of items in accordance with the provisions of clause entitled 'Change of Quantity in Section – III'. The Contractor shall carry out such variations and be bound by the same conditions as though the said variations occurred in the Contract Documents.

**21.0 ASSIGNMENT AND SUB-LETTING OF CONTRACT**





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- 21.1. The Contractor may, after informing owner's Engineer in charge of the work and getting his written approval, assign or sub-let the Contract or any part thereof other than supply of main equipments and any part of the plant for which makes are identified in the Contract. Suppliers of the equipment not identified in the Contract or any change in the identified suppliers shall be subjected to approval by the owner's Engineer in charge of the work. The experience list of equipment Contractors under consideration by the Contractor for this Contract shall be furnished to the owner's Engineer in charge of the work for approval, prior to procurement of all such items/equipment. Such assignment/sub-letting shall not relieve the Contractor of any obligation, duty or responsibility under the Contract. Any assignment as above, without prior written approval of the owner's Engineer in charge of the work, shall be void.
- 21.2. For components/equipment procured by the Contractor for the purposes of the Contract, after obtaining the written approval of TSECL, the Contractor's purchase specifications and enquiries shall call for quality plan to be submitted by the suppliers along with their proposals. The quality plans called for from the Contractors shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the Contractors quality control organization, the relevant reference document/standard used, acceptance level, inspection documentation raised, etc. Such quality plans of the successful Contractors shall be discussed and finalized in consultation with the owner's Engineer in charge (**Deputy General Manager / Senior Manager**) of the work and shall form part of the purchase order/contract between the Contractor and the Contractor. Within three weeks of the release of the purchase orders/contracts for such bought out items/components, a copy of the same without price details but together with detailed purchase specifications, quality plans and delivery conditions shall be furnished to the owner's Engineer in charge of the work by the Contractor.

**22.0 CHANGE OF QUANTITY**

- 22.1. During the execution of the Contract, TSECL reserves the right to increase or decrease the quantities of items under the Contract but without any change in unit price or other terms & conditions. Such variations shall not be subjected to any limitation for the individual items but the total variations in all such items including items not covered under the Contract shall be limited to **±25%**.
- 22.2. The Contract price shall accordingly be adjusted based on the unit rates available in the Contract for the change in quantities as above. The base unit rates, as identified in the Contract shall however remain constant during the currency of the Contract, except as provided for in clause 31.0 below. In case, the unit rates are not available in the contract, the same shall be worked out as below:
- i) If the rates for the additional, altered or substituted work are specified in the contract, the contractor is bound to carry the additional, altered or substituted work at the same rates as are specified in the contract.
  - ii) If the rates for the additional, altered or substituted work are not specifically provided in the contract, the rates will be derived from a similar class of work as are specified in the contract.
  - iii) If the rates for the additional, altered or substituted work includes any work for which no rate is specified in the contract / cannot be derived from the similar class of work in the contract, then such work shall be carried out at the rates which will be determined on the basis of current schedule of rate of TSECL above minus / plus the percentage which the total contract amount bears to the estimated cost put to tender. Provided always if the rate for particular part or parts of the item is not available in the schedule of rates, the rate of such part or parts will be determined by TSECL of the work on the basis of the prevailing market rate when the work was done.
  - iv) If the rates for the additional, altered or substituted work cannot be determined in the manner specified in sub-clause i, ii & iii above, then the contractor shall within 7(Seven) days of receipt of order to





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

carry out the order, inform the owner's Engineer in charge of the work of rate which it is his intention to charge for such class of work, supported by analysis of rate or rates claimed, and TSECL shall determine the rate or rates claimed with mutual settlement with the contractor.

- v) The deviation limit referred to above is the net effect (**algebraically sum**) of all additions and deductions ordered.
- vi) Time for the completion for the work shall be extended in the proportion that the altered, additional or substituted work bears to the original contract of the work and the certificate of the owner's Engineer in charge (**Deputy General Manager / Senior Manager**) of the **work shall be conclusive for approval of the time extension by TSECL.**

**23.0 PAKING, FORWARDING AND SHIPMENT**

23.1. The Contractor, wherever applicable, shall after proper painting, pack and crate all equipment in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till the time of erection. The Contractor shall be held responsible for all damages due to improper package.

23.2. The Contractor shall notify the owner's Engineer in charge of the work of the date of each shipment from his works, and the expected date of arrival at the site.

23.3. The Contractor shall also give all shipping information concerning the weight, size and content of each packing including any other information the owner's Engineer in charge of the work may require.

23.4. The Contractor shall prepare detailed packing list of all packages and containers, bundles and loose materials forming each and every consignment dispatch to Site.

The Contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling, right from his works up to the Site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipment.

**23.5. 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 (**Deputy General Manager / Senior Manager**) 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.

**24.0 NO WAIVER OF RIGHTS**

Neither the inspection by TSECL nor any order by TSECL for payment of money or any payment for or acceptance of, the whole or any part of the Works by the owner's Engineer in charge of the work, nor any extension of time, nor any possession taken by the owner's Engineer in charge of the work shall operate as a waiver of any provision of the Contract, or of any power herein reserved to TSECL or any right to damages herein provided nor shall any waiver of any breach in the Contract be held to be a waiver of any other or subsequent breach.



## **25.0 CERTIFICATE NOT TO AFFECT RIGHT OF TSECL AND LIABILITY OF CONTRACTOR.**

No interim payment certificate of the owner's Engineer in charge of the work, nor any sum paid on account by TSECL, nor any extension of time for execution of the Works granted by TSECL shall affect or prejudice the rights of TSECL against the Contractor or relieve the Contractor of his obligation for the due performance of the Contractor, or be interpreted as approval of the Works done or of the equipment furnished and no certificate shall create liability for TSECL to pay for alterations, amendments, variations or additional works not ordered, in writing, by the owner's Engineer in charge of the work or discharge the liability of the Contractor for the payment of damages whether due, ascertained or certified or not or any sum against the payment of which he is bound to indemnify TSECL, nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise affect or prejudice the rights of TSECL against the Contractor.

## **26.0 INSPECTION AND TESTING OF EQUIPMENTS / MATERIALS**

26.1. **All equipment's / materials shall be dispatched by the contractor only after issuance of 'Materials Inspection Clearance Certificate (MICC)' by the inspecting officer / team of TSECL. Waiver of inspection may be done by TSECL in special circumstances with deduction of inspection cost @ 3% of value of materials for which inspection to be waived. In that case bidder should submit the routine Test certificates of Manufacture which shall be the basis for acceptance of such materials by TSECL. No such materials will be accepted without Test Certificate.**

26.2. After manufacturing or at the stage of dispatch of equipments / materials the contractor shall give intimation to the owner's Engineer in charge of the work for conducting inspection of equipments / materials at manufacture's works or at recognized testing laboratories to be arranged by the contractor. **The intimation shall be made at least 15(fifteen) days before the equipments / materials become ready for dispatch.**

26.3. Testing of equipments / materials as specified above shall be conducted at the risk and cost of the contractor. **The contractor shall also bear the to and fro traveling, food and lodging charges of the inspecting officer / team of TSECL.**

## **27.0 PROGRESS REPORTS AND PHOTOGRAPHS**

During the various stages of the Work in the pursuance of the Contract, the Contractor shall at his own cost submit periodic progress reports as may be reasonably required by the owner's Engineer in charge of the work with such materials as, charts, Bar Charts, photographs, test certificates, etc. Such progress reports shall be in the form and size as may be required by the owner's Engineer in charge of the work and shall be submitted in at least Three (3) copies.

## **28.0 EXTENSION OF TIME**

28.1. TSECL may consider to **grant time extension** for completion of the work if it is felt absolutely essential on fulfillment of following conditions by the Contractor:-



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- a) The contractor must apply to the Engineer-In-charge in writing for extension of time so required justifying the necessity.
- b) Such application must state **the grounds** which hindered the contractor in the execution of the work within the time as stipulated in the contract document.
- c) Such application must be made within 30 days of the date on which such hindrance had arisen.
- d) 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.

28.2. **The Engineer-In- Charge(Deputy General Manager)** 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.

28.3. The opinion of the **Engineer- in- charge (Deputy General Manager)**, whether the grounds shown for the time are or are not reasonable, is final. If the **Engineer- in- charge** is of the opinion that the grounds shown by the supplier/ contractor are not reasonable and declines to grant extension to time, the supplier/contractor cannot challenge.

### **29.0 TAKING OVER**

Upon successful completion of all the tests to be performed at Site on equipment furnished and erected by the Contractor, the owner's Engineer in charge of the work shall issue to the Contractor a **Taking over Certificate** as a proof of the final acceptance of the equipment. Such certificate shall not unreasonably be withheld.

## **CONTRACT SECURITY AND PAYMENTS**

### **30.0 CONTRACT PERFORMANCE GUARANTEE**

The Contractor shall furnish **Contract Performance Guarantee** as specified in Clause 6.0 of Section - I for the proper fulfillment of the Contract within Fifteen (15) days of "**Notice of Award of Contract.**"

### **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"**

### **31.0 PAYMENT**

31.1. The payment to the Contractor for the performance of the Works under the Contract will be made by TSECL as per the guidelines and conditions specified herein. All payment made during the Contract shall be **on account payments only**. The final payment will be made on completion of all Works and on completion of **Warranty / Guaranty Period** including fulfillment by the Contractor of all his liabilities under the Contract.

### **31.2. Currency of Payment**

All payments under the Contract shall be in Indian Rupees only.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**31.3. Due Dates for Payments**

TSECL will make progressive payment as and when the payment is due as per the terms of payment set forth as herein after.

**32.0 Mode of Payment**

32.1. Payment due on supply / erection of Equipment & materials / services shall be made by the owner's Engineer in charge of the work through account payee Banker cheque.

**32.2. TERMS OF PAYMENT**

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

**32.2.1. Price of Supply and Erection**

The terms of payments for price of all equipment / materials and erection are detailed herein after.

**A) Supply of Hardware, cable accessories, other sundry/ materials excepting Spares, Tools & Plant.**

**i) 80% of the cost of materials after:**

- a. Acknowledgement of Letter of Award.
- b. Submission of contract performance guarantee as per clause 6.0 (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 (Delivery Challan in original) including the material inspection clearance certificate (MICC) issued by the inspecting officer / team of TSECL.
- f. Finally, **on receipt of materials at site.**  
(Store receipt voucher (SRV) issued by an officer not below the rank of Senior Manager or Manager In- charge)
- g. **Insurance policy/certificate.**
- h. **Manufacturer's/Contractor's guarantee certificate of quality of supplied equipments and materials.**
- **Progressive bill value for supplied of equipment / materials shall not be less than Rs. 10 Lacs.**
- ii) Balance **10%** of the cost of **materials / Cable accessories /Hardware / other sundry materials etc.** after **successful erection** at site.
- iii) Balance **10%** of the cost after successful commissioning.

**B) For the Erection Component**

- a. **90%** on successful erection of **materials / Equipments/ Cable accessories /Hardware / other sundry materials etc** as per **lay-out drawing / Erection Schedule / Erection Key Diagram** submitted by the bidder and approved by TSECL.
- b. Balance **10%** of the erection cost of **materials / Equipments / Cable accessories /Hardware / other**



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

sundry materials etc. after successful commissioning.

- c. Progressive bill value for **erection / laying** component shall not be less than Rs. **10.00 Lacs.** .

**C ) For the Spares & Tools & Plant**

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

- 33.0 Price adjustment/Contract Variation:- Quoted Prices shall be FIRM . No variation of the quoted prices will be allowed within the Scheduled Completion period of within any extended period as approved by Engg. in Charge / TSECL authority.**

**34.0 DEDUCTION FROM CONTRACT PRICE**

All costs, damages or expenses which TSECL may have paid, for which under the Contract, the Contractor is liable, will be deducted from the progressive bill of the contractor.

**35.0 SPARES**

- 35.1. All the spares for the equipment under the Contract will, strictly, conform to the specification and documents and will be identical to the corresponding main equipment / components supplied under the Contract and shall be fully interchangeable.

- 35.2. All the mandatory spares covered under the Contract shall be produced along with the main equipment as a continuous operation and the delivery of the spares will be affected along with the main equipment in a phased manner and the delivery would be completed by the respective dates for the various categories of equipment as per the agreed Bar chart. In case of recommended spares, the above will be applicable provided the order for the recommended spares has been placed with the Contractor prior to commencement of manufacture of the main equipment

- 35.3. The quality plan and the inspection requirement finalized for the main equipment will also be applicable for the corresponding spares.

- 35.4. **The Contractor will provide TSECL with the manufacturing drawings, catalogues, assembly drawings and any other documents required by TSECL so as to enable the Owner to identify the recommended spares. Such details will be furnished to TSECL as soon as they are prepared but in any case not later than six months prior to commencement of manufacture of the corresponding main equipment.**

- 35.5. The Contractor will provide TSECL with **all the addresses and particulars of his sub-suppliers** while placing the order on Contractors for items /components / equipment covered under the Contract and will further ensure with his Contractors that TSECL, if so desires, will have the right to place order (s) for spares directly on them on mutually agreed terms based on offers of such Contractors.

**35.6. WARRANTY FOR SPARES**

The Contractor shall warrant that all spares supplied will be new and in accordance with Contract Documents and will be free from defects in design, materials and workmanship and shall further guarantee as under:

- 35.6.1. for 3 years operational spares (both mandatory and recommended)

- d. For any item of spares ordered or to be ordered by TSECL for 3 years operational requirement of the plant which is manufactured as a continuous operation together with the corresponding main equipment/component, the warranty will be **12 months from the scheduled date of commercial operation of the last unit of main equipment under the Contract.** In case of any failure in the original component/equipment due to faulty designs, materials and workmanship, the corresponding spare parts, if any, supplied will be replaced without any extra cost to TSECL unless a joint examination and analysis by TSECL and the Contractor of such spare parts prove that the defect found in the original part that failed, can safely be assumed not to be present in spare parts. Such





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

replaced spare parts will have the same warranty as applicable to the replacement made for the defective original part/component provided that such replacement for the original equipment and the spare replaced are again manufactured together. The discarded spare parts will become the property of the Contractor as soon as they have been replaced by the Contractor.

- e. For the item of spares ordered / to be ordered by TSECL for 3 years operational requirement of the equipment, which with the written approval of the Owner, are not manufactured as a continuous operation together with the manufacture of the corresponding main equipment / component, will be warranted for 6000 hrs of trouble free operation, **if used within a period of 18 months (reckoned from the date of delivery at Site)**. However, if such spare parts are put to use after 18 months of the delivery at site then the guarantee of such spares will stand valid till the expiry of 36 months from the scheduled date of **the completion of commissioning of the last unit of equipment** or 6000 hrs of trouble free operation after such spares are put in service, whichever is earlier.
- f. **For long Term Requirement.**

For items of spares that may be ordered by TSECL to cover requirements beyond 3 years of initial operation of the plant, the warranty will be till the expiry of 6000 hrs of trouble free operation if used within a period of 18 months from the date of delivery at Site. For items of spares that may be used after 18 months from the date of delivery at Site, the warranty period will be 12 months from the date they are put to use or 6000 hrs of trouble free operation, whichever is earlier.

- 35.6.2. The warranty of spares that are not used within 18 months from the respective dates of the delivery at Site covered in Para (b) & (c) above will, however, be subject to the condition that all such spares have been stored / maintained / preserved in accordance with Contractor's standard recommended practice, if any, and the same have been furnished to TSECL.
- 35.6.3. To enable TSECL to finalize the requirement of recommended spares which are ordered subsequent to placement of order for main equipment in addition to necessary technical details, catalogue and such other information brought-out here-in-above, the Contractor will also provide a justification in support of reasonableness of the quoted prices of spares which will, inter-alia, include documentary evidence that the prices quoted by the Contractor are not higher than those charged by them from other customers in the same period.
- 35.6.4. In addition to the spares recommended by the Contractor, if TSECL further identifies certain particular items of spares, the Contractor will submit the prices and delivery quotations for such spares within 30 days of receipt of such request with validity period for 6 months for consideration of placement of order for additional spares, if TSECL so desires
- 35.6.5. The Contractor shall guarantee the long-term availability of spares to TSECL for the full life of the equipment covered under the Contract. **The Contractor shall guarantee that before going out of production of spare parts of the equipment, he shall give at least twelve (12) months advance notice so that the latter may order his bulk requirement of spares, if he so desires.** The same provision will also be applicable to Sub-Contractor of any spares by the Contractor or his Sub-Contractors. Further, in case of discontinuance of manufacture of any spares by the Contractor or his Sub-Contractors, the Contractor will provide TSECL, two years in advance, full manufacturing drawings, material specifications and technical information required by TSECL for the purpose of manufacture of such items.
- 35.6.6. Further in case of discontinuance of supply of spares by the Contractor or his Sub-contractors, the Contractor will provide TSECL with full information for replacement of such spares with other equivalent makes, if so required by TSECL.
- 35.6.7. The prices of all future requirements of items of spares beyond 3 years operational





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

requirement will be derived from the corresponding ex-works price at which the order for such spares have been placed by TSECL as part of mandatory spares or recommended spares. Ex-works order price of future spares shall be computed in accordance with the price adjustment provisions covered under the main Contract excepting that 'the base indices will be counted from the scheduled date of successful completion of trial operation of the last equipment under the main project and there will be no ceiling on the amount of narration in the prices. The above option for procuring future long term requirement of spares by TSECL shall remain valid for a period of 5 years from successful completion of commissioning of the last unit of equipment.

35.6.8. The Contractor will indicate in advance the delivery period of the items of spares, which TSECL may procure in accordance with above Sub-clause. In case of emergency requirements of spares, the Contractor would make every effort to expedite the manufacture and delivery of such spares on the basis of mutually agreed time schedule.

35.6.9. In case the Contractor fails to supply the mandatory, recommended or long term spares in accordance with the terms stipulated above, TSECL shall be entitled to purchase the same from alternate sources at the risk and the cost of the Contractor and recover from the Contractor, the excess amount paid by TSECL over the rates worked out on the above basis. In the event of such risk purchase by TSECL, the purchases will be as per the works and procurement policy of TSECL prevalent at the time of such purchases and at his option, may include a representative of the Contractor in finalizing the purchases.

35.6.10. It is expressly understood that the final settlement between the parties in terms of the relevant clauses of the Bidding Documents shall not relieve the Contractor of any his obligations under the provision of long term availability of spares unless otherwise discharged in writing by TSECL.

### **36.0 TRANSFER OF THE TITLE**

36.1. This **Transfer of Title of equipments** / materials shall not be construed to mean the acceptance and the consequent "Taking Over" of equipment and materials. The Contractor shall continue to be responsible for the quality and performance of such equipment and materials and for their compliance with the specifications until "**Taking Over**" and the fulfillment of guarantee provisions of this Contract.

36.2. This Transfer of Title shall not relieve the Contractor from the responsibility for all **risks of loss or damage** to the equipment and materials as specified under the clause entitled "Insurance" of this Section.

### **37.0 INSURANCE**

37.1. The Contractor **at his cost shall arrange, secure and maintain all insurance** as may be pertinent to the Works and obligatory in terms of law to protect **his interest and interests of TSECL against all perils detailed herein**. The form and the limit of such insurance as defined herein together with the under-writer in each case shall be acceptable to TSECL. However, irrespective of such acceptance, the responsibility to maintain adequate **insurance coverage at all times during the period of "Construction & commissioning Contract"** shall be of the Contractor alone. **The Contractor's failure in this regard shall not relieve him of any of his contractual responsibilities and obligations**. The insurance covers to be taken by the Contractor shall be in a joint name of TSECL and the Contractor. The Contractor shall, however, be authorized to deal directly with Insurance Company or Companies and shall be responsible in regard to maintenance of all insurance covers. Further the insurance should be in freely convertible currency.

37.2. Any loss or damage to the equipment or any material(specified in the Schedule) during handling, transportation, storage, erection, putting into satisfactory operation and all activities to be



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performed till the successful completion of commissioning of the equipment shall be to the account of the Contractor. The Contractor shall be responsible for preference of all claims and make good the damages or loss by way of repairs and/or replacement of the equipment, damaged or lost. The transfer of title shall not in any way relieve the Contractor of the above responsibilities during the period of **Construction & commissioning Contract**. The Contractor shall provide TSECL with copy of all insurance policies and documents taken out by him in pursuance of the **Construction & commissioning Contract**. Such copies of documents shall be submitted to TSECL immediately after such insurance coverage. The Contractor shall also inform TSECL in writing at least Sixty (60) Days in advance regarding the expiry/cancellation and/or change in any of such documents and ensure revalidation, renewal etc., as may be necessary well in time.

37.3. The perils required to be covered under the insurance shall include, but not be limited to fire and allied risks, miscellaneous accidents (erection risks) **workman compensation risks, loss or damage in transit, theft, pilferage, riot, strikes, social unrest and malicious damages, civil commotion, weather conditions, accidents of all kinds, etc.** The scope of such insurance shall be adequate to cover the replacement / reinstatement cost of the equipment for all risks upto and including delivery of goods and other costs till the equipment is delivered at Site. The insurance policies to be taken should be on replacement value basis and/or incorporating escalation clause. Notwithstanding the extent of insurance cover and the amount of claim available from the underwriters, the Contractor shall be liable to make good the full replacement / rectification value of all equipment/materials and to ensure their availability as per project requirements.

37.4. All costs on account of insurance liabilities covered under the Contract will be to Contractor's account and will be included in Contract Price, However, TSECL may from time to time, during the pendency of the Contract, ask the Contractor in writing to limit the insurance coverage, risks and in such a case, the parties to the **Construction & commissioning Contract** will agree for a mutual settlement, for reduction in Contract price to the extent of reduced premium amount. The Contractor, while arranging the insurance shall ensure to obtain all discounts on premium, which may be available for higher volume or for reason of financing arrangement of the project.

37.5. The clause entitled '**Insurance**' under the Section - IV, covers the additional insurance requirements for the **portion of the works to be performed at the Site**.

### **38.0 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.

### **39.0 DELAYS BY TSECL OR HIS AUTHORISED AGENTS**

39.1. In case the Contractor's performance is delayed due to any act on the part of TSECL or his authorized agents, then the Contractor shall be given due extension of time for the completion of the Works, to the extent of such act on the part of TSECL has caused delay in the Contractor's performance of the Contract. Regarding reasonableness or otherwise of the extension of time, the decision of the TSECL shall be final.

### **40.0 DEMURRAGE, WHARFAGE, ETC.**

All demurrage, wharf age and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the Contractor.



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(A Govt. of Tripura Undertaking)

**41.0 FORCE MAJEURE**

41.1. Force majeure is herein defined as any cause which is beyond the control of the Contractor or TSECL as the case may be, which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affects the performance of the Contract, such as:

- a. Natural phenomena, including but not limited to floods, droughts, earthquakes and epidemics;
- b. Acts of any Government including but not limited to war, declared or undeclared, quarantines, and embargoes.

Provided the contractor shall within Fifteen (15) days from the occurrence of such a cause notify TSECL in writing of such causes, acceptance of which will be given by TSECL after verification.

41.2. 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.

**42.0 SUSPENSION OF WORK**

42.1. **TSECL reserves the right to suspend and reinstate execution of the whole or any part of the Works without invalidating the provisions of the Contract.** Orders for Suspension or reinstatement of the Works will be issued by TSECL to the Contractor in writing. The time for completion of the works will be extended for a period equal to duration of the suspension.

**43.0 CONTRACTOR'S DEFAULT**

43.1. If the Contractor shall neglect to execute the Works with due diligence and expertise or shall refuse or neglect to comply with any reasonable order given to him, in the Contract by the TSECL's Engineer in charge (**Deputy General Manager / Senior Manager**) of the work in connection with the works or shall contravene the provisions of the Contract, TSECL may give notice in writing to the Contractor to make good the failure, neglect or contravention complained of. Should the Contractor fail to comply with the notice within Thirty (30) days from the date of serving the notice, then and in such case TSECL shall be at liberty to employ other workmen and forthwith execute such part of the Works as the Contractor, may have neglected to do or if TSECL shall think fit, without prejudice to any other right he may have under the Contract to take the work wholly or in part out of the Contractor's hands and re-contract with any other person or persons to complete the works or any part thereof and in that event TSECL shall have free use of all Contractor's equipment that may have been at the time on the

Site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor over the same, and TSECL shall be entitled to retain and apply any balance which may otherwise be due on the Contract by him to the Contractor, or such part thereof as may be necessary, to the payment of the cost of executing the said part of the Work or of completing the Works as the case may be. If the cost of completing of Works or executing a part thereof as a foresaid shall exceed the balance due to the Contractor, the Contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay, which the Contractor shall have to pay if the completion of Works is delayed.



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(A Govt. of Tripura Undertaking)

43.2. In addition, such action by TSECL as aforesaid shall not relieve the Contractor of his liability to pay liquidated damages for delay in completion of Works as defined in **clause 13.0 of this Section**. Such action by TSECL as aforesaid, the termination of the Contract under this clause shall neither entitle the Contractor to reduce the **value of the Contract Performance Guarantee** nor **the time thereof**. The Contract Performance Guarantee shall be valid for the full value and for the full period of the Contract including guarantee period.

**44.0 TERMINATION OF CONTRACT ON OWNER'S INITIATIVE**

44.1. TSECL reserves the right to terminate the Contract either in part or in full due to reasons stipulated in the clause entitled "**Contractor's Default**." TSECL shall in such an event give Fifteen (15) days notice in writing to the Contractor of his decision to do so.

44.2. The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice.

44.3. If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the partners dies then **unless TSECL is satisfied** that the legal representatives of the individual contractor or of the proprietor of proprietary concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the Contract, **TSECL shall be entitled to cancel the Contract as to its uncompleted part without being in any way liable to payment of any compensation to the estate of deceased Contractor and/or to the surviving partners of the Contractor's firm** on account of the cancellation of the Contract. The decision of TSECL that the legal representatives of the deceased Contractor or surviving partners of the Contractor's firm cannot carry out and complete the Contract shall be final and binding on the parties

**RESOLUTION OF DISPUTES**

**45.0 SETTLEMENT OF DISPUTES**

45.1. Any dispute(s) or difference(s) arising out of or in connection with the Contract shall, to the extent possible, be settled amicably between the parties.

45.2. If any dispute or difference of any kind whatsoever shall arise between **Deputy General Manager / Senior Manager** in charge of the work and the Contractor, arising out of the Contract for the performance of the Works whether during the progress of the Works or after its completion or whether before or after the termination, abandonment or breach of the Contract, it shall, in the first place, be referred to and settled by the **Additional General Manager** of the **concerned circle / General Manager** as the case may be, who, within a **period of Thirty (30) days** after being requested by either party to do so, shall give written notice of his decision to both the parties.

45.3. In the event the Contractor being dissatisfied with any such decision, the matters in dispute shall be referred to arbitration as hereinafter provided.

**46.0 ARBITRATION**

46.1. All disputes or differences in respect of which the decision, if any, of the Engineer has not become final or binding as aforesaid shall be settled by arbitration in the manner hereinafter provided.

46.1.1. The arbitration shall be conducted by an arbitrator, to be nominated by TSECL and he will be the sole arbitrator to conduct the arbitration.



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(A Govt. of Tripura Undertaking)

- 46.1.2. The arbitration shall be conducted in accordance with the provisions of the Indian Arbitration & Reconciliation Act, 1996 or any statutory modification thereof. The venue of arbitration shall be at Agartala.
- 46.2. The arbitrators may, from time to time with the consent of all the parties enlarge the time for making the award.
- 46.3. The arbitrator shall have full powers to review and / or revise any, decision, opinion, direction, certification or valuation of the **Engineer** in accordance with the Contract, and neither party shall be limited in the proceedings before such arbitrators to the condense or arguments out before the Engineer for the purpose of obtaining the said decision.
- 46.4. During settlement of disputes and arbitration proceedings, both parties shall be obliged to carry out their respective obligations under the Contract.

**47.0 RECONCILIATION OF ACCOUNTS**

The Contractor shall prepare and submit every 4(four) months, a statement covering payments claimed and the payments received vis-à-vis the works executed, for reconciliation of accounts with the owner's Engineer in charge (**Senior Manager**) of the work. The Contractor shall also prepare and submit a detailed account of Materials received from TSECL and utilized by him for reconciliation purpose.

**SECTION-IV**

**ERECTION CONDITIONS OF CONTRACT**

**1.0 General:**

1.1 This specification covers erection including supply of 11KV & 1.1 KV XLPE Cable and other sundry materials specified in Section - I. The contractor shall clearly indicate in his offer the sources from where he proposes to procure the raw material / completed material and its components related to erection, installation, construction & commissioning Contract on turnkey basis.

1.2 Any material / item of work not specifically mentioned in the contract but required to satisfactorily complete and commission the job is deemed to be included in the scope of work of the contractor.

1.3 The work of shall be carried out as per relevant Indian Standard. In those cases where specific IS code is not available, the work shall be executed as per best engineering practice / construction standard of TSECL / REC or CBIP guide lines or as specified in the document. The contractor shall indicate in his offer the detailed description of procedure to be deployed for stringing operation.

**2.0 Location Details:** The lines shall be laid in the areas covered within jurisdiction of Electrical Sub-Division Capital Complex under Capital Complex Electrical Division.

**3.0 Details of Line Route and Terrain:**





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The 11 KV UG power lines will be running almost through plain areas of Electrical Sub-Division no-V, GB . Preparation of preliminary route alignment maps of power lines covered under this package indicating the general topography and major crossings like HV power lines and road etc. are in the contractor's scope.

**4.0 Access to the Line and Right of Way:**

Owner will facilitate and assist the contractor in getting clearance and securing way leave and right of way from Private / Public / Govt. owned lands. However it shall be the responsibility of the contractor to conduct preliminary survey before quoting the bid and further getting clearance for right of way during execution. The Owner shall not be responsible for delay on this account or pay any compensation in lieu of getting clearance/ any damages for right of way during execution of the project. **ROW (Right of Way) is to be arranged by Agency / Contractor.**

**5.0 Detailed Survey for Optimization of Pole Location:**

5.1 The detailed survey for line route and optimization of line location along with profiling shall be carried out by the successful contractor. The provisional quantity only has been indicated in the **Schedule of work.**

5.2 The single line diagram of existing UG lines **and DT(s) proposed** for installation etc. works and where works require to be carried out shall be available in the office of the DGM, Capital Complex Electrical Division, Agartala wherefrom the same can be obtained by the contractor. The detailed survey shall be carried out by the contractor along the suggested route. The contractor will examine the site of works and its surroundings and obtain at his own responsibility and expenses, all information regarding general site characteristics, crossings, accessibility, infrastructure details etc. The Owner will, however, assist the interested contractor to see and inspect the site of work. For this purpose the contractors are requested to contact the **Dy. General Manager, Capital Complex Electrical Division, Agartala.**

5.3 The contractor should note that the Owner will not furnish the topographical map prepared by Archeological Survey of India but will make available any assistance that may be required for obtaining topographical map.

5.4 In case the 11 KV underground cables is to be laid along the municipal road / highway or any other road than the ones mentioned above, the contractor shall make preliminary survey to assess such requirement and take into account in his bid. TSECL will provide support and assistance in getting approval from civic authorities. However, proposal for approval shall be submitted by the contractor well in time.

**6.0 Clearance from Ground, Building, Trees etc.:** Clearance from ground, building, trees and telephone lines shall be provided in conformity with the Indian Electricity Rules 1956.

6.1 The tree cutting shall be the responsibility of the contractor at the time of survey as well as during actual execution. However, the contractor shall count, mark and put proper Nos. with suitable quality of paint at his own cost on all the trees that are to be cut by him at the time of actual execution of work. Contractor may note that TSECL shall not pay any compensation for any loss or damage to the properties or for tree cutting necessitated due to contractor's work.





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

- 6.2 Any way-lay which may be required shall be arranged by the by the contractor .TSECL will provide all support and assistance for such way lay as required but ultimate responsibility rests with the contractor.
- 6.3 To evaluate and tabulate the trees and bushes coming within 6.096 m on either side of the centre alignment of the support, the trees will be numbered and marked with quality paint serially from angle point 1 onwards and corresponding number will be painted on the stem of trees at a height of 1m from ground level. The trees listed should contain the following information:
- a) Girth (circumference) measured at a height of 1 m from ground level.
  - b) Approximate height of the tree with an accuracy of +/- 2 mtrs.
  - c) Name & the type of the species / tree.
- 6.4 The profile sheets duly spotted with preliminary schedule indicating position of poles, wind span, weight span, angle of deviation, river or road crossings and other details shall be submitted for approval of the Owner. After approval, the contractor shall submit six copies of approved profile along with one set of reproducible final profile drawing to the Owner for record purpose.

**7.0 Environmental Conditions:**

**General Climatic Conditions:**

The installations are required to operate satisfactory under the following site conditions:

- i) Max. temperature 50 Degree C
- ii) Min. temperature -3 Degree C
- iii) Max. relative humidity 100%
- iv) Min. relative humidity 26%
- v) Average No. of rainy days / annum Nearly 120 days.
- vi) Average annual rainfall 900 mm
- vii) Average No. of dust storm days / annum 35
- viii) Isoceraunic level 45
- ix) Max. Wind pressure 195 kg./sq.m.
- x) Altitude above mean sea level Less than 1000 M

The area is in extreme climatic belt. Monsoons are generally active in the area from the month of June to September. The area is also prone to mild dust storms during the months of Oct to March. The maximum temperature in summer season shall be of the order of 50°C and minimum temperature in



winters shall be of the order of 3°C. Normal day temperature during summer is 40°C. Hail & Storm takes place in the months of April & May.

**8.0 Technical Data:**

The contractor shall furnish all technical data as per relevant schedules in five copies.

**9.0 Statutory Regulations and Standards:**

**9.1 Statutory Regulations:**

The contractor is required to follow Statutory Regulations stipulated in **Electricity Act 2003** and **Indian Electricity Rules 1956** as amended to-date and other local rules and regulations referred to in this specification.

**9.2 Reference Standards:**

The work shall be carried out in accordance with specifications & construction standards attached hereto. The **codes or standards** referred to in this specification shall govern in all cases wherever such references are made. In case of conflict between such codes or standards and specification, latter shall govern. Such codes or standards referred to shall mean the latest revision, amendments/ changes adopted and published by relevant agencies. Other internationally accepted standards, which ensure equivalent or better performance than those specified shall also be accepted. All tested steel sections shall be supplied conforming to relevant Indian Standard Specifications.

**10.0 Quality Assurance, Inspection and Testing:**

**10.1 QUALITY CONTROL**

Quality Control Procedures for the manufacture of **11 KV XLPE cable, jointing KITS and HDPE Pipe** etc. shall be prepared by the contractor and submitted to the TSECL for approval.

**10.2 Quality Assurance Program**

This shall be prepared and followed to ensure that the equipment, materials and services under the scope of the contract whether manufactured or performed within the contractor's works or at his subcontractors' premises or at the TSECL's site or at any other place of work are in accordance with the specifications. The contractor shall adopt suitable quality assurance program to control all activities at all points necessary. Such program shall be broadly outlined in his bid and finalized after discussions with the TSECL before the award of the contract. The contractor shall submit his detailed program after the award of the contract for approval by the Owner after discussion. However, in case



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a detailed valid program approved by the TSECL already exists, same would be followed till its validity. The quality assurance program by the contractor shall generally cover the following:

- (a) Organization structure for the management and implementation of the proposed quality assurance program;
- (b) Documentation of control system;
- (c) Qualification data of contractor's key personnel;
- (d) The procedure for purchase of materials, parts components and selection of sub-contractors' services including Contractor analysis, source inspection, incoming raw material inspection, verification of material purchases, etc.
- (e) System for shop manufacturing and site erection controls including process control, fabrication and assembly control;
- (f) Control of non-conforming items and system for corrective actions;
- (g) Inspection and test procedure both for manufacture and field activities;
- (h) Control of calibration and testing and measuring of field activities;
- (i) System for indication and appraisal of inspection status;
- (j) System for quality audits;
- (k) System for authorizing release of manufactured products to the TSECL;
- (l) System for maintenance of records;
- (m) System for handling, storage and delivery; and
- (n) A quality plan detailing the specific quality control measures and procedures for controlling the quality characteristics relevant to each item of equipment and materials furnished and/or services rendered.

10.2.1 The Owner or his duly authorized representative reserves the right to carry out quality audits and quality surveillances of the system and procedures of the contractor, his sub-contractors' quality management and control activities.

10.2.2 The contractor will be required to submit all quality assurance documents as stipulated in the quality program at the time of the Owner's inspection of equipment and materials.

10.2.3 The contractor shall adopt suitable quality assurance program to control each activity. Such program shall be outlined by the contractor and shall be finally accepted by the Owner.

**10.3 Inspection and Testing:**



**Upon award of the contract, the contractor and TSECL shall establish mutually acceptable control and inspection procedures and indications are to be given at that time by the contractor as to how the agreed procedures will be implemented.**

#### **10.4 General**

- 10.4.1 **All goods / Jointing Kits** being supplied, shall conform to type tests, sample tests as per the technical specifications and shall be subject to routine, acceptance and site tests in accordance with requirements stipulated under the respective sections, unless otherwise stated. The Owner reserves the right to witness any or all the type and sample tests. The contractor shall inform the Owner of the detailed program of tests at least two (2) weeks in advance in case of domestic supplies.
- 10.4.2 The contractor shall furnish to the Owner the reports of all type tests, sample and routine tests as per technical specification along with the equipment/materials drawings. The type tests conducted earlier should have been conducted in accredited laboratories (based on ISO/IEC by a reputed accreditation body) or witnessed by Owner or another electric power utility. The type test reports submitted shall be of the tests conducted within last five (5) years prior to the date of bid opening. In case the test reports are of a test conducted five (5) years prior to the date of bid opening, and don't correspond to the offered equipment/material, or don't comply with the Technical Specifications, the contractor shall repeat this / these test / tests at no extra cost to the Owner before sample (acceptance) tests.
- 10.4.3 The Owner, his duly authorized representative and/or outside inspection agency acting on behalf of the Owner shall have free access at all reasonable times to the contractor's/sub-Contractor's premises or works and shall have the power at all reasonable times to inspect and examine the equipment /materials and workmanship of the works during its manufacture or erection. If part of the works is being manufactured or assembled at other premises or works, the contractor shall obtain for the Owner, his duly authorized representatives and/or outside inspection agency permission to inspect as if the works were manufactured or assembled on the contractor's own premises or works. Inspection may be made at any stage of manufacture, dispatch or at the site at the option of the Owner, and the equipment if found unsatisfactory due to bad workmanship or quality or material is liable to be rejected.
- 10.4.4 When the factory tests have been completed at the contractor's or subcontractor's works, the Owner / Inspector shall issue a certificate to this effect within fifteen (15) days after the completion of the tests, but if the tests are not witnessed by the Owner/Inspector, the certificate shall be issued within 15 days of receipt of the contractor's test certificate by the Owner's representative. Failure of the Owner / Inspector to issue such a certificate shall not prevent the contractor from proceeding with the works. The completion of these tests or the issue of the certificate shall not bind the Owner to accept the equipment/materials should it, on further tests after erection, be found not complying with the contract. The equipment / materials shall be dispatched to site only after approval of test reports and issuance of the inspection certificate by the Owner.
- 10.4.5 The inspection by the Owner and issue of the inspection certificate thereon shall in no way limit the liabilities and responsibilities of the contractor in respect to the agreed quality assurance program forming part of the contract.



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- 10.4.6 The Owner will have the right of having at contractor's expenses any other test(s) of reasonable nature carried out at the manufacturer's premises or at any other place in addition of aforesaid type and routine tests to satisfy that the equipment / materials comply with the specifications.
- 10.4.7 The Owner deserves the right for getting any field tests not specified in the respective sections of the technical specifications conducted on the completely assembled equipment at site. The Owner will provide the testing equipment for these tests.
- 10.4.8 The contractor shall ensure that his subcontractors manufacturing and supplying the goods (material and equipment) shall perform the routine tests specified in the related standards and in the technical specifications of this contract regularly.
- 10.4.9 The contractor shall notify the Owner in writing at least two (2) weeks in advance for inspection and testing or as otherwise directed in advance of the date and place at which any material or work will be ready for inspection and testing.
- 10.4.10 Should any postponement become necessary; the contractor shall provide written notification at least one week prior to the originally scheduled date. The Owner shall give 48 hours' notice in writing to the contractor, of his intention to attend the tests, or ask for postponement, if required.
- 10.4.11 Should the Owner explicitly waive to attend the relevant test, the contractor may proceed with the test, which shall be deemed to have been made in his presence, and the contractor shall forthwith forward to the Owner duly certified copies of the test reports for approval.
- 10.4.12 All sample and type tests will be performed at the presence of the authorized personnel of the contractor or inspectors authorized by the contractor, if there is no representative of Owner. Owner may or may not be present in any or all sample and type tests but all test reports shall be approved by Owner. This procedure shall not release the contractor from any of his responsibilities or obligations under this contract. The contractor shall prepare and agree with the Owner, the test programs so that tests to be performed in countries (i.e., at manufacturer's factory recognized test facilities) are carried out in sequence which would permit TSECL to organize in an optimal manner the supervision of the said tests by the inspection agency.

**ACRONYMS**

Reference Abbreviations Name and Address	
IEC	International Electro Technical Commission Bureau Central de la Commission Electro Technique International, Rue de verembe Geneva, Switzerland
ISO	In International Organization for Standardization, Danish Board of Standardization Aurchoegyej-12 DK-2900, Heertrup, DENMARK
ISS	Indian Standard Bureau of Indian Standards Nanak



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**11. SPECIFIC REQUIREMENT**

The contractor shall be responsible for safety of human and equipment during erection, construction, testing & commissioning and during working in the locations.. It will be the responsibility of the contractor to co-ordinate and obtain electrical inspector's clearance before commissioning. Any additional items or modification due to observation of such statutory authorities shall be provided by the contractor at no extra cost.

.....\*\*\*.....

**SECTION-V**

**1. FOREWORD**

The provisions under this section are intended to supplement general requirements for the materials, equipments, **erection, construction and services** covered under other sections of this bid document and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall prevail.

**2. GENERAL REQUIREMENT**

- 2.1 The bidders shall submit the technical requirements, data and information as per the technical data sheets provided in this Section.
- 2.2 The contractors shall furnish catalogues, engineering data, technical information, design **documents, drawings relating to supply of cable accessories, other sundry materials, erection key diagram and construction etc.**
- 2.3 It is recognized that the manufacturers' may have standardized the use of certain components, materials, processes or procedures different from those specified herein. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Owner.
- 2.4 Except for lighting fixtures, wherever a material or article is specified or defined by the name of a particular brand, manufacturer or Contractor, the specific name mentioned shall be understood as establishing type, function and quality and not as limiting competition.
- 2.5 Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or needed for erection,





**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the Technical Specifications unless included in the list of exclusions. Materials and components not specifically stated in the specification but which are necessary for satisfactory operation, unless specifically excluded, shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost. All similar standard components/ parts of similar standard equipment provided shall be inter-changeable with one another.

### **3. STANDARDS**

- 3.1 The erection & construction works including supply of specific sundry materials and accessories covered by the specification shall be designed, engineered, manufactured, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.
- 3.2 The equipment to be furnished under this specification shall conform to latest issue with all amendments (as on the date of bid opening) of standard specified in this document, unless specifically mentioned in the specification.
- 3.3 The bidder shall note that standards mentioned in the specification are not mutually exclusive or complete in themselves, but intended to complement each other.
- 3.4 The bidder shall also note that list of standards presented in this specification is not complete. Whenever necessary, the list of standards shall be considered in conjunction with specific IS/IEC.
- 3.5 When the specific requirements stipulated in the specifications exceed or differ than those required by the applicable standards, the stipulation of the specification shall take precedence.
- 3.6 Other internationally accepted standards which ensure equivalent or better performance than that specified in the standards specified under individual sections for various equipments shall also, be accepted, however the salient points of difference shall be clearly brought out in additional information schedule with English language version of such standard. The equipment conforming to standards other than specified under individual sections for various equipments shall be subject to Owner's/owner's approval.
- 3.7 The contractor shall clearly indicate the specific standards in accordance with which the works will be carried out.

### **4. SERVICES TO BE PERFORMED BY THE EQUIPMENT BEING FURNISHED:**

- 4.1 All equipment shall perform satisfactorily under various electrical, electromechanical and meteorological conditions of the site of installation.
- 4.2 All equipment shall be able to withstand all external and internal mechanical, thermal and electromechanical forces due to various factors like wind load, temperature variation, short circuit etc for the equipment.
- 4.3 The terminal connectors of the equipment shall be designed taking into account various forces that are required to be withstood.
- 4.4 The equipment shall also comply with the following:



- a) All outdoor equipments except marshalling kiosks etc. shall be suitable for hot line washing.
- b) To facilitate erection of equipment, all items to be assembled at site shall be “match marked”.
- c) All piping, if any between equipment control cabinet / operating mechanism to marshalling box etc. of the equipment, shall bear proper identification to facilitate the connection at site.

## SECTION – VI

### TECHNICAL SPECIFICATION SECTION

#### **1. TECHNICAL SPECIFICATION FOR L.T. XLPE POWER CABLE (armoured)**

**For sizes 1CX10, 16, 35, 50, 95, 120, 150, 185,240, 300, 400,500 & 630mm<sup>2</sup> / 2CX10, 16, 35, 50, 95, 120, 150, 185,240, 300, 400,500 & 630mm<sup>2</sup> / 3CX10, 16, 35, 50, 95, 120, 150, 185,240, 300, 400,500 & 630mm<sup>2</sup> / 3.5CX25, 35, 50, 95, 120, 150, 185, 240, 300, 400, 500 & 630mm<sup>2</sup> / 4CX16, 25, 35, 50, 95, 120, 150, 185, 240, 300, 400, 500 & 630mm<sup>2</sup>**

**Technical specification of LT single core, two core, three core, 3.5 core and four core, Cross linked Polyethylene (XLPE) insulated, FRLS, PVC sheathed, armoured power cables.**

**1. Scope:**

The specification covers design, manufacturing, testing, packing, supply & delivery on FOR destination basis of 1100 volts grade, LT Cable, multiple cores, Cross linked Polyethylene (XLPE), insulated, FRLS- PVC sheathed, armoured power cables for effectively earthed systems.

**2. Standards:**

Unless otherwise specified, the cable shall conform in all respects to IS 7098-Part-1(1988), IS 8130-1984, IEC: 60502, IS 5831-1984, IS 10810-1984, IS 3975-1999 and IS 10418-1982 standards with latest amendments thereof.

**3. Climatic conditions:**

1	Location	Tripura
2	Maximum ambient air temperature	50 deg C
3	Minimum ambient air temperature	(-)5 deg C



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4	Average daily maximum ambient temperature	40 deg C
5	Max yearly weighted average ambient temperature	32 deg C
6	Isoceraunic level	45 days/year
7	Maximum altitude above mean sea level	1000 meters
8	Minimum relative humidity	26%
9	Max. relative humidity	100%
10	Average no of rainy days/ year	120
11	Basic Wind Speed	47m/s
12	Avg. Annual rainfall	900 mm
13	Pollution	Moderate
14	Maximum wind pressure	195 kg/ m sq

Note: Moderately hot & humid tropical climate is conducive to rust & fungus growth. The climatic conditions are also prone to wide variations in ambient conditions. Smoke is also present in the atmosphere. Heavy lightning also occurs during May to October.

**Design, construction and technical parameters: -**

**4. Conductor:**

The conductor of the cable shall be made from high conductivity, Electrolytic, H4 Grade, stranded aluminium to form compacted and circular /shaped conductor having resistance within limits as specified in IS 8130/ 1984 with latest amendments. The aluminum conductor shall be of class-2 as per IS 8130.

**5. Insulation:**

The insulation shall be suitable for LT system voltage and the insulating material shall be cross linked Poly Ethylene (XLPE), and applied by extrusion process as per IS 7098 Part-1 and its latest amendments. The insulation shall be an extrusion of thermosetting cross linked poly ethylene rated for 90°C continuous operation.

The insulating material shall have excellent electrical properties with regard to resistivity, dielectric constant and loss factor and shall have high tensile strength and resistance to abrasion. This shall not deteriorate at elevated temperatures or when immersed in water. The insulation shall be preferably fire resistant and resistant to chemicals like acids, alkalis, oils and ozone.

The insulation properties shall be stable under thermal conditions arising out of continuous operation at conductor temperature of 90°C rising momentarily to 250°C under short circuit conditions. It shall be free from any foreign material or porosity visible to the



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unaided eye. The insulation shall be so applied that it fits closely on the conductor and it shall be possible to remove it without damaging the conductor.

The average thickness of insulation shall not be less than the nominal value as specified in IS: 7098 (Part I) with latest amendments.

Tolerance on insulation thickness shall be as per IS-7098 Part-1. The insulation shall withstand mechanical and thermal stress under both steady state and transient operating conditions.

**6. Core identification (for multiple core cables):**

Individual core of multi-core cables shall be colour coded and/or numbered for proper identification in accordance with clause 10.1 of IS: 7098 (Part – I).

**7. Fillers and Laying up of cores (for multiple core cables):**

In multi core cables, the cores shall be laid together with a suitable right hand lay. The interstices shall be filled with non-hygroscopic material. Further, the compounds used with fillers shall be such as to have no deleterious effect on other components of the cable and to be stable at cable temperatures.

**8. Inner sheath (common covering):**

The laid up cores shall be provided with inner sheath applied by extrusion process. It shall be ensured that the shape is as circular as possible. It shall be applied to fit closely on to the laid up cores and shall be possible to remove easily without causing any damage to the underlying insulated cores.

The thickness of the inner sheath shall be as per (12.3) IS: 7098 (Part - I). No tolerance on the negative side shall be acceptable.

**9. Armoring:**

The armour of cables shall consist of either galvanized round steel wires or galvanized steel strips as per clause 13.2 of IS: 7098 (Part I). The armoring shall be applied such that the minimum area of coverage shall be 90% and the gap between any two armour strips/wire shall not be more than the width of strip/ diameter of armour wire. The galvanized steel strips/wire shall comply with the requirements of IS: 3975- with latest amendments. In case of Single core cable armoring shall be of Non-magnetic material conforming to IS: 3975 – 1999 (amended upto date). The dimensions of the galvanized steel strip/wire shall be as per IS: 7098 (Part-I) (Table 6, Clause 13.3, armoring size and dimension shall be as per method (b), method (a) is not acceptable) with latest amendments. No tolerance on the negative side shall be acceptable. Tolerance on size of armour shall be as per IS:7098 Part-1 &IS:3975.

**10. Outer sheath:**

The outer sheath shall consist of extruded tough outer sheath of PVC compound insulation over the armoring. The PVC compound for the outer sheath shall conform to type ST-2 of IS: 5831 - 1984 (amended up to date) with suitable additives (to prevent attacks by rodents and termites) shall be provided.

The colour of the outer sheath shall be black. The cable must meet all the requirements of the IS: 7098 (Part 1) amended up to date and shall bear ISI mark.

**11. General:**



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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.

The purchaser reserves the right to ask for documentary evidence of the purchase of various materials, (to be used for the manufacture of cable) as a part of quality control. Quality Assurance plan shall be submitted. Each of cable type and size shall be ISI certified. The manufacturer shall submit self certified Xerox copy of valid ISI license with the offer.

**12. Continuous Current rating:**

**As per Appendix -1**

**13. Short circuit Current rating:**

**As per Appendix -1**

**14. Operation:**

i) Cable shall be suitable for operation under voltage and frequency variation as per Latest Indian Electricity rule. ii) Cable shall be suitable for laying in air, in duct or buried underground directly or through trench less boring.

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

**15. Tests:**

**A. Type tests:**

All the cable types and sizes i.e. items offered should have been fully type tested as per IS 7098 (Part-1) with amendments upto date at any NABL accredited Laboratory/ Test house. If the manufacturer's lab is accredited by NABL then it shall be acceptable for type testing. The bidder shall furnish one set of authenticated copy of type test reports along with the offer. These type tests must have been conducted within last five years prior to date of Bid opening. For any change between design/type of already type tested and the design / type offered against this specification, the purchaser reserves the right to demand repetition of type tests without any extra cost. For each type and size the type test shall be got carried out independently.

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

The type test certificates type tests as per IS7098 part-1 shall be furnished invariably with the offer: (a)

Tests on conductor:

- i. Tensile test
- ii. Wrapping test
- iii. Resistance test

b. Tests for armouring strips / wires. :

- c. Tests for thickness of insulation (eccentricity) and sheath.

d. Physical tests for insulation. :



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- i. Tensile strength and elongation at break.
- ii. Ageing in air oven
- iii. Hot set
- iv. Shrinkage test
- v. Water absorption test (gravimetric) (e) Physical tests for outer sheath :
  - i. Tensile strength and elongation at break.
  - ii. Ageing in air oven
  - iii. Shrinkage test
  - iv. Hot deformation
  - v. Loss of mass in air oven
  - vi. Heat shock
  - vii. Thermal stability
- viii. Carbon black content of polythene sheath.
- f. Insulation resistance test (volume resistivity)
  - g. High voltage test
  - h. Flammability test
  - i. FRLS Tests-

The following FRLS tests are to be conducted as per the referred standard

- HCL gas evolution test (IEC - 754.1)
- Oxygen Index (ASTM-D-2863)
- Temperature Index (ASTM-D-2863)
- Smoke density test (ASTM-D-2863)
- Flammability test (IEC-332.1)
- Swedish Chimney test (SS-424 14 75)
- Ladder Test (IEEE-383)

XLPE cables shall be tested as per IS 7098 / IEC.

The LT XLPE cables shall be routine tested as per relevant IEC/IS

- B. The first lot offered shall not be less than 10% of ordered quantity of each size of LT XLPE ARMORED CABLE. One sample from the 1st Lot of LT XLPE ARMORED Cable of each size as received in purchaser's store shall be selected and sealed by the inspecting officer nominated by purchaser's for getting it type tested at any NABL accredited testing laboratory. The charges incurred towards type test of the material received in our stores shall be borne by Supplier. In case sample from first lot fails then:
  - a. Supplier shall have to replace the full quantity of the respective inspected lot supplied to various stores and lying unused at stores.
    - b. For the quantity already utilized against the order in field a deduction @ 15% (Fifteen Percent) of F.O.R. Destination prices of the material supplied shall be made.





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c. Sample from next lot shall be selected again for type test. All test charges incurred towards type test of the material for second time shall be borne by the Supplier. In case sample again fails in the type test then further supplies shall not be accepted.

**C. Acceptance test:**

The selection of sample pieces for acceptance test shall be as per Appendix A of IS 7098 (Part-I), of each lot offered for inspection or part thereof. The minimum shall be one drum.

The g acceptance tests shall be carried as per IS: 7098 (Part-I) out on the selected samples.

- a. Tensile test (for aluminum)
- b. Wrapping test (for aluminum) (c) Conductor resistance test.
- d. Test for thickness of insulation and sheath
- e. Hot set test for insulation
  - f. Tensile strength and elongation at break test for insulation and sheath. (g) High voltage test.
- (h) Insulation resistance (volume resistivity) test

All the acceptance tests shall be carried out by the firm, in the presence of purchaser's representative at their works. The firm shall give atleast 15 days advance notice to the purchaser 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.

**D. Routine Tests:**

The following shall constitute the routine tests. The Inspector may also inspect the routine tests at the time of inspection.

- a. Conductor resistance test
- b. High-voltage test for 5 minutes [as per Clause 16.2 of IS: 7098 (Part-I)].

**16. Quality Assurance Plan:**

A detailed list of bought out items which got into the manufacture of cables should be furnished indicating the name of the firms from whom these items are procured. The bidder shall enclose the quality assurance plan invariably along with offer followed by him in respect of the bought out items, items manufactured by him & raw materials in process as well as final inspection, packing & marking. The Company may at its option order the verification of these plans at manufacturer's works as a pre qualification for technically accepting the bid

**17. Identification mark:**

The outer sheath of the cable shall bear following identification parameters embossed at intervals of length of one meter of cable, throughout the cable:-

- i. Name of manufacturer
- ii. Year of manufacture
- iii. Voltage grade
- iv) Size of cable



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- v) Cable code
- vi) Name of purchaser TSECL”
- vii) ISI certification mark.
- viii) Successive length
- ix) Marking for FRLS cable

**18. Packing and forwarding:**

18.1 The cable shall be wound on non-returnable 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 paint. Similarly, the inside surface of drum shall have the protective layer of varnish / paint.

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

18.3 Length: The cable shall be supplied in standard drum length as per detail below:-

Size(sq.mm)	1C(meter)	2C(meter)	3C(meter)	3.5C& 4C(meter)
0-up to16	2000	1500	1000	1000
Above 16-up to 50	1500	1000	1000	1000
Above 50-up to 150	1000	750	750	750
Above 150-up to 300	750	500	500	500
Above 300	500	300	300	300

18.4 The ends of the cable shall be sealed by means of non- hygroscopic heat shrinkable sealing material.

18.5 The following information be stencilled on the drum with either waterproof 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. Gross weight
- ix. Direction of rotation of drum (by means of an arrow)
- x. Position of outer end of cable
- xi. Nigam’s technical specification number.
- xii. Year of manufacture
- xiii Reference of Tender No. / P.O. No. date xiv Property of “TSECL”.
- xiv. Name of consignee and the destination.



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xv. ISI Certification Mark.

- 18.6 The firm 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 supplier, without any extra cost.
- 18.7 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.

**19. Inspection:**

- 19.1 The inspection may be carried out by the purchaser at any stage of manufacture. The successful bidder shall grant free access to the purchaser's representative at reasonable time when the work is in progress. Inspection and acceptance, of any cables under this specification by the purchaser, shall not relieve the supplier of his obligation of supplying cable in accordance with the specification and shall not prevent subsequent rejection if the cables are not found as per the technical specifications.
- 19.2 The supplier shall keep the purchaser informed in advance about the programme of manufacturing of cables so that arrangement can be made for inspection.
- 19.3 The purchaser reserves the right to insist for witnessing the acceptance / routine tests of the bought out items.
- 19.4 The manufacturer shall be responsible to pay penalty of Rs 20,000/- for each occasion at which the fake inspection call has been made or the material is rejected during testing/inspection by the authorized agency/representative of the Nigam. This penalty would be in addition to the expenses incurred by the Nigam in deputing the Inspecting Officer, carrying out such inspection.
- 19.5 At least 5% of total numbers of drums subject to minimum of 2 in each lot put up for inspection shall be selected at random to ascertain the length/workmanship of cable by the following method:
- 19.6 At the work of the manufacture, the cable shall be transferred from one drum to another for checking any manufacturing defects in the cable drum selected for conducting acceptance tests, at the same time measuring its length with the help of pulley & cyclometer graduated in presence of inspector. The difference in the measured length thus obtained from the declared length by the supplier in the packing list shall be applied to all the drums if the cable is found short during checking the sample lot (s).
- 19.7 The supplier shall present the latest Calibration Certificate(s) of testing instruments/equipment's to be used for the testing of the material covered in the Purchase Order to the authorized inspecting officer /inspecting agency of the purchaser. The testing instruments / meters /apparatus etc. should be got calibrated by the supplier from time to time from an independent testing laboratory / house having valid accreditation from National Accreditation Board for testing and calibrating laboratories for the testing equipment or from original manufacturers having traceability to NABL



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(A Govt. of Tripura Undertaking)

/NPL. The calibration certificate(s) should not in any case be older than one year at the time of presenting the same to the inspecting officer / inspecting agency of the purchaser. The testing instruments / equipment should be duly sealed by the Calibrating Agency and mention thereof shall be indicated in the calibration certificate(s).

**20. Documentation:**

- 20.1 The bidder shall furnish following documents along with his offer - Sectional view, showing the General constructional feature with conductor / conductor screen / insulation / armoring / inner and outer sheath etc.
- 20.2 Drawing of cable drums with details of material dimension and paint etc.
- 20.3 All the required type test reports.
- 20.4 Literature, pamphlets for the supplied items.

**21. Technical and guaranteed particulars:**

The bidder shall furnish all Guaranteed Technical Particulars, as called for, in Appendix -2 of this Specification. Which are subject to guarantee, shall be clearly identified. Offer not containing this information will not be considered for acceptance.

**22. Challenge Clause:-**

The material offered/received after the inspection by the authorized inspecting officer may again be subjected to test for any parameter from any testing house/in-house technique of the Nigam & the results if found deviating/ un-acceptable or not complying to Technical specification, the bidder shall arrange to supply the replacement within thirty (30) days of such detection at his cost including to & fro transportation. In addition, penalty @ 10% of cost of the inspected lot of material shall be imposed.

**23. Warranty Period:-**

The supplier shall be responsible to replace, free of cost, with no transportation or insurance cost to the purchaser, up to destination, the whole or any part to the material which in normal and proper use proved as defective in quality or workmanship, subject to the condition that the defect is noticed within 12 months from the date of commissioning. The consignee or any other officer of Nigam actually using the material will give prompt notice of each such defect to the supplier. The replacement shall be effected by the supplier within a reasonable time, but not, in any case, exceeding 15 days/ The supplier shall, also, arrange to remove the defective material within a reasonable period, but not exceeding 30 days from the date of issue of notice in respect thereof, failing which, the purchaser reserve the right to dispose of defective material in any manner considered fit by him (purchaser), at the sole risk and cost of the supplier. Any sale proceeds of the defective material after meeting the expenses incurred on its custody, disposal handling etc., shall however be credited to the supplier's account and set off against any outstanding dues of the purchaser against the supplier. The warranty shall be for the entire duration of the warranty period.

**24. Nigam's Quality Assurance Plan: -**

The Nigam's Quality assurance plan for the inspection of material at manufacturer's factory, post receipt inspection at Nigam's stores/ turnkey contractor's site stores , dispatch of material, supply lots, counter checking etc is in force for the procurement and turnkey works which shall be applicable, as the case may be, along with upto date amendments, if any.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
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**Appendix -1**

**1100V Single Core, two core, three Core, 3.5 core and four core, XLPE insulated Armoured Power Cables with aluminium conductor for earthed systems:-**

**1. Continuous current rating-**

Nominal Cross sectional area of conductor (sqmm)	Continuous current rating for three core cables(Amps)		Continuous current rating for single core cables(Amps)		Continuous current rating for two core cables(Amps)	
	In ground	in Air	In ground	in Air	In ground	in Air
10	57	53	59	57	57	53
16	78	70	40	73	78	70
35	116	117	170	140	116	117
50	140	140	255	170	140	140
95	200	221	204	255	200	221
120	225	258	230	300	225	258
150	255	294	265	342	255	294
185	285	339	295	385	285	339
240	325	402	340	450	325	402
300	370	460	390	519	370	461
400	435	542	450	605	435	542
500	481	624	500	700	481	624
630	723	723	555	809	537	723

Nominal Cross sectional area of conductor (sqmm)	Continuous current rating for 3.5 core cables(Amps)		Continuous current rating for 4 core cables(Amps)	
	In ground	in Air	In ground	in Air
16	0	0	78	70
25	95	99	95	99
35	116	117	116	117
50	140	140	140	140
95	200	221	200	221
120	225	258	225	258
150	255	294	255	294
185	285	339	285	339
240	325	402	325	402
300	370	461	370	460
400	435	542	435	542
500	481	624	481	624
630	537	723	537	723



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- Depth of laying: 900 mm; Ambient Air temp: 40 deg C; Ground Temp: 30 deg C; Thermal resistivity of soil: 150 deg C cm/w.
- While designing over all system suitable derating factor shall be take in to account as per the site condition.

**2. Single core armoured cables - dimensional details as per IS 7098 (Part-1)**

<b>Nominal area of conductor (sq mm)</b>	<b>Nominal thickness of insulation (mm)</b>	<b>Minimum thickness of outer sheath (mm)</b>
35	1.2	1.24
50	1.3	1.24
95	1.4	1.40
120	1.5	1.40
150	1.7	1.40
185	1.9	1.40
240	2.0	1.40
300	2.2	1.56
400	2.4	1.56
500	2.6	1.56
630	2.8	1.72

**3. Two core armoured cables - dimensional details as per IS 7098 (Part-1)**

<b>Nominal area of conductor (sq mm)</b>	<b>Nominal thickness of insulation (mm)</b>	<b>Minimum thickness of inner sheath (mm)</b>	<b>Minimum thickness of outer sheath (mm)</b>
10	0.70	0.3	1.24
16	0.70	0.3	1.40
35	0.90	0.3	1.40
50	1.00	0.3	1.40





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95	1.10	0.4	1.56
120	1.20	0.4	1.56
150	1.40	0.5	1.72
185	1.60	0.5	1.88
240	1.70	0.5	2.04
300	1.80	0.6	2.20
400	2.00	0.7	2.36
500	2.20	0.7	2.68
630	2.40	0.7	2.84

**4. Three core armoured cables - dimensional details as per IS 7098 (Part-1)**

<b>Nominal area of conductor (sq mm)</b>	<b>Nominal thickness of insulation (mm)</b>	<b>Minimum thickness of inner sheath (mm)</b>	<b>Minimum thickness of outer sheath (mm)</b>
35	0.90	0.3	1.40
50	1.00	0.3	1.40
95	1.10	0.4	1.56
120	1.20	0.4	1.56
150	1.40	0.5	1.72
185	1.60	0.5	1.88
240	1.70	0.6	2.20
300	1.80	0.6	2.20
400	2.00	0.7	2.52
500	2.20	0.7	2.68



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630	2.40	0.7	2.84
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**Three and Half core armoured cables**

<b>Nominal area of conductor (sq mm)</b>	<b>Nominal thickness of insulation (mm)</b>	<b>Minimum thickness of inner sheath (mm)</b>	<b>Minimum thickness of outer sheath (mm)</b>
35	0.90	0.3	1.40
50	1.00	0.3	1.40
95	1.10	0.4	1.56
120	1.20	0.4	1.72
150	1.40	0.5	1.72
185	1.60	0.5	1.88
240	1.70	0.6	2.20
300	1.80	0.6	2.20
400	2.00	0.7	2.52
500	2.20	0.7	2.68
630	2.40	0.7	3.00

**Four core armoured cables**

<b>Nominal area of conductor (sq mm)</b>	<b>Nominal thickness of insulation (mm)</b>	<b>Minimum thickness of inner sheath (mm)</b>	<b>Minimum thickness of outer sheath (mm)</b>
16	0.70	0.3	1.40
25	0.90	0.3	1.40
35	0.90	0.3	1.40



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

50	1.00	0.3	1.40
95	1.10	0.4	1.56
120	1.20	0.5	1.72
150	1.40	0.5	1.88
185	1.60	0.5	2.04
240	1.70	0.6	2.36
300	1.80	0.7	2.36
400	2.00	0.7	2.68
500	2.20	0.7	2.84
630	2.40	0.7	3.00

**Conductor resistance and Short Circuit Current Carrying**  
**Capacity (common for 1C and 3C & 3.5C):**

<b>Nominal area of conductor (sq mm)</b>	<b>Maximum DC resistance at 20 deg C (Ohms/km)</b>	<b>Short Circuit current for conductor (KA/sec)</b>
25	1.20	2.35
35	.8680	3.29
50	.6410	4.70
95	.3200	8.93
120	.2530	11.28
150	.2060	14.10
185	.1640	17.39
240	.1250	22.56
300	.1000	28.20



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400	.0778	37.60
500	.0605	47.00
630	.0469	59.22

**Appendix-II**

**GUARANTEED TECHNICAL AND OTHER PARTICULARS FOR THE SUPPLY OF  
MULTIPLE CORE LT XLPE ARMoured CABLES.**

Sl No	Particulars	XLPE ARMoured CABLES IN SIZE
1	Manufacturer's name and works address.	
2	Standard specification to which the material shall	
3	<b>VOLTAGE GRADE</b>	
4	<b>NO. OF CORES.</b>	
5	<b>CONDUCTOR DETAILS:</b>	
	<b>A. Normal cross section area of :</b>	
	i. Phase Conductor (Sq.mm)	
	ii. Neutral Conductor (Sq.mm)	
	<b>B. No. and size of strands (in mm)of:</b>	
	i. Phase Conductor (Sq.mm)	
	ii. Neutral Conductor(Sq.mm)	
	<b>C. SHAPE OF CONDUCTOR</b>	
	<b>D. Whether compacted or non compacted</b>	
	<b>E. Resistance at 27 °c</b>	
	i. Phase Conductor ohm/km	
	ii. Neutral Conductor ohm/km	



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6	INSULATION	
	i. Type	
	ii. Colour	
	iii. Thickness	
	A. Phase Conductor (sq.mm)	
	i. Nominal (mm)	
	ii. Minimum (mm)	
	B. Neutral Conductor (Sq.mm)	
	i. Nominal (mm)	
	ii. Minimum (mm)	
7	Type of inner sheathing and colour	
	Whether Binder Tape provided	
8	Armoring	
	i.Type	
	ii. Dimension (mm)	
9	Outer Sheath	
	i. Materials	
	ii. Thickness	
	a. Nominal (mm)	
	b. Minimum (mm)	
	iii. Standard to which it Confirm	
10	FILLAR	
	a. Type and size of filler used	
	b. MIN. WT. OF FILLER IN KG./KM	
11	MAX. OVERALL DIAMETER OF THE CABLE IN MM	
12	Nature of Packing.	



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	<b>A. DRUM</b>	
	a. TARE WEIGHT OF DRUM	
	b. WHETHER DRUM IS WHELL	
	c. DRUM DETAILS & DIMENSIONS	
	d. Whether 2-Full Ply Flange Construction or 2-Full Ply plus 1 Segmental layer Flange Construction	
	<b>B. Drum size</b>	
	a. Flange Diameter (d1) (mm)	
	b. Barrel Diameter (d2) (mm)	
	c. Centre hole Diameter (d3) (mm)	
	d. Overall with (L1) (mm)	
	e. Travers (L2) (mm)	
	<b>C. Thickness of Flange</b>	
	<b>D. Barrel End (Supporting disc or</b>	
	i. Diameter (mm)	
	ii. Thickness (mm)	
	<b>E. Stretchers (core carrier Planks )</b>	
	i. Number (Min)	
	ii. Thickness x width (mm)	
	<b>F. Barrel Battens thickness (core</b>	
	<b>G. Barrel Middle Supports (Middle</b>	
	<b>H. Thickness of External Lagging.</b>	
13	<b>DETAILS OF METAL</b>	
	<b>A. Clamping Studs with</b>	
	i. Numbers	
	ii. Diameter (mm)	





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	<b>B. Square or Round Washers</b>	
	i. Numbers	
	ii. Diameter (mm)	
	<b>C. M.S. Bushes</b>	
	i. Numbers	
	ii. Thickness of Sleeve (mm)	
	iii. Dimension of Sleeve (mm)	
	<b>iv. Number of Bolts</b>	
	v. Diameters of Bolts	
	<b>D. Diameters of Bolts</b>	
	I. Numbers	
	ii. Diameter of Bolts (mm)	
	Centre Plate Bolts. J. Numbers ii Diameter of Bolts (mm)	
	E. Centre Hole Diameter (mm)	
	F. Minimum Weight in Kg/km : a. Aluminum b. XLPE c. PVC	
	G. Standard Length of cable in metre & its Tolerance	
	H. Whether material bears BIS Certification	
	I. BIS License no.& validity.	
	J. Embossing.	
	K. Any other particulars.	



## **2. HEAT SHRINKABLE TYPE TERMINATIONS FOR 11 KV XLPE CABLES**

### **1. 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. 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. CLIMATIC CONDITIONS:**

As mentioned in the General Climatic Conditions in **clause 9 of Sec-IV**.

### **4. 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. 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 solidly earthed neutral for working voltage of 11 KV. 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 is made and contractors shall categorically confirm 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 50 degree Centigrade for more than 5 years.**

5.2.9 The **fault level (as well as duration) withstand capability** of terminations should be strictly matching with the 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.



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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. 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 in **Annexure-‘C’**.

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

**8. 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:**

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.



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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. INSPECTION:**

9.1 All test and inspection shall be made at the place of manufacture unless otherwise especially agreed upon by the manufacturer / bidder/contractor and purchaser (TSECL) 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. Cost of inspection including to and fro expenses of at least two nos. inspectors of TSECL shall be borne by the contractor.

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. 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.

**ANNEXURE-‘C’**

**GUARANTEED TECHNICAL PARTICULARS FOR TERMINATIONS FOR OUTDOOR / INDOOR**

1. Manufacturer’s name & Address.
2. Sl. No. & Name and Country of origin.
3. Voltage grade.
4. Type of kit offered.
5. Applicable standards.
6. Size.
7. Material of tubing/moulded part/self-amalgamating tape etc.
8. Insulation time.
9. Curing time.
10. Time required for energization after completion of termination.
11. Special devices required, if any.
12. Kit storage temperature (Degree centigrade).
13. (a) Shelf life of kit.  
(b) Design life of kit.
14. List of contents of kit (to be furnished separately)
15. Material used for stress control.
16. Dielectric strength of insulation material (kV/mm).
17. Materials used in encapsulating compound and environmental sealing.
18. Class of kit.



19. Whether test reports, drawings and instruction leaflets are enclosed.
20. Volume resistivity.
  - i) Stress control tubing.
  - ii) Non tracking tubing.
21. Relative permittivity.
  - i) Stress control tubing.
  - ii) Non tracking tubing.
22. Water absorption.
  - i) Stress control tubing.
  - ii) Non tracking tube.
23. Tracking resistance.
  - i) Stress control tube.
  - ii) Non tracking tube.
24. Tensile strength.
  - i) Stress control tube.
  - ii) Non tracking tube.
25. Ultimate elongation
  - (a) Stress control tube.
  - (b) Non tracking tube.

**Note :** While giving details of technical parameters under Sr. No. 20 to 25 above, the reference of applicable relevant ISS/international standard must be indicated.

### 3. **HDPE pipes**

#### 1.0 SCOPE:

This section covers design, manufacture, testing before dispatch, 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/mm <sup>2</sup> )    | : 150       |
| g. Maximum altitude above mean sea level (Meters) | : 1000      |
| h. Isoceraunic level (days/year)                  | : 50        |





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- 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 standard make suitable for laying 3core 300mm square XLPE cable underground.

(ii) The HDPE pipe shall be ISI marked and complying to technical requirement of IS14930.

**(a). Size: -**

(iii) The HDPE pipe shall have OD/ED (mm) as 180/152 and have standard length of 6 meters.

**(b). Fitting and Assembly.**

(vi) 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.**

(v) The HDPE pipe shall be of non-flame propagating type as per IS-14930 (Part-II).

**(d.) Antirodancy**

(vi) The HDPE pipe shall have antirodancy property to prevent damage caused due to rodents.

**(e). Inspection & Test**

(vii) The HDPE pipes shall be offered for inspection at manufactured work before dispatch and test as per relevant IS shall be conducted by the authority representative of purchaser.

**4.0 INSPECTION**

4.1 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.

4.2 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.

**5.0 PACKING & MARKING**

**5.1 PACKING**



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Pipes shall be well finished, clean and free from harmful surface defects.

The Pipes shall be so transported that the pipes are adequately protected against damage in ordinary handling and transit. To avoid damage of the pipes, transshipment in between the road transportation must be avoided i.e. each consignment should be transported from factory to DGM Electrical Division No. II, Agartala through a single carrier.

## 6.0 MARKING

A. 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
- f. Project : SPA
- g. ISI certification mark if any :

## 7.0 Guaranteed technical Particulars

### Guaranteed technical parameters of HDPE PIPE

- (i) Name of manufacturer
- (ii) Size of HDPE pipe (O/D)(I/D)mm.
- (iii) Standard length
- (iv) Colour
- (iv) Method of Jointing
- (v) **Material**
  - (a) Whether having non-flame propagating property.
  - (b) Whether having Anto-rodancy feature.
  - (c) Detail of fitting accessories.
  - (d) Detail of past supplies & performance.
  - (e) Type test certification.

## 5 EARTHING AND EARTHING WITH G.I. PIPE

### 1.0 Scope

GI earthing pipe should be made of **40 mm diameter** ISI marked heavy duty A 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 A).



## **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.

## **1.0 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 (hot) 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/m<sup>2</sup>. 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/mm<sup>2</sup>.
- ii. The elongation percentage on a gauge length of 5.65/so (where so 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 withstanding 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.
- i. 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 plates 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 up to 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 gm/m<sup>2</sup>.
- ii. The weight of the coating expressed in gram/m<sup>2</sup> 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.
  - ii. 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 color 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) One 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.

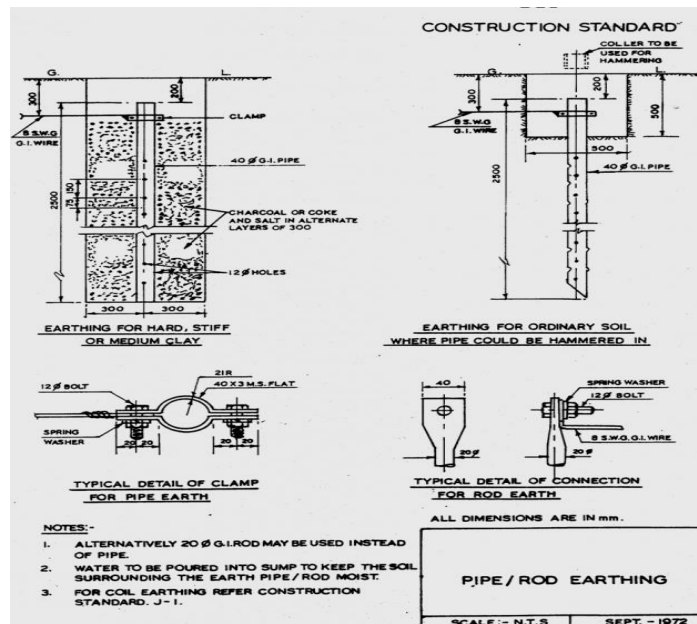
**10.5** To each of the remaining two earth electrodes, the following should be connected:-

- (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.



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



## 8. SPECIFICATIONS OF XLPE CABLE LAYING & TERMINATION WORK

1. **SCOPE-** This chapter covers the requirements for the selection, installation, jointing & Commissioning of power cables as per present scope of work .For details not covered in these Specifications, IS : 1255 - 1983 CODE OF PRACTICE FOR INSTALLATION AND MAINTENANCE OF POWER CABLES. All references to BIS-Specifications and codes are for codes with amendments issued upto date i.e. till the date of call of tender.
2. **STORAGE AND HANDLING**
  - I. The cable drums shall be stored on a well-drained, hard surface, so that the drums do not sink in the ground causing rot and damage to the cable drums. Paved surface is preferred, particularly for long term storage.
  - II. The drums shall always be stored on their flanges, and not on their flat sides.
  - III. Both ends of the cables should be properly sealed to prevent ingress/ absorption of moisture by the insulation during storage.
  - IV. Protection from rain and sun is preferable for long term storage for all types of cables. There should also ventilation between cable drums.
  - V. During storage, periodical rolling of drums once in, say, 3 months through 90 degrees shall be done,
  - VI. Damaged battens of drums etc. should be replaced as may be necessary.
  - VII. When the cable drums have to be moved over short distances, they should be rolled in the direction of the arrow marked on the drum.
  - VIII. For manual transportation over long distances, the drum should be mounted on cable drum wheels, strong enough to carry the weight of the drum and pulled by means of ropes. Alternatively, they may be mounted on a trailer or on a suitable mechanical transport.
  - IX. For loading into and unloading from vehicles, a crane or a suitable liftingtackle should be used. Small sized cable drums can also be rolled down carefully on a suitable ramp or rails, for unloading, provided no damage is likely to be caused to the cable or to the drum.
3. **INSTALLATION**
  - I. Cables with kinks, straightened kinks or any other apparent defects like defective armouring etc. shall not be installed



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II. Cables shall not be bent sharp to a small radius either while handling or in installation. The minimum safe bending radius for PVC/XLPE (MV) cables shall be 12 times the overall diameter of the cable. The minimum safe bending radius for PILCA/XLPE (HV) cables shall be as permissible in IS:1255-1983 . At joints and terminations, the bending radius of individual cores of a multi core cable of any type shall not be less than 15 times its overall diameter.

III. The ends of cables, suitable sealing compound/tape shall be used for this purpose, if likely exposed to rain in transit storage. Suitable heat shrinkable caps may also be used for the purpose

While the shortest practicable route should be preferred, the cable route shall generally follow fixed developments such as roads, foot paths etc. with proper offsets so that future maintenance, identification etc. are rendered easy

IV. Cable route shall be planned away from drains and near the property, As far as possible; the alignment of the cable route shall be decided after taking into consideration the present and likely future requirements of other services including cables route, possibility of widening of roads/lanes etc

V. Corrosive soils, ground surrounding sewage effluent etc. shall be avoided As far as possible, the alignment of the cable route shall be decided after taking into consideration the present and likely future requirements of other services including cables route, possibility of widening of roads/lanes etc for the routes.

VI. Power and communication cables shall as far as possible cross each other at right angles. The horizontal and vertical clearances between them shall not be less than 60cm.

VII. Way leave for the cable route shall be obtained as necessary, from the appropriate authorities

VIII. *Route indicators* - Power cable route Indicators should be provided at an interval not exceeding 200 M and also at turning points of the power cable route wherever practicable.

**4. Methods of laying:-**

**(a) Trenching**

I. XLPE cables under the present scope of work will be laid through digging a trench of 500 mm width and 1200 mm depth excluding locations where it is likely to vary on higher side. The trenches shall be excavated in reasonably straight lines. Wherever there is a change in the direction, a suitable curvature shall be adopted complying with the requirements of IS:1255-1983

II. Where gradients and changes in depth are unavoidable, these shall be gradual.

III. The bottom of the trench shall be level and free from stones, brick bats etc.

IV. The excavation should be done by suitable means-manual or mechanical. The excavated soil shall be stacked firmly by the side of the trench such that it may not fall back into the trench.

V. Adequate precautions should be taken not to damage any existing cable(s), pipes or any other such installations in the route during excavation.

**(b) Sand cushioning**

I. Sand cushioning of 600 mm thick to be placed at the bottom of the trench to form a bed for the cables. **When the cables have been laid they shall be inspected and accepted by the Engineer in Charge.** They shall then be covered with second Sand layer which shall be punned around and over the cables to a level of 100mm above the top of the cables. Where more than one horizontal layer of cables is to be laid similar sand bedding shall be provided for each layer.

**(c) Flat Brick soling**

I. Two layers of First class brick of nominal size 22cmX11.4cmX7 cm **over the second sand layer to be placed centrally over the cables, throughout the** length of the cable. The bricks to be placed breadth-wise for the full length of the cable. No final filling in of trenches shall be commenced until the Engineer in charge has accepted the placing of Plain Flat Brick soling.





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- II. Where more than one cable is to be laid in the same trench, this protective covering shall cover all the cables and project at least 5cm over the sides of the end cables.

**(d) Back filling with excavated earth :-** The trenches to be then back-filled with excavated earth, free from stones or other sharp ended debris and shall be rammed and watered, in successive layers not exceeding 30cm depth. A crown of earth not less than 50mm and not exceeding 100mm in the centre and tapering towards the sides of the trench shall be left to allow for subsidence. The crown of the earth however, should not exceed 10 Cms so as not to be a hazard to vehicular traffic. The temporary re-statements of roadways should be inspected at regular intervals, particularly during wet weather and settlements should be made good by further filling as may be required.

- **Extra loop cable:-** Approximately 3m of surplus cable shall be left on each terminal end of the cable and on each side of the underground joints. The surplus cable shall be left in the form of a loop. Where there are long runs of cables such loose cable may be left at suitable intervals as specified by the Engineer-in Charge.
- **Trenching, laying & sand cushioning work** related to coiling of excess Cable and Cable Joints to be provided with same technical specification as detailed above.

**(e) Testing before laying**

- I. All the time of issue of cables for laying, the cables shall be tested for continuity and insulation resistance \
- II. The cable drum shall be properly mounted on jacks, or on a cable wheel at a suitable location, making sure that the spindle, jack etc. are strong enough to carry the weight of the drum without failure, and that the spindle is horizontal in the bearings so as to prevent the drum creeping to one side while rotating.
- III. The cable shall be pulled over on rollers in the trench steadily and uniformly without any jerks and strain. The entire cable length shall as far as possible be laid off in one stretch. PVC/XLPE cables less than 120sq.mm. size may be removed by "Flaking" i.e. by making one long loop in the reverse direction.
- IV. After the cable has been so uncoiled, it shall be lifted slightly over the rollers beginning from one and by helpers standing about 10m apart and drawn straight. The cable shall then be lifted off the rollers and laid in a reasonably straight line.

**(f) Testing before covering**

The cables shall be tested for continuity of cores and insulation resistance and the cable length shall be measured, before closing the trench. The cable end shall be sealed /covered.

**(g) Laying of single core cables**

- I. Three single core cables forming one three phase circuit shall normally be laid in close trefoil formation and shall be bound together at intervals of approximately 1m.
- II. The relative position of the three cables shall be changed at each joint at the time of original installation, complete transposition being effected in every three consecutive cable lengths.
- III. Route *indicators* - Power cable route Indicators should be provided at an interval not exceeding 2()0 M and also at turning pomts of the power cable route wherever practicable.

**(h) Earthling and Bonding**

- I. The metal sheath, metal screen (if any) and armour of any cable should be efficiently earthed at both ends.
- II. In case of single-core cables of larger sizes, the armour, lead sheath and metal screen, if any, is bonded at times only at one point.
- III. Attention is drawn in this case to the presence of standing voltages along armour or lead sheath



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

and to the considerable increase in such voltages when cables carry fault currents, These voltages must be taken into account when considering safety and outer sheath insulation requirement,

- IV. All metal pipes or conduits in which the cables have been installed, should be efficiently bonded and earthed.

Where cables not having metallic sheath are used, embedding additional earth electrodes and connecting the same with steel armour of cable becomes necessary, Earthing and bonding should be done In accordance with IS : 3043-1966

**(i)High Voltage Test:-** Cables after jointing and terminating are subjected to DC high voltage test as detailed below. The leakage current shall also be measured and recorded for future reference.

<b>DC Test Voltages after Installation (Before Commissioning)</b>			
Rated Voltage of Cables(KV)	Test Voltage between		Duration (in Minutes)
	Any Conductor and Mettalic Sheath / Screen / Armour (in KV)	Conductor to Conductor (for Un Screened Cables (in KV)	
<b>11kv</b>	<b>3</b>	<b>3</b>	<b>5</b>

During the high voltage test, all other electrical equipment related to the cable installation, such as switches, instrument transformers, bus bars, etc, must be earthed and adequate clearance should be maintained from the other equipment and framework to prevent flashovers. In each test, the metallic sheath/screen/armour should be connected, to earth.

**(j) CABLE INSTALLATION PLAN:-** On completion of laying, terminating and jointing of the cables, a plan should be prepared, which should contain the following details of the installation.

- I. Type of cables, cross-section area, rated voltage. Details of construction, cable number and drum number;
- II. Year and month of laying;
- III. Actual length between joint-to-joint or ends;
  - IV. Location of cables and joints in relation to certain fixed reference points, for example, buildings, hydrant, boundary stones, etc;
- V. Date of making joint; and
- VI. Results of original electrical measurements and testing on cable installation.
- VII. Cables shall be properly arranged in the trenches such that criss crossing is avoided and final take off to feeder pillars / poles or as required as specified or as per approved drawing is facilitated. Contractors are responsible for arrangement of cables in cable trench. Adequate sizes of GI pipe sleeves shall be utilized for end termination of cable. Pipe sleeves shall be laid at an angle of maximum 45° to the trench wall. In case of larger dia cables i.e. 50 mm and above adequately sized pipe with larger bend radius shall be provided for ease of drawing of cable or for replacement. In place where it is not possible, a smaller trench may be provided as approved by Engineer in charge.
- VIII. Cable markers shall be provided as directed at **every 30 m and at cable joint locations.**
- IX. Temporary ends if any shall be protected against dirt and moisture and prevents damage to the insulation. Proper PVC or rubber insulating tape shall be used. Use of friction type or fabric tape is not permitted
- X. Cables laid underground in excavated cable trenches shall be as per the approved drawings. Trenches shall be of sufficient depth and width for laying of all cables. Cables shall be spaced properly so that



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

heat dissipation is attained.

- XI. Cables shall be laid in trenches as shown in the drawing. Before laying the cable the bottom of trench shall be filled with sand 150 mm of depth duly leveled. The cables laid on this sand shall be covered with further 150 mm depth sand on top of largest diameter of the cable. Sand shall be lightly pressed. Protective covering of suitable bricks / HT tiles/ half round slab as specified and as per approved drawings shall be provided before back filling the trench with soil, rammed and leveled.
- XII. Insulation resistance test of all the cables shall be taken in presence of Engineer in charge. Defective cables shall be immediately replaced before laying of cables of other groups.
- XIII. Suitable GI / HDPE/ RCC hume pipes for protection as directed shall be provided as required. Cable ends shall be drawing carefully through such pipes to prevent damage to the cable. Radius at bending shall not be less than the recommended bending radius of the cables specified by the manufacturer. Standard gauge of pipe filling shall be used for sizing the pipe.
- XIV. Prior approvals for cutting holes for laying cable in existing structures and foundations shall be obtained from the Engineer in charge.
- XV. GI pipes laid for cable laying shall be bend with hydraulically operated bending machine.(which is to be arranged by the contractor).Bends of pipes shall be placed in such a way that they are concealed in wall, soil or structures. The open end of the pipes shall be suitably plugged with plugs supplied by the contractor at no extra cost.
- XVI. Supporting angles for cables shall be suitably clamped / tied by means of nylon cords and the angles shall be painted before laying the cables. The paint shall be done with one coat of red lead paint and two coats of approved bituminous aluminum paint unless otherwise specified.

**SECTION-VII**

**SPECIAL INSTRUCTIONS TO BIDDER(S)**

- The Bidder(s), before submitting of Bid(s), are advised to invariably visit the sites of the works and satisfy himself/themselves about physical volume of works to be carried out, acquaint him/them with the environment, take into consideration details of all **minor & major Technical requirements so as to ensure successful completion of the work with ease & comfort on award.**
- The Contractor shall, be fully responsible for total **erection and commissioning** of all **Equipment, cables, & all associated items (to be supplied by the owner and themselves)** as per standard & requirement of TSECL. Therefore the Contractor shall give due importance to each & every details of the work. He shall be liable to take care of and arrange for even any petty but integral component (**not considered in the scope of the work**) for total successful erection .testing at site and completion of the work.
- The Bidder(s) shall have to furnish “**Guaranteed Technical Particulars**” of **each item** of **Equipment / Switchgear / Spares / others** as per “**Technical Particulars**” sought in **FORMAT(s) / SPECIFICATIONS** appended in the Bidding Document. Furnishing of “**Technical Particulars**” of such item(s), which have not been sought through formal **FORMAT** in the Document, shall be the responsibility of the Bidder(s) as per guaranteed particulars of the related Manufacturer(s).
- The Bidder(s) shall have to furnish Manufacturer’s “**Literature on product Specification**” of all **Major equipment** with Bidding Document.
- The Bidder(s) shall also furnish “**Technical Particulars**” of all sub-item(s) of Main Items.
- **List of MAKE for Equipment / Switchgear/other materials and** all items have been furnished in the **Bidding Document**. For any **Left-Out** item, the Bidder(s) shall have to supply item of such **MAKE acceptable as Standard Product** and to be authenticated by supporting Document as to



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

utilization by any **State Electricity board/Power utility/Power corporation of the Country.**

- The Successful Bidder shall have to submit “Design, drawing and dimensional details” of all **equipment, accessories, equipment foundation, Steel Structure supports of Equipment, Drawing & Design of Tower & Beam / guarder, Electrical layout of Transformer bays, foundation lay out, Erection Key Diagram etc. as required**, Switchgears, Structures, Construction Standards and **Bill of materials** for all components etc. within 15 days as per requirement and stipulations in the Bidding document from the date of issue of L.O.A. for approval of the Owner. The work shall be based strictly on such approved drawing.
- The Spares and Tools & Plants as specified in the Schedule shall be of the particular MAKE. All such spares and T & P shall be supplied along with related Literature / Manual / Catalogue of concerned Manufacturer.
- Specification of All Civil Works shall be guided by the Standards of TRIPURA PWD (Public Works Department).The Successful Bidder shall have to submit “Design and drawing of Distribution Sub-station layout, 11 KV & LT Line layout, Foundation of Equipment and Structures, Cable Trench Details, etc.” within 15 days **as per requirement and stipulations in the Bidding document** from the date of issue of L.O.A. for approval of the Owner. The work shall be based strictly on such approved drawing
- The Successful Bidder shall have to submit “Design, drawing and dimensional details” of all **equipments, equipment foundation, Steel Structure supports of Equipment, Drawing & Design of Tower & Beam / guarder, Electrical layout of Transformer bays, foundation lay out, Erection Key Diagram etc. as required**, Switchgears, Structures, Construction Standards and **Bill of materials** for all components etc. within 15 days as per requirement and stipulations in the Bidding document from the date of issue of L.O.A. for approval of the Owner. The work shall be based strictly on such approved drawing.
- The Spares and Tools & Plants as specified in the Schedule shall be of the particular MAKE. All such spares and T & P shall be supplied along with related Literature / Manual / Catalogue of concerned Manufacturer..

All materials and equipments (Other than those considered in scope of this NIT) for the work shall be delivered / supplied by TSECL from its store yard within the project Area / stock yard within Agartala Municipal Corporation area.

- No RCC Pillar Raised Transformer base is considered within scope of this NIT / work. Any requirement during execution will be treated as **extra item**.
- ROW (Right of Way) is to be arranged by agency / contractor. TSECL will however, provide and extend all and best possible support as may be required in obtaining Right of Way.
- **Date** on which erection of line / lines (Over ground or Underground) with all allied accessories, equipments and sub-station structures etc. in full respect and up to satisfaction of Engineer in charge will be done shall be treated as **date of completion of Erection**. However warranty and liability for completing and commissioning of materials, devices, equipment etc. considered for supplying in this NIT within scope of supply of bidder shall be regulated as per provisions already contained in the document.



**GENERAL & TECHNICAL FIELD REQUIREMENT**

**SCOPE OF WORKS:**

The scope of works include execution on **Turnkey** Basis with complete system design, procurement / manufacture, manufacturer's quality assurance, shop testing (including type testing where specified/required), transportation, storage, erection, including all civil/structural works, site testing, commissioning of all items & materials as elaborated below including all associated activities that though not exclusively specified here in but are required for the completion of the entire works under this package.

- This specification intends to cover but not restrict to the following activities, services and works.
- Complete design and engineering of all over ground & underground lines, Distribution sub-stations, equipment, control gears, other material and services.
- Providing engineering data, drawings and O&M manuals for Owner's review, approval and records.
- Manufacturing, supply, testing, packing, transportation and insurance from the manufacturer's work to the site of such materials in the document.
- Receipt, storage, insurance, preservation and conservation of equipment, materials, accessories at the site.
- All civil and structural works as required.
- Fabrication, pre-assembly (if any), erection, testing at site and putting into satisfactory operation of all the equipment/material including successful commissioning.
- In addition to the requirements indicated in the Technical Specifications, all the requirements as stated in other sections shall also be considered as a part of this specification as if completely bound herewith.
- The Bidder shall be responsible for providing all material, equipment and services specified or even not specified but otherwise which are required to ensure operability, maintainability and the reliability of the complete work covered under this specification.
- All services & activities required to be given contractually, by the bidder, during warranty period.

The package envisages following works at GB Cancer hospital, 79 tilla, under ED Capital Complex, Agartala. .

- Survey, Pole Spotting for all HT & LT Lines and Finalization of DT Location.
- Installation of new Distribution sub-station.
- All materials to be supplied by TSECL shall have to be carried from TSECL Stores as per direction of Engg-in-charge.

All dismantled materials i/c D.T. shall have to be returned to ESD Stores.

**LABBREVIATIONS**

<b>ACSR</b>	<b>Aluminum Conductor Steel Reinforced</b>
<b>DT</b>	<b>Distribution Transformer</b>
<b>PCC</b>	<b>Pre-stressed Compact Concrete</b>



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

<b>STP</b>	<b>Steel Tubular Pole</b>
<b>HT</b>	<b>High Tension</b>
<b>LT</b>	<b>Low Tension</b>
<b>MS</b>	<b>Mild Steel</b>
<b>XLPE</b>	<b>Cross Linked Poly-ethylene</b>
<b>GI</b>	<b>Galvanized Iron</b>
<b>BOM</b>	<b>Bill Of Material</b>
<b>G. O.A.B.</b>	<b>Gang Operated Air Break</b>
<b>DC</b>	<b>Direct Current</b>
<b>E &amp; M</b>	<b>Electrical and Mechanical</b>
<b>UG</b>	<b>Underground</b>
<b>OG</b>	<b>Over ground</b>
<b>DOF</b>	<b>Drop Out Fuse</b>
<b>LA</b>	<b>Lightning Arrester</b>
<b>TSECL</b>	<b>Owner/Purchaser</b>
<b>ABC</b>	<b>Ariel Bunched Cable</b>





**LIST OF NAME(S) OF PREFERABLE MANUFACTURER**

<b>SL. NO.</b>	<b>ITEM</b>	<b>MANUFACTURER</b>
<b>1.</b>	XLPE CABLE	HAVELS / POLYCAB / KEI
<b>2.</b>	OUTDOOR CABLE JOINTING KITS	DENSON (YAMUNA GAS & CO)/SHRINK FIT (COMPAQ INTERNATIONAL) / 3M
<b>3</b>	HDPE PIPE	Jain Pipes/Supreme/ Sudhakar /Sree Narayani

**DECLARATION**

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



**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, 79 Tilla,**  
**Agartala – 799001,**  
**West Tripura.**

Dear Sir,

In consideration of **Tripura State Electricity Corporation Limited** (hereinafter referred to as the 'Owner', which expression shall unless repugnant to the context 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. ....dated .....valued at .....for .....(scope of contract) and the Contractor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to .....being .(%) 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 of .....as 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.



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

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.

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 Contactor's liabilities.

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

Dated this ..... day of .....20..... At .....

**WITNESS**

.....	.....
(Signature)	(Signature)
.....	.....
(Name)	(Name)
.....	.....
(Official Address)	(Official Address)

Attorney as per Power  
Of Attorney No. ....

Date .....

**NOTES:**

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



**APPLICATION FOR EXTENSION OF TIME**

(Part – I)

- Name of Contractor \_\_\_\_\_
- Name of work (as given in the contract) \_\_\_\_\_  
\_\_\_\_\_
- Agreement no. \_\_\_\_\_
- Contract amount \_\_\_\_\_
- Date of Commencement of work as per agreement \_\_\_\_\_
- Period allowed for completion of work (as per agreement) \_\_\_\_\_
- Date of completion stipulated in the agreement \_\_\_\_\_
- Actual date of completion \_\_\_\_\_
- Period for which extension of time has been given previously if any \_\_\_\_\_
  - 1<sup>st</sup> extension vide No. \_\_\_\_\_
  - 2<sup>nd</sup> extension vide No. \_\_\_\_\_
  - 3<sup>rd</sup> extension vide No. \_\_\_\_\_
  - 4<sup>th</sup> extension vide No. \_\_\_\_\_
- Period for which extension have been previously given (Copies of the previous application should be attached).
- Hindrances on account of which extension is applied for with date on which hindrances occurred.

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	Period for which extension is applied for.	Remarks as to why the hindrances occurred and justification for extension of time

- Total period for which extension is now applied for on account of hindrances mentioned above.
- Extension of time required for extra work: - \_\_\_\_\_ Months. \_\_\_\_\_ days.
- Detailed for extra work and the amount involved: -
- Total value of extra work: -
  - Proportionate period of extension of time based on estimated amount put to tender on account of extra work: -
- Total extension of time required for 11 & 12: -

**Signature of Contractor**



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**APPLICATION FOR EXTENSION OF TIME**

(Part – II)

(To be filled in by TSECL)

- Date of receipt of application from \_\_\_\_\_ contractor for the work of \_\_\_\_\_ in the Sub-Divisional \_\_\_\_\_.
- Acknowledgement issued by the Sr. Manager, vide his No. \_\_\_\_\_ Dated \_\_\_\_\_.
- 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.
-------------	--



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**APPLICATION FOR EXTENSION OF TIME**

(Part – III)

(To be filled in by TSECL)

- Date of receipt in the Divisional office: \_\_\_\_\_
- 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 recommended

- 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**

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

**Signature of AGM**

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

**Signature of GM (Technical)**

- Recommendation / Approval of the CMD: -

**Signature of CMD**







**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
**(A Govt. of Tripura Undertaking)**

**(Bidder's Letter Head)**

To,  
The Deputy General Manager  
Capital Complex Electrical Division  
79 Tilla  
Tripura State Electricity Corporation Limited  
Agartala - 799006, Tripura West

**Sub: "No Deviation" declaration**

Ref: NIT No: ----- Date:

Sir,

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: \_\_\_\_\_



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

PROFORMA FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT/FACILITIES

(TO BE GIVEN BY BANKER OF BIDDER)

**BANK CERTIFICATE**

This is to certify that M/S..... (FULL NAME AND ADDRESS) who are submitting their Bid to .....against their tender specification vide Ref. No..... and date .....is our customer for the past .....years.

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

Sl.No.	TYPE OF FACILITY	SANCTIONED LIMIT AS ON DATE	UTILIZATION AS ON DATE.....
--------	------------------	--------------------------------	--------------------------------

This letter is issued at the request of M/S.....

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

SEAL OF THE BANK



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

**Schedule of Quantity & Prices” (Schedule-A)**

Sl. No.	Description of Items	Qty	Unit	Rate in fig.	Rate in words
<b>A</b>	<b>SUPPLY OF THE FOLLOWING</b>				
1	Supply of 3½ -core, 6.35/1.1 KV 50 sqmm XLPE insulated Al power cable.	180	Mtr		
2	Supply of L.T KIOSK(400/230 V) by using M.S Flat (50 X6 mm) and M.s sheet of 1.6 mm thickness with busbar arrangement to supply upto 600Amps busbar alluminium strips with separate arrangement for fitting 8 nos cut outs & no no Energy meter section isolated from the busbar which is housed in separate box in/c connection of KIOSK and painting as reqd.(Size of KIOSK- Lenght-36" ,Height-52" and Breadth-12")	1	No		
3	Supply of 2.5 mtr long 40mm dia G.I pipe(Make:- TATA/ JINDAL)	5	No		
4	Supply of 60 Kg Salt & 55 KG Charcoal(For 1 Pit)	5	No		
5	Bi-Metalic Lugs 95 Sq mm	20	No		
6	Bi-Metalic Lugs 120 Sq mm	20	No		
7	1" dia PVC Pipe	30	Mtr		
8	Supply of M.S Nuts & Bolts i/c Washer of assorted size ISI Marked machine made	40	No		
<b>B</b>	<b>CARRYING OF THE FOLLOWING</b>				



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

1	Carriage of line materials such as cable, AAC, AAAC, ACSR, G.I wire, Cross Arm, Stay set, Insulators etc. by Mechanical Transport from the Electrical Sub-Divisional site store to working site Vis -a-vis, including loading, unloading and stacking as required upto the lead of 25 KM to 50KM.	1	Nos		
2	Carriage of 11/0.430 kv ,3-phase 63 KVA by Mechanical Transport from Site to Workshop site VIS-a vis including loading, unloading & stacking etc as required, a) Upto the lead range 25 KM.	1	No		
3	Carriage of 11/0.430 kv ,3-phase 16 KVA/25 KVA by Mechanical Transport from Site to Workshop site VIS-a vis including loading, unloading & stacking etc as required, a) Upto the lead range 25 KM.	1	No		
<b>C</b>	<b>DISMANTLING OF THE FOLLOWING</b>				
1	Dismantling of 11/ 0.430 KV,3-phase 25 KVA/63 KVA of Distribution Transformer on pole with necessary Connection.	1	No		
<b>D</b>	<b>ERECTION OF THE FOLLOWING</b>				
1	Installation/positioning of 11/0.43 KV,3-phase 63 KVA of Distribution Transformer on pole with necessary connection & fitting fixing of all allied accessories components as required for making complete in all respect for energizing. (Supply by TSECL)	1	No		
2	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required. Trench size:- Width-350 mm,Hieght-750 mm / Sand (coughioning): Hieght-250 mm,Width-350 mm / protection:- Double layer Bricks. Above 35 Sq.mm to 95 sq.mm.	160	Mtr		
3	<b>Coiling</b> of excess Single/3 core/ 3½ core upto to 400 sqmm. HV/MV, XLPE insulated, armoured power cable direct into earth including excavation of earth upto a depth of 1500 mm (Size pit should be 2250 mm X 2250 mm or as per site requirement, including 1st class brick protection of two layer flat brick soling,300 mm .Fine sand (Local quarry) for cushioning/bed and refilling and ramming the excavated soil as per direction of Engineer in Charge.	6	Job		
4	Supply & making of <b>Cable end joints</b> for XLPE power cable.				



**TRIPURA STATE ELECTRICITY CORPORATION LTD**  
(A Govt. of Tripura Undertaking)

	<b>Outdoor type</b> end joint suitable for 3-phase, 3½ Core, 1.1KV, 50 sqmm L.T, XLPE Cable.	6	Nos		
6	Earthing with G.I pipe 2.5 mtr Long and 40 mm dia, including excavation, refilling with alternate layer of salt & Charcoal as per drawing (excluding supply of G.I Pipe, Salt & Charcoal, G.I wire, Nuts & bolts etc as required).	5	Set		
7	Laying of 8 SWG wire at 300 mm below the ground level for earthing of sub-station equipments from earth electrode. <b>(Supply by TSECL)</b>	5	Set		
8	Fitting fixing of L.T Cut Outs(Set of 3 nos) on wooden plank (preferably Korai wood) of size 24" X 10"X1.5" & cable connection with termination by lugs/thimble complete (i/c supply of wooden plank, screws & MS clamp excluding cost of thimble) <b>(Supply by TSECL)</b>	1	Set		
9	Erection of Bi-Metallic lugs of 95 Sqmm.	20	No		
10	Erection of 95 sqmm PVC Cable.	40	mtr		
11	Supply & erection of T-shaped Pillar for cable line ID marking engraved with caption ' <b>LT UG POWER CABLE</b> ' made of pre-cast RCC of size, [Pillar- 3.0 x.0.33 x 0.33 ft & T-section- 1.0 x.0.33 x 0.33 ft] by excavating earth in/c painting of engraded caption in black colour on yellow background as per technical requirement.	8	No		
12	L.T KIOSK(400/230 V) by using M.S Flat (50 X6 mm) and M.s sheet of 1.6 mm thickness with busbar arrangement to supply upto 600Amps busbar alluminium strips with separate arrangement for fitting 8 nos cut outs & no no Energy meter section isolated from the busbar which is housed in separate box in/c connection of KIOSK and painting as reqd.(Size of KIOSK- Lenght-36" ,Height-52" and Breadth-12")	1	No		
13	Grouting of KIOSK'S leg with cement concrete ratio 1:2:4 (1 Cement:2 River sand : 4 Jhama bricks aggregate 20 mm nominal size) in/c supply of cement,sand and brick aggregated complete with excavation refilling as required@0.20 cum per leg as per TSECL specification,No of leg for one KIOSK=4 Nos.	0.8	Cum		