TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. joint venture)
Procurement Department
2nd Floor, IDCO Tower, Janpath Bhubaneshwar, Odisha 751022

NIT No.: TPCODL/P&S/55/2020-21

Open Tender Notification

for

SITC for UG cabling work for shifting of 33 KV Tulashipur I & II feeder from Jobra primary S/s to Medical premises S/s due to widening of road for re development of SCB Medical, Cuttack under CDD-I, Cuttack

Tender Enquiry No.: TPCODL/P&S/55/2020-21

Due Date for Bid Submission: 28.09.2020 [15:00 Hrs.]

TP Central Odisha Distribution Limited

(A Tata Power & Odisha Government joint venture)
Purchase department
2nd Floor, IDCO Towers, Janpath, Bhubaneswar-751022

TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. joint venture)
Procurement Department
2nd Floor, IDCO Tower, Janpath Bhubaneshwar, Odisha 751022

NIT No.: TPCODL/P&S/55/2020-21

INFORMATION TO THE BIDDERS TO PARTICIPATE IN E-TENDER SYSTEM OF TPCODL

-: Steps for E-tender submission:-

Tender Enquiry No	Work Description	EMD (Rs.)	Tender Participation Fee (Rs.)	Last Date and Time for payment of Tender Participation Fee
TPCODL/ P&S/ 55/2020-21	SITC UG cabling work for shifting of 33 KV Tulashipur I & II feeder from Jobra primary S/s to Medical premises S/s due to widening of road for re development of SCB Medical under CDD-I, Cuttack	6,23,000/-	5,000/-	15.09.2020, 17.00 Hrs

Please note that corresponding details mentioned in this document will superseded any other details mentioned anywhere else in the Tender Document.

Step 1:
The bidder can get primary information about the tender from the NEWSPAPER advertisement / TPCODL website (in case of open tender) / invitation through e-mail (in case of limited tenders)

Step 2:
First the prospective Bidder who intends to participate in an open tender should deposit the requisite tender fee as mentioned in the tender document trough NEFT/ RTGS in the a/c of TPCODL as mentioned in the tender document. Deposit of the Tender fee should be made within the scheduled time for such deposit as indicated in the Tender document.

Step 3:
After deposit of the tender fee, the bidder should furnish the following information through e-mail to the contact person indicated in the tender document.

Sl No	Description	Bidder's Response
1	Tender Enquiry No.	
2	Description of materials / Works Tendered	
3	Name of the bidding company	
4	Place & Detail Address of the Company	

5	Postal Code (PIN Code)	
6	Name of the authorized contact person of the Bidder	
7	Contact No./Mobile No. authorized person	
8	E-mail Id of the contact person	
9	Tender Fee details (Bank Name / Amount/NEFT-RTGS UTR No/ Date)	
10	GST No.	

Step 4:
After receipt of the above information through e-mail, Vendor will get an **invitation e-mail** from ARIBA System which is the e-tendering platform of TPCODL. In this mail there will be an online link as **Click Here** to participate in the tender.

Step 5:

Click **"Click Here"** to access this event.

Step 6:

If you are bidding first time for TPCODL through ARIBA site then please "Sign UP by creating User Name and password as mentioned in Sign Up page. Please follow the process, as mentioned in the Sign Up page, during creation of User Name and password.

Those who are already having User Name and password for accessing TPCODL events, they can LOGIN using same User Name and password.

Step 7:
Click Continue. The simple one-page registration screen will open for first time user. **All* mark mandatory field to be filled in**.

Step 8:
You will be able to see the RFQ (i.e Detail Tender document).

Step 9:
After review and downloading of all documents click on **"Accept Review Pre-requisites"**i.e acceptance of terms and conditions.

Step 10:
Review and accept **"Bidder Agreement".**

Step 11:
You can see attached tender document in PDF format against clause no 1.1.1 (Introduction).

Step 12:
Vendor has to attach PDF version of technical bid in clause no. 2.1 and 2.2. (**In this field do not attach any price document.)**

Step 13:

Uploading of Price Bid

(a) Price schedule is attached in envelope.3.1 of ARIBA. Same has to be downloaded and price and tax details to be filled in as per the format given, print to be taken in vendor's letter head and signature and seal to be made by authorised person. PDF version of this price bid to be attached.For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

(b) In addition, the bidder has to upload the editable form of the price bid in EXCEL format in envelope 3.2 of ARIBA system.

Step 14:
After uploading successfully Techno commercial offer and price part then click on **"Submit Entire Response"**

Note: Once user ID and password created, bidder can also login to ARIBA site through the following URL:

https://service.ariba.com/Sourcing.aw/124997008/aw?awh=r&awssk=oxt0s1BN&dard=1

CONTENTS OF THE ENQUIRY

1.0 Event Information

1.1 Scope of work

Open Tenders are invited through e-tender bidding process from interested Bidders for entering into a Contracts as defined below :

Line Item no.	Work Description	EMD Amount (Rs.)	Tender Fee (Rs.)
1.	SITC for UG cabling work for shifting of 33 KV Tulasipur I & II feeder from Jobra primary S/s to Medical premises S/s due to widening of road for re development of SCB Medical, Cuttack under CDD-I, Cuttack	6,23,000/-	5,000/-

Note: Tender fee is inclusive of GST

1.2 Availability of Tender Documents

Please Refer "Procedure to participate in the e-Tender".

1.3 Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website	From 03.09.2020 Onwards
(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure to Participate in Tender"	15.09.2020, 15:00 Hrs
(c)	Date & Time of Pre-Bid Meeting (If any)	NA
(d)	Last Date of receipt of pre-bid queries, if any	18.09.2020 up to 15:00 Hours
(e)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	22.09.2020
(f)	Last date and time of receipt of Bids through AIBA E-Tender Portal	28.09.2020 up to 15:00 Hours
(g)	Date & Time of opening of Price of qualified bids	Bidders Will be notified to successful bidder through e mail

Note :- In the event of last date specified for submission of bids and date of opening of bids is declared as a closed holiday for TPCODL, Bhubaneswar office the last date of submission of bids and date of opening of bids will be the following working day at appointed times.

1.4 Mandatory documents required along with the Bid

1.4.1 EMD of requisite value and validity
1.4.2 Tender Fee of requisite value
1.4.3 Price Bid as per the Price Schedule mentioned in Annexure-I (BOQ).
1.4.4 Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.
1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
1.4.6 Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.
1.4.7 Duly signed and stamped "Acceptance Form for participation in Reverse Auction" As per Annexure VI on bidder's letter head.
1.4.8 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.

Please note that in absence of any of the above documents, the bid submitted by a bidder shall be liable for rejection.

1.5 Deviation from Tender

Normally, the deviations to tender terms are not admissible and the bids with deviation are liable for rejection. Hence, the bidders are advised to refrain from taking any deviations on this Tender. Still in case of any deviations, all such deviations shall be set out by the Bidders, clause by clause in the 'Annexure III - Schedule of Deviations' and same shall be submitted as a part of the Technical Bid.

1.6 Right of Acceptance/ Rejection

Bids are liable for rejection in absence of following documents:-

1.6.1 EMD of requisite value and validity
1.6.2 Tender fee of requisite value
1.6.3 Price Bid as per the Price Schedule mentioned in Annexure-I (BOQ).
1.6.4 Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.
1.6.5 Filled in Schedule of Deviations as per Annexure III
1.6.6 Filled in Schedule of Commercial Specifications as per Annexure IV
1.6.6 Acceptance Form for participation in Reverse Auction" as per Annexure VI
1.6.7 Receipt of Bid within the due date and time

TPCODL reserves the right to accept/reject any or all the bids without assigning any reason thereof.

1.7 Qualification Criteria

1. *The bidder should have average annual turnover of Rs.3 Crore in last three years (FY 16-17, FY 17-18 and FY 18-19). Audited balance sheet, profit and loss account and auditors report from the statutory auditors of the company required.*

2. Experience: Bidder should have at least three years experience in executing following works
(a) 33 or 11 KV DP Structure : 1 No

(b) 33 or 11 KV UG cable works : 1 Km

3. Bidder must have all statutory compliance like valid PAN, ESI registration, EPF registration and GSTN registration.

4. Bidder should have a valid HT Electrical license issued by Govt. of Odisha for carrying out electrical works in Odisha Copy of license required. In case bidder is not having this license bidder shall submit an undertaking that in case they are successful bidder, license shall be obtained before execution of contract.

1.8 Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts. Bidders must agree to these rules prior to participating. In addition to other remedies available, TPCODL reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the General Condition of Contracts. A bidder who violates the market place rules or engages in behavior that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace
- Breach of terms as published in TENDER/NIT

1.9 Supplier Confidentiality

All information contained in this tender is confidential and shall not be disclosed, published or advertised in any manner without written authorization from TPCODL. This includes all bidding information submitted to TPCODL. All tender documents remain the property of TPCODL and all suppliers are required to return these documents to TPCODL upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

2.0 Evaluation Criteria

- The bids will be evaluated technically on the compliance to tender terms and conditions.
- The bids will be evaluated commercially on **overall all inclusive price of tender BOQ** as calculated in Schedule of Items *[Annexure I]* .TPCODL reserves the right to split the order line item wise and / or quantity wise, among more than one Bidder. Hence all bidders are advised to quote their most competitive rates.
- Bidder has to mandatorily quote as per schedule of item [Annexure-I]. Failing to do so TPCODL may reject the bid.

NOTE: In case of a new bidder not registered, inspection of their any other site and evaluation shall be carried out to ascertain bidder's capability and quality procedures. However TPCODL reserves the right to carry out site inspection and evaluation for any bidder prior to technical qualification. In case a bidder is found as Disqualified in the factory evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of TPCODL shall be final and binding on the bidder in this regard.

2.1 Price Variation Clause: The prices shall remain **firm** during the entire contract period.

2.2 Quantity variation Clause: There will not be any guarantee on quantity of job. Job has to be carried out on as and when required basis order from TPCODL on the quantity to be specified in the order.

3.0 Submission of Bid Documents

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document through e-tendering process.

Please note all future correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc will happen only through TPCODL E-Tender system (Ariba).

No e-mail or verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Bids shall be submitted in 3 (Three) parts:

FIRST PART: "EMD" as applicable shall be submitted. The EMD shall be valid for 210 days from the due date of bid submission in the form of NEFT/ RTGS / Bank Guarantee / Bank Draft / Bankers Pay Order (issued from a Scheduled Bank) in favoring 'TP Central Odisha Distribution Limited" payable at Bhubaneswar. The EMD (BG) has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted and the bid as submitted shall be liable for rejection. A separate non-refundable tender fee of stipulated amount also needs to be transferred online through in case the tender document is downloaded from our website.

TPCODL/ TPCODL Bank Details for transferring Tender Fee and EMD is as below:

Account Name: TP Central Odisha Distribution Limited
Bank Name: SBI, IDCO Towers, Bhubaneswar
Bank Account No. : 10835304915
IFSC Code : SBIN0007891

EMD Original Hard Copy shall be delivered at the following address in Envelope clearly indicating Tender Reference/ Enquiry Number, Name of Tender and Bidder Name

Chief (Procurement & Stores)
TP CENTRAL ODISHA DISTRIBUTION LIMITED
2ND FLOOR, IDCO TOWERS, JANAPATH, BHUBANESWAR- 751022

SECOND PART: "TECHNICAL BID" shall contain the following documents:

a) Documentary evidence in support of qualifying criteria mentioned as clause 1.7 of this tender documents
b) No Deviation Certificate as per the Annexure III – Schedule of Deviations
c) Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
d) Acceptance Form for participation in Reverse Auction as per the Annexure VI
e) Quality Assurance Plan *(where applicable)*

The technical bid shall be properly indexed and is to be submitted through TPCODL E-tender System (Ariba) only. Hard Copy of Technical Bids need not be submitted.

THIRD PART: "PRICE BID" shall contain only the price details and strictly in format as mentioned in Annexure I with explicit break up of basic prices, Taxes & duties, Freight etc. In case any discrepancy is observed between the item description stated in Schedule of Items mentioned in the tender and the price bid submitted by the bidder, the item description as mentioned in the tender document (to the extent modified through Corrigendum issued if any) shall prevail. Price Bid is to be submitted in soft copy through TPCODL E-Tendering system (Ariba) only. **Hard copy of Price Bid not be submitted**.

SIGNING OF BID DOCUMENTS:

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

The Bid being submitted must be signed by a person holding a Power of Attorney authorizing him to do so, certified copies of which shall be enclosed.

The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons signing the Bid on behalf of the Company. Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.

A bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.

The Bidder's name stated on the Proposal shall be the exact legal name of the firm.

3.2 Contact Information

Please note all correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc will happen only through TPCODL E-Tender system (Ariba).

No e-mail or verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Communication Details:

Package Owner

Name: Mr. Arabinda Sahu, AM- Procurement

Contact No: 9438319343

E-Mail ID: arabinda.sahu@tpcentralodisha.com

Escalation Matrix

Name: Mr. D.P. Das, Sr.GM

Contact No: 9438297571

E-Mail ID: deba.das@tpcentralodisha.com

Bidders are strictly advised to communicate with Package Owner through TPCODL E-tender System (Ariba) only. They need to pay Tender Participation Fee and receive the Ariba log-in. Above escalation details are for reference purpose only.

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply / work for individual items and Taxes & duties. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of TPCODL. The all-inclusive prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.

The quantity break up shown else-where other than Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated in the price schedule but which are required to complete the job as per the Technical Specifications / Scope of Work mentioned in the tender, shall be deemed to be included in prices quoted.

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only.

3.5 Period of Validity of Bids

Bids shall remain valid for 180 days from the due date of submission of the bid.

Notwithstanding clause above, the TPCODL may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and responses thereto shall be made in writing.

3.6 Alternative Bids

Bidders shall submit Bids, which comply with the Bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the bidding documents.

3.7 Modifications and Withdrawal of Bids

The bidder is not allowed to modify or withdraw its bid after the Bid's submission. The EMD as submitted along with the bid shall be liable for forfeiture in such event.

3.8 Earnest Money Deposit (EMD)

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. The EMD is required to protect the TPCODL against the risk of bidder's conduct which would warrant forfeiture.
The EMD shall be denominate in any of the following form:

- Banker's Cheque/ Demand Draft/ Pay order drawn in favor of TP Central Odisha Distribution Limited payable at Bhubaneswar.
- Online transfer of requisite amount through NEFT/ RTGS.
- Bank Guarantee valid for 210 days after due date of submission.

The EMD shall be forfeited in case of:

a) The bidder withdraws its bid during the period of specified bid validity.

Or

b) The case of a successful bidder, if the Bidder does not
i) accept the purchase order, or
ii) furnish the required performance security BG

3.9 Type Tests

The type tests report of the approved make specified in TPCODL specifications should have been carried out within five years prior to the date of opening of technical bids and test reports are to be submitted along with the bids. If type tests carried out are not within the five years prior to the date of bidding, the bidder will arrange to carry out type tests specified, at his cost. The decision to accept/ reject such bids rests with TPCODL.

4.0 Bid Opening & Evaluation process

4.1 Process to be confidential

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the TPCODL's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

4.2 Technical Bid Opening

The bids shall be opened internally by TPCODL. Participating Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened.

First the envelope marked "EMD" will be opened. Bids without EMD/ cost of tender (if applicable) of required amount/ validity in prescribed format, shall be rejected.

4.3 Preliminary Examination of Bids/ Responsiveness

TPCODL will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. TPCODL may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the

total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

Prior to the detailed evaluation, TPCODL will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

Bid determined as not substantially responsive will be rejected by the TPCODL and/or the TPCODL and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

4.4 Techno Commercial Clarifications

Bidders need to ensure that the bids submitted by them are complete in all respects. To assist in the examination, evaluation and comparison of Bids, TPCODL may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the TPCODL specifications and attempt will be made to bring all bids on a common footing. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted owing to any clarifications sought by TPCODL. After all techno commercial issues are clarified, price bids will be opened internally by TPCODL.

4.5 Price Bid Opening

Price Bid of only Technically qualified Bidders shall be considered and open internally by TPCODL. Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Price Bids are opened.

The EMD of the bidder withdrawing or substantially altering his offer at any stage after the technical bid opening will be forfeited at the sole discretion of TPCODL without any further correspondence in this regard.

4.7 Reverse Auctions

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products/ services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached as Annexure VI of this document. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form attached as Annexure VI as a token of acceptance for the same.

5.0 Award Decision

TPCODL will award the contract to the successful bidder whose bid has been determined to be the lowest-evaluated responsive bid as per the Evaluation Criterion mentioned at Clause 2.0. The Cost for the said calculation shall be taken as the all-inclusive cost quoted by bidder in Annexure I (Schedule of Items) subject to any corrections required in line with Clause 4.3 above. The decision to place rate contract / purchase order / LOI solely depends on TPCODL on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that TPCODL may deem relevant.

TPCODL reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without assigning any reason thereof.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and TPCODL reserves the right to award other suppliers who are found fit.

6.0 Order of Preference/Contradiction:

In case of contradiction in any part of various documents in tender, following shall prevail in order of preference:

1. Schedule of Items (Annexure I)
2. Post Award Contract Administration (Clause 7.0)
3. Submission of Bid Documents (Clause 3.0)
4. Scope of work and SLA (Annexure-VII)
5. Technical specification (Annexure-II)
6. Acceptance form for participation in reverse auction (Annexure VI)
7. General Conditions of Contract (Annexure- VIII)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

- After finalization of tender, work order shall be issued on successful bidder. Prices shall remain firm till validity of contract. Within the validity of contract and as per requirement of material, release order shall be issued time to time.
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of rate contract. PBG applicable shall **10%** of order Value. PBG submitted, shall be released after completion of applicable guarantee period plus one month.
- Any change in statutory taxes, duties and levies during contract period shall be borne by TPCODL. However, in case of delay in work execution owing to reasons not attributable to TPCODL, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPCODL.
- The free issue materials (if any) shall be supplied from TPCODL store which shall be transported by the BA to the work site at BA's Cost. Similarly, dismantled Materials (if any) shall be returned to the TPCODL store at BA’s cost.
- All other terms and conditions of TPCODL GCC shall be applicable.

7.2 Drawing Submission & Approval

BA shall submit complete drawing and GTP within 15 days of issue of order. All drawing/ technical document shall be submitted by BA in one go. TPCODL shall provide approval within 7 days of receipt of all drawing/ technical documents. Any revision shall be submitted by BA within 4 days of intimation.

7.3 Delivery Terms

Completion period for entire project shall be **6 months** from the date of issue of order.

7.4 Guaranty Period

The materials to be supplied by the contractor shall be guaranteed for satisfactory operation against defects in design and workmanship for a period of 24 months from the date of handing over the completed installations.

Any defects noticed during the above period should be rectified by the Contractor free of cost provided such defects are due to faulty design, bad workmanship or bad materials used on receipt of written notice from the Purchaser.

7.5 Payment Terms

After completion of the installation work at site and acceptance by TPCODL, BA shall submit the certified RA bills / invoices in original in monthly basis to the concerned department.

Payment shall be released **within 45 days** of the receipt of the invoices (RA/ Final Bills) complete in all respects.

7.6 Climate Change

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change. Please refer attached Environment Policy and Sustainability Policy, Annexure-XI, of Tata Power for more details.

7.7 Ethics

- TPCODL is an ethical organization and as a policy TPCODL lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.
- TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:
- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer attached Tata Code of Conduct (TCOC), Annexure-X, for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID: purchase@cescoorissa.com & pkjain@tatapower.com

8.0 Technical Specification and standards:

Attached in Annexure-II

9.0 General Condition of Contract

Any condition not mentioned above shall be applicable as per GCC. Attached along with this tender in Annexure VIII.

Any condition not mentioned above shall be applicable as per GCC for Supply attached along with this tender.

10.0 Safety

All jobs are this tender have to be executed strictly in compliance to the Safety terms and Conditions of Tata Power. Please refer attached Safety terms and conditions, Annexure-IX, for details. Violation of Safety norms will result in Penalty as mentioned in the above document. Safety Policy of Tata Power is also enclosed for reference.

NIT No.: TPCODL/P&S/55/2020-21

ANNEXURE I

Schedule for Items (BOQ)

Rate to be quoted as per BOQ given below:

	UG cabling work for shifting of 33 KV Tulashipur I & II feeder from Jobra primary S/s to Medical premises S/s due to widening of road for re development of SCB Medical under CDD-I, Cuttack									
Sl. No.	**Name of Materials**	**Unit**	**Quantity**	**Supply**			**Erection**			**Total Amount (In Rs.)**
				Unit Rate (In Rs.)	**GST (In Rs.)**	**Total Rate with GST (In Rs.)**	**Unit Rate (In Rs.)**	**GST (In Rs.)**	**Total Rate with GST (In Rs.)**	
a	**b**	**c**	**d**	**e**	**f**	**g= (e+f) x d**	**h**	**i**	**j=(h+i) x d**	**k= g+j**
A	**Laying of 33 KV 3core 400 mm2 XLPE UG Cable taped from for Tulasipur- I & II over head line at Jobra primary substation : 1 Km Double Ckt**									
1	3Cx 400 mm2 33KV XLPE Cable (Armoured) A2XFY	Mtr	4100							
2	Heat shrinkable jointing Kit for 3Cx 400 mm2 33KV XLPE Cable (Straight through type)	No	16							
3	Heat shrinkable jointing Kit for 3Cx 400 mm2 33KV XLPE Cable (Outdoor type)	No	8							
4	Sundries	LS	1							

	Civil Works									
5	Trench & Brick Masonary work with slab for laying of cable , Cable trench 1 meter width x1 meter depth & with RCC cover as per the specification for laying of cable & sand filling for the protection of cable	Mtr	2000							
6	Loop chamber with excavation of soil with size 3.5 mtr x3.5 mtr x1.5 mtr depth. The chamber shall be filled with sand before and after looping of cable and then putting of PCC tiles on the filled sand. Finally, the chamber shall be filled by soil.	No	2							
B	**Construction of 4 pole with AB switch (Isolator type) Arrangement- 2 Nos**									
1	150X150 mm RS Joist (13 mtr) (8 Nos)	Kg	3598.4							
2	100 x 50 x 6 mm MS channel	Kg	600							
3	75 x 40 x 6 mm MS channel	Kg	1200							
4	65 x 65 x 6 mm MS angle	Kg	800							
5	33 KV Disc Insulator (B&S)	No	72							
6	33 KV H/ W fitting (B&S)	Pair	24							
7	33 KV AB switch (400 Amp)	Set	6							

8	33 KV LA	No	18							
9	Earthing Device (G.I. Pipe)	No	16							
10	Earthing complete with supply of Charcoal , salt etc by contractor (Excluding earthing device)	No	16							
11	25 x 3 mm G.I. Flat for earthing (8 nos)	Kg	192							
12	Assorted size nuts and bolts	Kg	100							
13	MS Washer	Kg	8							
14	Alumunium binding wire / tape	Kg	4							
15	100 mm2 AAA Conductor for jumpering	Km	0.12							
16	Red oxide paint	Ltr	12							
17	Aluminium paint	Ltr	8							
18	Black paint	Ltr	4							
19	Concreting of Pole pits as per the specification	No	8							
20	Cooping of Pole Pits as per the specification	No	8							

21	33 KV Danger Board	No	8							
22	Sundries	LS	1							
	Total (in Rs.)									

Figures : Rupees ……Only

Signature & Seal of the Bidder

NOTE:

* The bids will be evaluated commercially on the overall all inclusive price of tender BOQ.
* The unit price should be inclusive of freight, insurance and other levies (if any) and exclusive of GST. GST to be mentioned separately.
* The bidders are advised to quote prices strictly in the above format. Failing to do so, bids are liable for rejection.
* The bidder must fill each and every column of the above format. Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.
* No cutting/ overwriting in the prices is permissible

.

ANNEXURE II

Technical Specification attached separately with the tender

ANNEXURE III

Schedule of Deviations

Bidders are advised to refrain from taking any deviations on this TENDER. Still in case of any deviations, all such deviations from this tender document shall be set out by the Bidders, Clause by Clause in this schedule and submit the same as a part of the ***Technical Bid.***

Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the TPCODL's specifications:

S. No.	Clause No.	Tender Clause Details	Details of deviation with justifications

By signing this document we hereby withdraw all the deviations whatsoever taken anywhere in this bid document and comply to all the terms and conditions, technical specifications, scope of work etc. as mentioned in the standard document except those as mentioned above.

Seal of the Bidder:

Signature:

Name:

ANNEXURE IV

Schedule of Commercial Specifications

(The bidders shall mandatorily fill in this schedule and enclose it with the offer Part I: Technical Bid. In the absence of all these details, the offer may not be acceptable.)

S. No.	Particulars	Remarks
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm / Variable
1a.	If variable price variation on clause given	Yes / No
1b.	Ceiling	--------- %
1c.	Inclusive of GST	Yes / No (If Yes, indicate % rate)
1d.	Inclusive of transit insurance	Yes / No
2.	Delivery	Weeks / months
3.	Guarantee clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages clause acceptable	Yes / No
7.	Validity (180 days) (From the date of opening of technical bid)	Yes / No
8.	Inspection during stage of manufacture	Yes / No
9.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
10.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
11.	Covered under Micro, Small & Medium Enterprises Act,2020	Yes / No (If Yes, indicate, MSME Reg'n No.)

ANNEXURE V

Checklist of all the documents to be submitted with the Bid

Bidder has to mandatorily fill in the checklist mentioned below:-

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this RFQ	
3	Company profile/ organogram	
4	Signed copy of this RFQ as an unconditional acceptance	
5	Duly filled schedule of commercial specifications (Annexure IV)	
6	Sheet of commercial/ technical deviation if any (Annexure III)	
7	Balance sheet for the last completed three financial years; mandatorily enclosing Profit & loss account statement	
8	Acknowledgement for Testing facilities if available (duly mentioned on bidder letter head)	
9	List of Machine/ tools with updated calibration certificates if applicable	
10	Details of order copy (duly mentioned on bidder letter head)	
11	Order copies as a proof of quantity executed	
12	Details of Type Tests if applicable (duly mentioned on bidder letter head)	
13	All the relevant Type test certificates as per relevant IS/ IEC (CPRI/ ERDA/ other certified agency) if applicable	
14	Project/ Supply Completion certificates	
15	Performance certificates	
16	Client Testimonial/ Performance Certificates	
17	Credit rating/ Solvency certificate	
18	Undertaking regarding non blacklisting (On company letter head)	
19	List of trained/ Untrained Manpower	

Annexure VI

Acceptance Form for Participation In Reverse Auction Event

(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out-rightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at TPCODL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by TPCODL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder

ANNEXURE VII

SCOPE OF WORK

1. Laying of double circuit 3 core 33 KV XLPE UG cable in trench method for conversion of 33 KV Tulasipur OH feeder – I & II from Jobra primary S/s to Medical primary S/s due to widening of road for re development of SCB MCH : 4.1 Km
2. Jointing of cable by straight and end termination kit as per BOQ/ schedule of item.
3. Construction cable trench of 1 mtr width and 1 mtr depth with filling of sand and covering slab arrangement as per the specifiaction
4. Construction of 4 pole structure with AB switch arrangement: 02 Nos
5. The detail route survey to be conducted including route map
6. Complete manufacture, including shops testing & supply of materials from the approved vendor (materials which are to be supplied by the bidder)
7. Providing Engineering drawings related to scope of work for the Owner's approval;
8. Loading, transportation and Unloading from TP Central Orissa Distribution Co. Ltd. store/site to other site or vice versa.
9. ROW issues will be resolved by the bidder. TPCODL extend support to BA in ROW arrangement.
10. Liaising with autonomous body (Govt. Department- Development Authority /Municipality/NHAI/R&B/ Forest etc.) is under scope of bidder. Fees of Govt Department will be paid by TPCODL.
11. Necessary statutory clearance from Electrical Inspector of Odisha & any other authority for energizing the Circuit shall be in the scope of this tender. However, any statutory fees shall be borne by TPCODL on production of documentary evidence.
12. Bidders are requested to visit the site to understand the scope of work, site conditions and requirement prior to bidding. Hence, no price/time escalation shall be admissible on these accounts.
13. Prior erecting any extra items for these scheme- rates should be approved from competent authority.
14. The Bidder should have own Safety equipment like Neon Tester, Portable Earth, Earthing discharge rod etc. along with Calibration certificates of all equipment.
15. Successful Bidder has to ensure safety and Quality of job at site for whole duration and they have to submit the safety report and quality report to TPCODL if required.
16. Taking Over: After commissioning of the complete system and final approval of Electrical Inspector & compliance to punch points observed to the satisfaction of Projects as per statutory requirements, system shall be handed over to TPCODL. Incase taking over by TPCODL is delayed because of reasons not attributable to BA, taking over certificate will be issued by TPCODL & Retention money will be released. It would be considered to be deemed taking over by TPCODL after fully compliance by bidder to all applicable successful testing & compliance to Inspections carried out to the satisfaction of TPCODL Projects & further taking over is pending due to reasons attributable to TPCODL beyond a period of one month. However, Retention amount shall be cleared after 03 months at the option of bidder after successful Pre commissioning & EI clearance subject to

fulfilling of other terms of Tender (i.e. Submission of EPBG etc) & submission of undertaking from bidder to provide fullest support in future at the time of commissioning.

17. Any change in statutory taxes, duties and levies during the contract period shall be borne by TPCODL. However, in case of delay in work execution owing to reasons not attributable to TPCODL, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPCODL.
18. There will be no price escalation given to bidder after issue the RO even if there is delayed the project due to ROW permission.
19. Quotation in all BOM items is mandatory, and bid shall be rejected if any line of found blank in un price bid.
20. Statutory Variations: Any changes in existing taxes/ Duties and levies, Introduction of new taxes and duties etc. during the period of the contract shall be paid at actual to BA subject to BA shall submit the tax break up in details, however, where BA has quoted the all-inclusive prices and not shown the tax break-up, this clause will not be applicable. The date of issue of MDCC shall be used for this purpose.
21. Guarantee period: 24 months from Handing over.
22. In case any additional material is to be asked to supply after finalization of scope of work in the detailed Engineering, the Extra price and the extension of delivery time (if applicable) as the case may be mutually agreed between TPCODL and Successful Bidder.
23. Proving the steel barricading/ any other (as per site requirement) as per TPCODL specification will be in Bidder scope, TPCODL will not give any additional cost for this activity. This line item is not mentioned in Tender BOQ and no extra item will be paid to successful bidder in future for this activity.
24. Normal De-watering will be in bidder scope, TPCODL will not give additional cost for this activity, but if there will be huge de-watering or level of water is huge than prices for this activity will be decided mutually. In this case successful bidder has to provide the details back up for this activity.
25. Loading, Unloading & Transportation of all the scrap material to be stacked counted (where material supplied by BA) and loading unloading, transportation of this scrap to TPCODL site/Store as per direction of Engg In-Charge will be in bidder scope.
26. Crane/ New Generation Hydra shall be used for loading, unloading, handling & erection of equipments at site. Normal Hydra shall not be used at site. In case of site related issues where crane or New Gen Hydra cannot be used due to site constraint or other reasons, the Normal Hydra can be used only post receipt of permission from TPCODL E-I-C.
27. Sign writing of equipments/ poles where ETC of such equipments is also in bidder scope shall be in bidder scope. No additional price shall be given to BA.
28. Providing Infrastructure and Supporting to Jointer for making the joints in HT/LT in O/H Line and underground line shall be in bidder Scope. This item shall not be paid additional.
29. Watch & Ward, de-watering (normal) shall be in bidder scope.
30. Wherever TPCODL specifications are not available relevant IS/IEC to be followed. All Drawings mentioned in the Tender Specification and other required for the completeness of the tender shall be submitted. Drawing

submission process shall not be deemed complete of all the requirements are not complied during the submission of the same.

31. The successful bidder has to follow the Contract safety management (CSM) as per GCC. The penalty will be imposed on the bidder for any safety violence as per CSM matrix.
32. The scope of supply items- includes design, Engineering, Manufacturing; testing, loading, unloading, transportation to site storage, preservation, insurance, along with supply of all accessories, tools, spares, O&M catalogs for successful ITC is in the scope of Bidder.

Annexure VIII

General Conditions of Contract – Attached separately

Annexure IX

Safety Policy and Safety terms and conditions.

1. Definitions

1.1 Order Manager: Order Manager is the Tata Power representative, who has the ownership of the given job under the signed contract.

1.2 ServiceProvider/Contractor/vendor:Anindividualoranorganizationthatprovides servicestoTataPower underasignedcontract.

1.3 Site Safety Management Plan: It is the safety plan agreed between Contractor /service provider & Tata Power. It will contain the entire job specific safety requirement and will be signed by the service provider.High RiskJob: Any job which has significant health and safety risk associated to it. The list of high risk jobs has been identified at Tata Power level. Emergency: a serious, unexpected, business discontinuity and often dangerous situation resulting loss of revenue/property and requiring immediate action.

2. SafetyPolicy

TATA

HEALTH AND SAFETY POLICY

Tata Power is committed to provide safe and healthy working environment for the prevention of work related injuries and ill-health. Safety is one of our core values. We strive to be a leader in safety excellence in the global power and energy business. In pursuit of this, we are committed to the following:

- Maintain and continually improve our management systems to eliminate hazards and reduce health & safety risks to all our stakeholders.
- Incorporate appropriate health & safety criteria into business decisions for selection of plant and technology, performance appraisal of individuals and appointments in key positions.
- Comply and endeavour to exceed all applicable health & safety legal and other requirements
- Integrate health & safety procedures and best practices into every operational activity with assigned line-functional responsibilities at all levels.
- Involve our employees and business associates in maintaining a safe and healthy work environment through consultation and participation
- Inculcate safety culture by visible leadership and empowerment.
- Ensure required competency to enable our employees and business associates for working safely.
- Promptly report incidents, investigate, share crucial learnings and prevent recurrences.
- Influence our business associates in enhancing their health and safety standards and align with Tata Power's health & safety codes and practices.
- Set safety & health metrics as indicators of excellence, monitor progress and continually improve health and safety performance.

We shall ensure the availability of appropriate resources at all times to fully implement and communicate this policy to all stakeholders by suitable means and periodically review its relevance in continuously changing business environment.

(Praveer Sinha)
CEO & Managing Director

Date: 11th March, 2019

TATA POWER
Lighting up Lives!

3. Safety Organization & Responsibilities

4.1 Contractor Site Management and Supervision

Each Contractor will be responsible for fulfilling all statutory and safety requirements as per the laws of the land and not limited to Factory Act, Electricity Act, Electricity Rules and Regulations, Shop and Establishment Act etc.

Each Contractor shall provide at least one competent full time safety supervisor for workforce of less than 100 numbers. When workforce ranges from 100 to 1000, the contractor has to provide at least one qualified safety officer and safety supervisors (reporting to the safety officer) in the ratio 1:100. For every 1000 addition in workforce, the contractor has to add 1 safety officer. The Tata Power Project Safety Manager will review and approve the appointment of all safety supervisors. Contractor/Subcontractor safety supervisors/officers will work with Tata Power Safety Managers and align themselves with Tata Power safety requirements.

Each Contractors'/Subcontractors' Site Manager is responsible, and will be held accountable, for the safety of their subcontractors and workforce and for ensuring that all equipment, materials, tools and procedures remain in safety compliance at job site, including:

- 4.1.1 Holding officer/supervisors accountable for safety and actively promote safe work performance.
- 4.1.2 Participate in and cooperate with all safety program requirements to be implemented in order to meet Tata Power safety objectives.
- 4.1.3 Ensure timely reporting of safety incidents, near misses, unsafe acts and conditions.
- 4.1.4 Identify the training needs of its employees and maintain all safety training documents.
- 4.1.5 Provide safety performance report at an agreed frequency.
- 4.1.6 Stopping of unsafe work (acts and/or conditions) immediately, until corrective action be taken.

4.2 Contractor Supervisors and General Staff

Contractors' site supervisors and general staff members in charge of job site functions such as field engineering, warehousing, purchasing, cost and scheduling, etc. are responsible for the safe performance of the work of those they supervise. They must set an example for their fellow employees by being familiar with applicable sections of the Site Safety program and ensuring that all site activities are performed with SAFETY as the primary objective.

Each site supervisor is responsible and will be held accountable for identifying, analyzing and eliminating or controlling all hazards through implementation of an aggressive, pro-active Health, Safety and Environmental Program from project inception through project completion. Each supervisor will proactively participate in the SHE program by observing, correcting unsafe acts, and recording these observations.

4.3 Contractor Workforce

Contractor workforce must make safety a part of their job by following safety rules and regulations and by using all safeguards and safety equipments. They must take an active part in the Site Safety program to ensure their own safety and injury-free employment as well as being alert to unsafe practices of their fellow employees.

Every member of the workforce is expected to report for work without influence of any Drug/Alcohol. All employees are expected to report any hazardous conditions practices and behaviors in their work areas and correct where ever

possible.Workforce is responsible for active participation in safety and health programs, suggestion systems,trainingsandin immediatereportingofallinjuries,anyunsafepractices,conditionsor incidentstotheirsupervisors.

4.4 Vendor/Contractor

Vendors/Contractor shall at all times comply with, and ensure that their workforce comply with all site safety rules and regulations. Specifically, with applicable provisions of the Tata Power Site Safety Management Plan, and all statutory safety rules and regulations.

4. Site Safety Rules and Procedures:

The work in the safest possible manner can only happen when it has been carefully planned and all applicable procedures are followed. The Tata Power Safety Procedures are derived from Tata Power best practices and the applicable Government acts regulations. In each case, the most stringent regulation is used.

Following is the list of Tata Power's critical Safety Rules and Procedures. Contractor shall refer to approved Rules and Procedures for detailed requirements and ensure conformance.

5.1 Lock Out and Tag Out Procedure

This procedure is intended to be used for the protection of Personnel while servicing or performing maintenance on equipment / pipeline / vessel / process systems. This is a general procedure that shall be used as the minimum requirements for isolation of equipment, pipelines, machines, system from all possible sources of hazardous energy and / or material such as Steam, Hot Water, Compressed Air, any other process fluid / chemical energy/Mechanical energy or Electrical energy. For complete procedure kindly refer Procedure Document No. TPSMS/CSP/LOTO/001 REV 01 available on official website of Tata Power (www.tatapower.com)

5.2 Excavation Safety (Shoring and Sloping) Procedure

This procedure is developed to cover the safe practices required for shoring and sloping in excavation and trenching jobs. This procedure is developed to establish mandatory requirements for practices to protect personnel, property and equipment from hazards associated with above activities. For complete procedure kindly refer Procedure Document No TPSMS/CSP/EXS/002 REV 01 available on official website of Tata Power (www.tatapower.com)

5.3 Confined Space Entry Procedure

This procedure outlines the steps required to perform the confined space entry and to protect personnel from the hazards of entering and conducting operations in confined spaces. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/CSE/003 REV 01 available on official website of Tata Power (www.tatapower.com)

5.4 Working at Height Procedure

This procedure describes the rules and procedures to protect employees from the hazards of working at heights.

This procedure is developed to cover the safe practices required for Working at Heights. This procedure is developed to establish mandatory requirements for practices to protect personnel from hazards associated in this area. For complete procedure kindly refer Procedure Document No –TPSMS/CSP/WAH/004 REV 01 available on official website of Tata Power (www.tatapower.com)

5.5 Heavy Equipment Movement Safety Procedure

Heavy equipment lifting and movement is an activity involving loading, unloading, storage and movement from one place to another including lifting and erection or repairing of equipment with cranes or hoists. Material, machinery and equipment handling operations are being carried out by large capacity cranes and hoists, which make the job safer and faster. This procedure addresses the hazards

and precautions associated with such equipment and their use. For complete procedure kindly refer Procedure Document No –TPSMS/CSP/HEMS/005 REV 01 available on official website of Tata Power (www.tatapower.com)

5.6 Mobile Crane Safety Procedure

Mobile cranes are responsible for many incidents, injuries. Falling loads from mobile cranes pose a severe hazard to operators and nearby workers and property. Many types of cranes, hoists, and rigging devices are used for lifting and moving materials. To maintain safe, appropriate standards has to be adhered to and only qualified and licensed individuals shall operate these devices. For complete procedure kindly refer Procedure Document No –TPSMS/CSP/MCS/006 REV 01.

5.7 Scaffold Safety Procedure

This procedure is developed to provide information on the safe erection, use, dismantling and maintenance of access scaffolding in the workplace. It is developed to establish mandatory requirements for practices to protect personnel from hazards associated with erection, use and dismantling of scaffolds. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/SCAF/007 REV 01 available on official website of Tata Power (www.tatapower.com)

5.8 Electrical Safety Procedure

The objective of these standards is to specify minimum mandatory requirements and advisory guidance for identifying and controlling hazards to ensure 'Zero Harm' with regard to operation maintenance and testing of electrical equipment. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/ELEC/010 REV 01 available on official website of Tata Power (www.tatapower.com)

5.9 Job Safety Analysis (JSA) Procedure

This objective of this procedure is to have a task based risk assessment process in place that identifies, evaluates and controls the risks associated with work activities, and as a result, prevents those involved in the task or those potentially affected by the task, from being harmed. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/JSA/009 REV 01 available on official website of Tata Power (www.tatapower.com)

5.10 Fire Safety Management Procedure

Objective of This standard is to specify the minimum mandatory requirements and advisory guidelines to ensure prevention of fire related incidents and managing / controlling their impacts if they do occur. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/FSM/011 REV 01

5.11 Permit To Work Procedure

Given the inherent hazards of the power generation and distribution industry, a significant number of TATA POWER operations and installations are critical. Work Permit (WP) System is an essential element in controlling the workplace risks in an effective manner. For complete procedure kindly refer Procedure Document No –TPSMS/CSP/PTW/008 REV 01 available on official website of Tata Power (www.tatapower.com)

5.12 Lift (Elevator) Safety Procedure

To provide safe operating procedure for taking control of lift car before entering and existing the pit of OTIS make elevators. For complete procedure kindly refer Procedure Document No – TPSMS/GSP/LIFT/001 REV 01 available on official website of Tata Power (www.tatapower.com)

5.13 Working on conveyor belt Procedure

This procedure is developed to cover the safe practices required for Working on live equipment and to protect personnel from hazards associated with it. For complete procedure kindly refer Procedure Document No – TPSMS/GSP/CONV/002 REV 01 available on official website of Tata Power (www.tatapower.com)

5.14 Handling Hazardous Materials Procedure

This Procedure is developed to provide procedure for recycling and / or safe disposal of used / waste batteries in compliance with all legislation. For complete procedure kindly refer Procedure Document No-TPSMS/GSP/HAZM/003 REV 01 available on official website of Tata Power (www.tatapower.com)

5.15 Material Handling and Storage Procedure

The purpose of this document is to provide procedures to assist the safe handling of materials (manual handling and mechanical handling). For complete procedure kindly refer Procedure Document No – TPSMS/GSP/MATL/004 REV 01 available on official website of Tata Power (www.tatapower.com)

5.16 Contractor Safety Management Procedure

The purpose of this document is to engage with contractors in a way to create safe work environment for everyone working for Tata Power. For complete procedure kindly refer Procedure Document No – TPSMS/GSP/CSM/015 REV 01 available on official website of Tata Power (www.tatapower.com)

The above procedures will be updated periodically and the updated version of the procedures as well as any additional critical procedure will be available on official website of Tata Power (www.tatapower.com) for your reference.

5. Training and Capability Building

Safety Training and capability building of workforce is a major component of safety management program. All training required must be provided and documented as specified by Tata Power and Indian Regulations. Tata Power Safety Manager will audit contractors training and related documentation to assure its adequacy.

6.1 Tata Power Site Safety Orientation

All Tata Power contractor and subcontractor workforce is required to attend Tata Power Site Safety Orientation Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry.

This Safety Orientation Course will be for duration of minimum half day. The information provided during the orientation will include, but is not limited to following:

1. Job rules, personal safety and conduct
2. Hazards reporting
3. Reporting of injuries
4. Emergency procedures
5. Safety Activities and Program including disciplinary measure and incentives.
6. Critical safety procedure relevant to the job

6.2 Capability Building

Appropriate training such as L1, L2 & L3 is given to ensure that a jobholder, either supervisor or worker, is competent to do his/her job safely. The skill training is provided through TPSDI and other agencies authorized by Tata Power on the list of 15 procedures mentioned under safety procedure.

Contractor shall ensure that concerned workmen are provided with adequate training before he/she is allowed to execute the work.

An evaluation test will be conducted after the completion of the training. Those workmen employee who meet the minimum required competency will be provided with Gold Card which is valid for 3 years, post which the workmen has to reappear for the assessment. If the workman is not able to qualify the assessment, he/she will be given 3 additional attempts to clear in 3 month timeframe failing which he/she will not be allowed to work on high risk jobs.

6. Pre Employment and Periodic Medical check up

Contractor shall arrange to conduct a pre employment and periodic medical check-up for its entire workforce by Tata Power medical officer or Tata Power authorized medical officer. The contractor shall be able to produce the certificate prior to the employment. The contractor shall also organize to conduct periodical medical checkup (six monthly) for the following categoryofemployees:

- Drivers(CheckforVision&Hearing)
- EquipmentOperators(CheckforVision&Hearing)
- Workforce working at Height (Check for Vision, Hearing, Vertigo & Height Phobia)
- Workforce Handling the hazardous substances (Coal, ash and chemicals)
- Workforcein high decibel area (>90 Decibel, Check for Hearing)
- Workforce, working in specific areas requiring specific medical attention should conduct the medical test as laiddownintherespectiveSiteSafetyManagement Plan.

7. Safety Performance Evaluation and Penalties

8.1 A certain percentage of the bill value will be retained against every running bill as safety performance retention. The amount will be released with the last invoice based on "Safety Performance score" attached in CSM-F-3 of CSM procedure. The amount is based on following table

Contract Value	Retention Amount(%)
Upto 10 Lakhs	2.5
10–50 lakhs	2
0.5 to 10 Cr	1.5
>10 Cr	1

8.2 Safety performance Score will be monitored by the Order Manager every month.

8.3 For the contract value of more than Rs 1 Cr or contract duration more than 12 months, the retention amount shall be released half yearly based on safety performance. For all remaining contracts, the retention amount will be released withthefinalbill.

8.4 In case of job stoppage due to safety violations/ unsafe observations at the site, no time extension shall be given to the contractor, if such delays are attributable to contractor.

8.5 In case of fatality, limb loss or loss of property, vendor has to pay for liability, legal, statutory and additional mutually agreed settlement charges imposed by the appointed committee. This charge is over and above the retention amount.

8.6 Thecommitteewillfinalizeanamountbetween5-50lakhsbasedonfactorssuchasadvise by statutory authorities, contract value and impact of accident etc.

8.7 Safety performance bonus 1% (limiting to 50 lakhs) of the invoice value will be considered at the end of the job if the contractualsafetyperformancescoreis100%.

8.8 During the progress of the work, concerned Supervisor/Engineer will visit and inspect the work site regularly and evaluate the safety performance of the contractor based on matrix attached herewith.

8.9 Order Manager, divisional chief and SBU head have the authority to terminate the contract in case of three consecutive serious violations.

Safety Performance Evaluation - CSM-F-3

	Lead Indicators	Unit Of measurement	Target	weight age
1	% of Employee certified in TPSDI/Authorized agency	%	50	10
2	CFSA score (Annexure6.1)	Average Severity of Violations	1.49	20
3	Monthly inspection completed for Critical Equipments, lifting Tools & Tackles and hand tools used at site	%	80	5
4	Condition of tools, tackles and equipments	%	100	15
	Lag Indicators			
1	Number of Fatalities	No.	0	30
2	Number of Lost work day case (LWDC)	No.	0	10
3	Man-days Lost	No.	0	10

In addition to above evaluation criteria, for specific violations penalty shall be imposed on the contractors under following circumstances:

Sr No	Description of violation	Severity	Penalty /
1.	Working without Permit	5	5000/-
2.	Untrained (TPSDI) worker on high-risk jobs.	5	5000/-
3.	Unhygienic/Bad condition of PPE	2	250/-
4.	Not following Tata Power Procedure & Standard	4	2000/-
5.	Unsafe Act/Condition of Severity 4	4	2000/-
6.	Unsafe Act/Condition of Severity 5	5	5000/-
7.	No Earthling of Electrical equipment	5	5000/-
8.	Damaged welding cable	5	5000/
9.	Violation of Positive Isolation Procedure (LOTO Not followed)	5	5000/
10.	ELCB of more than 30 mA/ELCB not working	5	5000/
11.	On/Off switch of welding m/c not working	5	5000/
12.	Electric cable tied with metal wire	5	5000/
13.	Leakage found DA hose / cylinder	5	5000/
14.	Use of LPG	5	5000/
15.	Use of Three-wheeler at the work site.	5	5000/
16.	Starting the job without Tool Box Talk	5	5000/
17.	Spatter falling on DA hose / Gas-line/ pathways / Equipment	5	5000/
18.	No safety latch in crane hook	5	5000/
19.	Load raised or swung over people or occupied areas of buildings	5	5000/
20.	Persons standing in swing area of construction equipments.	5	5000/
21.	Using damaged slings.	5	5000/
22.	Unstable scaffolding/non standard Scaffolding in use	5	5000/
23.	Handrails and mid-rails are missing	5	5000/
24.	Safety Harness not anchored with lifeline/fixed structure	5	5000/
25.	Fall arrestor not provided/ Not being used.	5	5000/
26.	Double life line not used for working at height	5	5000/
27.	No rubber mat in DB room	4	2000/-
28.	Water found accumulated in DB room/near welding machine.	4	2000/
29.	Inserting electric cables into socket, without using plug.	4	2000/
30.	Use of damaged electrical cable/two core cables.	4	2000/
31.	Inflammable material found in D.B Room./ welding areas.	4	2000/
32.	Loose material falling into excavated pit	4	2000/
33.	Water logging into excavated pit	4	2000/
34.	No / inadequate Barricade	4	2000/

Sr No	Description of violation	Severity	Penalty /
35.	Undercut / cave-in found on sides of excavated pits	4	2000/
36.	Grinding wheel/ Coupling/ Piling winch/other rotating parts without guard	4	2000/
37.	The HMV/Mobile Crane operator does not having a valid HMV driving license.	4	2000/
38.	The loading area is not leveled properly.	4	2000/
39.	Ladder not anchored at top	4	2000/
40.	Opening found in working platform of scaffolding/floor	4	2000/
41.	Inadequate illumination at the working area	4	2000/
42.	Loose material lying on Gantry ,platform	4	2000/
43.	Cleaning body with Compressed Air.	3	500/-
44.	Gas Cylinders using without cap.	3	500/
45.	Gas Cylinders stored without securing	3	500/
46.	Bringing inside any other chemicals, apart from approved by Safety dept.	3	500/
47.	Using drum for sitting or accessing height.	3	500/
48.	Misusing emergency facilities like fire hydrant line/ hose box/ spray system/ eye wash etc.	3	500/
49.	No provision of Safety net where falling materials or tools may occurs	3	500/
50.	Taking electrical supply from non designated outlet (other than socket).	3	500/
51.	Restricted gangways due to unwanted materials.	3	500/
52.	Not reporting incident.	3	500/
53.	Entering into restricted area like switch yard/ hazardous storage etc.	3	500/
54.	Work without supervision	3	500/
55.	Parking of vehicle without applying wheel choke at right front-front and left rear-rear wheels other than passengers cars.	3	500/
56.	Vehicle without helper or co-driver.	3	500/
57.	Not wearing florescent safety jacket at site.	3	500/
58.	People travelling in load body of vehicle.	3	500/
59.	Parking of vehicles at non designated area.	3	500/
60.	Shifting heavy materials without guide ropes.	3	500/
61.	Using other than 24V lamp inside the confined space/Use of other than 24V lamps.	3	500/
62.	Angular/ starch loading/ lifting with Crane or hoist.	3	500/
63.	By passing the limit switch/ Safety Interlock.	3	500/
64.	Housekeeping activities on road without proper barricade.	3	500/

Sr No	Description of violation	Severity	Penalty /
65.	Trying to board or alit from running vehicle.	3	500/
66.	Cylinder Valves of Gas cylinders not closed when not in use.	3	500/
67.	Flash-back arrester not used.	3	500/
68.	Trolley wheel found damaged.	3	500/
69.	Guy ropes of required length on both sides of object are not used during movement with load.	3	500/
70.	Scotch block/wedge not provide when the vehicle is parked.	3	500/
71.	Suitable Trolley not provided to hold the cylinders.	3	500/
72.	Locked First Aid box	3	500/
73.	Caution boards, danger signs (luminescent /red) along with emergency contact number are not found displayed.	3	500/
74.	Person found jumping barricading tape	3	500/
75.	Stacking of pipes, pile casing , drums without chock blocks/wedges	3	500/
76.	The terrain on which Heavy Equipment/Machinery moves is not reasonably hard.	3	500/
77.	Without Safety Helmet at working sites	4	250/-
78.	Without Crash Helmet (on bikes)	4	500/-
79.	Without Full body double lanyard Safety Harness (for work at height)	5	5000/-
80.	Without Hand gloves - Material Handling, Welding, Cutting,	4	100/-
81.	Without Safety goggles/ face shield - Welding/Cutting /Grinding	5	5000/-
82.	Handling Chemical without PVC Apron	5	5000/-
83.	Smoking in prohibited area (Closed Go-downs, Storage of flammable material, Storage of Gas cylinders)	5	1000/-
84.	Sleeping at Work Place	3	100/-
85.	Driving beyond speed limit	3	1000/-
86.	Seat Belt While Driving (for front seat passengers and driver)	3	500/-
87.	Driving without license	4	1000/-
88.	Heavy Commercial vehicles without reverse horn	3	500/-
89.	Non functional Head light/ tail light and side indicators	3	100/-
90.	Using Mobile Phone During Driving	5	5000/-
91.	Poor visibility of registration number/ without registration number	3	100/-
92.	Broken/ without Side view mirror	3	100/-
93.	Over speeding above specified limit	3	500/-
94.	Broken/ Without Pressure gauge on Oxygen/ LPG / Acetylene cylinder.	3	500/-

Sr No	Description of violation	Severity	Penalty /
95.	Without Flash back arrestor on Industrial Acetylene & Oxygen cylinders.	5	5000/-
96.	Spillage of hazardous material/chemicals during transportation	4	2000/-
97.	Electrical equipment without Earthing/ ELCB/ Double Insulation Cable.	5	5000/-
98.	Lifting Tools & Tackles used without/ expired Test Certificates.	5	5000/-
99.	Housekeeping repeatedly not maintained		
100.	• First Time	3	Warning
101.	• Second Time	4	1000/-
102.	• Third Time	5	5000/-
103.	Serious Violation Of House Keeping (after 1st or 2nd warning to be decided by Project Manager depending on the severity)		Rs.10000/- and above
104.	Repeat Violation of same nature	5	5X Violation

Annexure-X

Tata Code of Conduct

The Owner abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Owner and the Contractor for dealings under this Order/ Contract. A copy of the Tata Code of Conduct is available a tour website:

https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf

The Contractor is requested to bring any concerns regarding this to the notice of our Chief Procurement & Stores mail ID: pkjain@tatapower.com.

Annexure XI

CORPORATE ENVIRONMENT POLICY

Tata Power is committed to a clean, safe and healthy environment, and we shall operate our facilities in an environmentally sensitive and responsible manner. Our commitment to environmental protection and stewardship will be achieved by:

- Complying with the requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible
- Ensuring that our employees are trained to acquire the necessary skills to meet environmental standards
- Conserving natural resources by improving efficiency and reducing wastage
- Making business decisions that aim towards sustainable development
- Engaging with stakeholders to create awareness on sustainability

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!

CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
  - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
  - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
  - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
  - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
  - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!

Technical Specification – 33 kV Cable

CONTENTS

TP CENTRAL ODISHA DISTRIBUTION LIMITED
TECHNICAL SPECIFICATION

1.0 SCOPE

This specification covers technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at site/store, performance of 33 kV cable for trouble free and efficient operations.

Inclusive sizes:

3 CORE CABLE	1 CORE CABLE
3C X 300 sq.mm.	1C X 400 sq.mm. , 1C X 630 sq.mm.
3C X 400 sq.mm.	1C X 1000 sq.mm.

2.0 APPLICABLE STANDARDS

33 kV Cable covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest revisions of relevant Indian Standards /IEC/ International Standards and shall conform to the regulations of local statutory authorities.

IS 7098 (Part-2)	Specification for Cross-linked polyethylene insulated PVC sheathed Cables Part: 2 - For working voltages from 3.3 kV up to and including 33 kV
IS 8130	Specification for Conductor for insulated electric cables & flexible cords
IS 3975	Low carbon galvanized steel wires, formed wires and tapes for Armouring of cables
IS 10418	Specification for Drums for Electric cables
IS 5831	Specification for PVC insulation and sheath of electric cables
IS: 3975	Low carbon galvanized steel wires, formed wires and tapes for armoring of cables
IEC-60228	Conductor for insulated cables
IEC-60502 (Part-2)	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1.2 kV) up to 30 kV (Um = 36 kV) - Part 2: 22 kV Cables for rated voltages from 6 kV (Um = 7.2 kV) up to 30 kV (Um= 36 kV).
IEC-60811	Test methods for insulations and sheaths of electric cables and cords.
ASTM D 6097	Standard test method for relative resistance to vented water tree growth in Solid Dielectric insulating materials.
ICEA T 31-610	Test method for conducting longitudinal water penetration resistance tests on blocked conductors
IS 10810	Methods of tests for cables
IS 4905	Methods for random sampling
IS 4984	High density polyethylene pipes for water supply
IS 2530	Methods of test for polyethylene moulding materials and polyethylene compounds
IS 4826	Specification for hot dipped galvanized coatings on round steel wires
IEC 332	Test on electric cables on the fire conditions
IS 5:2007	Colours for ready mixed paints and enamels
ASTM 2863	Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
IEC 60754	Apparatus and procedure for the measurement of the amount of halogens evolved during the combustion of materials taken from electric or optical fiber cable constructions
ASTM 2843	Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics

<table>
<tr><td></td><td></td><td>*In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.</td></tr>
<tr><td>3.0</td><td>CLIMATIC CONDITIONS OF THE INSTALLATION</td><td>The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)
11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.
Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.</td></tr>
<tr><td>4.0</td><td>GENERAL TECHNICAL REQUIREMENTS</td><td>
<table>
<tr><th>S.No.</th><th>Description</th><th>Requirement</th></tr>
<tr><td>1.</td><td>Voltage grade</td><td>33 kV (Earthed system)</td></tr>
<tr><td>2</td><td>Max System voltage</td><td>36 kV</td></tr>
<tr><td>3</td><td>Frequency</td><td>50 Hz</td></tr>
<tr><td>4</td><td>Variation in frequency</td><td>+/- 5%</td></tr>
<tr><td>5</td><td colspan="2">
<table>
<tr><th>Cable components</th><th>3 CORE CABLE</th><th>1 CORE CABLE</th></tr>
<tr><td>Conductor</td><td colspan="2">Watertight Stranded Aluminum (compacted circular)</td></tr>
<tr><td>Conductor screen</td><td colspan="2">Semi conducting tape and screen</td></tr>
<tr><td>Insulation</td><td colspan="2">XLPE</td></tr>
<tr><td>Insulation screen</td><td>Shall have three layers:
a) Bonded Semiconducting,
b) Semiconducting water swellable tape,
c) Metallic copper tape</td><td>Shall have three layers:
a) Bonded Semiconducting,
b) Semiconducting water swellable tape,
c) Metallic copper tape
d) Polyester transparent tape over copper screen</td></tr>
<tr><td>Core identification strip</td><td>Beneath copper screen</td><td>NA</td></tr>
<tr><td>Inner sheath</td><td>Pressure Extruded PVC ST- 2 with PP fillers</td><td>Extruded PVC ST-2</td></tr>
<tr><td>Armour</td><td>GI wire round binded with rubberized cotton binding tape</td><td>Aluminum wire binded by rubberized cotton tape</td></tr>
<tr><td>Outer sheath</td><td colspan="2">PVC ST-2 FRLSH type of colour ‘yellow lemon shade’ code: 355 as per IS 5:2007</td></tr>
</table>
</td></tr>
</table>
</td></tr>
</table>

5.0 GENERAL CONSTRUCTION

The cross linked polyethylene insulated (XLPE) 33 kV Cable Dry cured & water cooled shall be manufactured and tested strictly in accordance with the Indian Standard IS 7098 (Part – 2)/ Relevant IEC/International standards and its latest amendments.

All material used in the manufacturing of cables shall be new and shall be selected as the best available for the intended use.

The rating factors for variation in ground and air temperature, depth of laying, thermal resistivity of soil and different laying configuration of cables shall be provided by the Bidder.

(A) Conductor:

S.No.	Parameter	Requirement
1	Conductor	As per IS 8130
2	Class	Class II
3	Material	Plain Aluminium, grade H2/H4
4	Shape	Stranded Compacted Circular
5	No. of strands & electrical parameters	Nominal size of conductor mm^2 / Min. number of strands / Max. DC resistance @ 20 deg C (Ohm/km) / Conductor Short circuit current rating for 1 second 300 / 30 / 0.10 / 28.3 kA 400 / 53 / 0.0778 / 37.7 kA 630 / 53 / 0.0469 / 59.4 kA 1000 / 53 / 0.0291 / 94.3 kA
6	Longitudinal water sealing of conductor	a) Non-conductive water swellable yarn/ tape/ combination of both shall be provided in between interstices of the conductor. b) Also, this water swellable tape and yarn shall be compatible to withstand conductor continuous temperature of 90 deg C and short circuit temperature of 250 deg C without any decay. c) It shall not affect the electrical conductivity of the conductor.
7	Cleanliness and uniformity	a) Before stranding, the cross-section of the Aluminium conductor shall be circular, and shall have uniform smooth surface, free from sharp edges and free from any defects. b) Stranded Conductor shall be free from oil traces & aluminum dust. Conductor (after stranding) shall be super cleaned c) Traces of aluminum dust on conductor or conductor screen shall not be acceptable.
8	Conductor jointing	Not acceptable in any strand or in any conductor after it is stranded.
9	Raw material supplier	Conductor raw material shall be procured from reputed suppliers viz., BALCO/ HINDALCO/ NALCO/ Vedanta only.
10	Diameter of conductor	To be specified by bidder
11	Min. weight of conductor (kg/km/core)	Nominal size of conductor mm^2 / Min. weight of conductor (kg/km/core) 300 / 780 400 / 1080 630 / 1650 1000 / 2600

(B) Conductor Screen

S.No.	Parameter	Requirement

1	Material	**1st layer:** Semi-conducting tape **2nd layer:** Semi-conducting compound
2	Configuration	**1st layer:** Semi-conducting tape shall be applied over conductor with nominal thickness of 0.2 mm. **2nd layer:** Semi-conducting compound screen shall be applied through triple extrusion process.
3	Min. thickness	Minimum thickness of semi-conducting compound screen shall be 0.5 mm at any point of measurement.
4	Resistivity	Resistivity of semiconducting conductor screen shall not exceed 1000 Ω-m
5	Uniformity on interfacial region	Interfacial region between conductor screen and insulation shall be uniform. Protrusion/ convolution/ other defects are not acceptable in the region.
6	Raw material supplier	Semiconducting compound shall be procured from reputed raw material suppliers viz.,Dow/Borealis/Hanwa only

(C) Insulation

S.No.	Parameter	Requirement
1	Material and extrusion process	XLPE insulation shall be applied through CCV/VCV line by triple extrusion process with 'Dry Curing' and 'Water Cooling'.
2	Raw material supplier	a) **XLPE compound shall be super cleaned and procured from reputed raw material suppliers viz.,** Dow/Borealis/Hanwa only. b) Both XLPE and semi conductive compounds shall be used from same raw material supplier.
3	Thickness and Eccentricity	a) Nominal thickness shall be 8.8 mm. b) Minimum thickness shall be 7.82 mm at any point of measurement. c) Eccentricity of insulation shall not exceed 10%.
4	Thermal stability	The insulation properties shall be stable under thermal conditions arising out of continuous operation at conductor temperature of 90 deg. C rising momentarily to 250 deg. C under short circuit conditions.
5	Cleanliness and uniformity	Interfacial region between insulation and insulation screen shall be uniform. Protrusion/convolution/ other defects are not acceptable. Core shall be free from void and contamination.

(D) Insulation Screen & Core identification strip

S.No.	Parameter	Requirement
1	Material	a) **1st layer** : Semi-conducting compound b) **2nd layer**: Semi-conducting water swellable tape c) **3rd layer:** Annealed copper tape
2	Configuration	a) **1st layer: Non-Metallic Part:** Extruded Insulation semiconducting screen shall be bonded type. Resistivity shall not exceed 500 Ω-meter. Surface of insulation screen shall be smooth, free from cavity/ nicks/scratches/ other visible defects. Min. thickness shall be 0.5 mm at any point of measurement. b) **2nd layer: Water Swellable tape:** Semi-conducting water swellable tapes shall be applied over non-metallic screen.

<table>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td></td><td>Minimum thickness of water swellable shall be 0.3 mm and minimum overlapping shall be 15%.

Core identification strip:

<table>
<tr><th>3 CORE CABLE</th><th>1 CORE CABLE</th></tr>
<tr><td>Each of the three core identification strips shall be applied longitudinally beneath copper screen.
Width of the coloured strip shall be 7-10 mm.</td><td>NA</td></tr>
</table>

c) 3rd layer: Metallic Part:
Annealed copper tape, helically wound over the water swellable tape with minimum 15% overlap.
Minimum thickness shall be 0.045 mm at any point of measurement.</td></tr>
<tr><td>3</td><td>Raw material supplier</td><td>Semiconducting compound shall be procured from reputed raw material suppliers viz., Dow/Borealis/Hanwa only</td></tr>
<tr><td>4</td><td>Diameter of cores</td><td>To be specified by bidder</td></tr>
<tr><td>5</td><td>Weight of cores/km (approx.)</td><td>To be specified by bidder</td></tr>
<tr><td>6</td><td>Weight of copper tape/km (approx.)</td><td>To be specified by bidder</td></tr>
</table>

(E) Fillers

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Parameter</th><th colspan="2">Requirement</th></tr>
<tr><th>3 CORE CABLE</th><th>1 CORE CABLE</th></tr>
<tr><td>1</td><td>Material</td><td>Virgin Polypropylene fibers of natural colour</td><td rowspan="2">NA</td></tr>
<tr><td>2</td><td>Configuration</td><td>Virgin Polypropylene fibers shall be tightly filled in empty space as fillers.</td></tr>
</table>

(F) Inner Sheath:

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Parameter</th><th colspan="2">Requirement</th></tr>
<tr><th>3 CORE CABLE</th><th>1 CORE CABLE</th></tr>
<tr><td>1</td><td>Material</td><td colspan="2">Black coloured Polyvinyl chloride (PVC) type ST-2 compound</td></tr>
<tr><td>2</td><td>Configuration</td><td>The laid up cores shall be provided with pressure extruded Polyvinyl chloride (PVC) type ST-2 compound conforming to IS: 5831 with latest amendments. Pressurized extrusion is required to remove any gaps remaining in between the fillers and to make the cable 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 and screens.</td><td>Extruded PVC ST-2 type conforming to
IS: 5831.
It shall be applied to fit closely and shall be possible to remove easily without causing any damage to the underlying insulated cores and screens.</td></tr>
</table>
</td></tr>
</table>

3	Raw material supplier	**PVC compound shall be procured from reputed raw material suppliers viz.,** Shakun, Kalpana, KLJ, DCM ShriRam. PVC compound from cable manufacturer shall be considered only after factory evaluation for the same.
4	Min. thickness At any point of measurement	**3 CORE CABLE**: 3CX300 sq.mm. – 0.7 mm; 3CX400 sq.mm. – 0.7 mm **1 CORE CABLE**: 1CX400 sq.mm. – 0.5 mm; 1CX630 sq.mm. – 0.6 mm; 1CX1000 sq.mm. – 0.7 mm

(G) Armour:

S.No.	Parameter	Requirement	
		3 CORE CABLE	**1 CORE CABLE**
1	Material	Low carbon annealed hot dipped galvanized round steel wires	H4 Grade Aluminium wires
2	Compliance to Standard	It shall comply with the requirements of IS 3975 along with latest amendments. Hot dipped galvanizing layer shall be uniform on low carbon annealed steel wires. Zinc coating shall be 290 g/m^2 as per IS 4826:1979.	It shall comply with the requirements of IS 8130 along with latest amendments.
3	Nominal Dimensions	3CX300 sq.mm. – 4.0 mm (GI Wire); 3CX400 sq.mm. – 4.00 mm (GI wire)	1CX400 – 2 mm (Aluminum wire); 1CX630 sq.mm. – 2.5 mm (Aluminum wire); 1CX1000 sq.mm. – 3.15 mm (Aluminum wire)
4	Approx. Armor Short circuit rating in kA for 1 sec	3CX300 sq.mm. – 40; 3CX400 sq.mm. – 42	1CX400 sq.mm. – 20; 1CX630 sq.mm. – 28; 1CX1000 sq.mm. – 42
5	Jointing in the armour wires	Not acceptable in any armour wire	
6	Laying of armour	The armor wires shall be applied as closely as practicable. Shall not be less than 90% of total circumference.	
7	Binding	The rubberized cotton binding tape shall be applied to bind the armor wires such that it shall not affect the electrical properties of the armor wires and the overall cable.	
8	Weight of armor	To be furnished by Bidder	
9	Raw material supplier	Armour shall be procured from reputed raw material suppliers viz., TATA Steel, Jindal Steel, SAIL only.	

(H) Outer Sheath

S.No.	Parameter	Requirement
1	Material	Polyvinyl chloride (PVC) ST-2 **FRLSH** type compound with **'lead napthenate'** additive
2	Configuration	Polyvinyl chloride (PVC) ST-2 FRLSH type compound with **'lead napthenate'** additive as 'termite & rodent repellent' applied by extrusion process.
3	Min. Thickness at any point of measurement	**3 CORE CABLE**: 3CX300 sq.mm. — 3.0 mm; 3CX400 sq.mm. — 3.0 mm **1 CORE CABLE**: 1CX400 sq.mm. — 2.04 mm; 1CX630 sq.mm. — 2.36 mm; 1CX1000 sq.mm. — 2.52 mm
4	Colour	Yellow Lemon color, colour code: 355 as per IS 5:2007.
5	Surface uniformity	Surface of outer sheath shall be free from cavity/ nicks/ other visible defects.
6	Raw material supplier	**PVC compound shall be procured from reputed raw material suppliers viz.,** Shakun, Kalpana, KLJ, DCM ShriRam. PVC compound from cable manufacturer shall be considered only after factory evaluation for the same.
7	Weight of outer sheath/km	To be provided by bidder

(I) Sealing end cap:

S.No.	Parameter	Requirement
1	Material	Adhesive coated polyolefin heat shrinkable
2	Configuration	Adhesive coated polyolefin heat shrinkable end cap shall be provided at both ends of the cable.
3	Additional requirements	2 nos. additional cable end caps shall be provided with each drum and placed in the drum.

(J) Other requirements

S.No.	Parameter	Requirement
1	Overall diameter of cable	To be provided by bidder
2	Weight of Overall cable	To be provided by bidder

6.0 NAME PLATE AND MARKING ON DRUM AND CABLE OUTER SHEATH

Steel drums shall be provided. Drum shall be free from sharp edges and visual defect.
Stencil plate on one flange side of the drum and **laminated paper sheet** on other side flange of drum.
Cable length on one drum shall be 250 meters max. +/- 5%.

i. Following details shall be provided on flanges of **drum**:

a) Manufacturer's name
b) Type of Cable
c) Size of Cable
d) Voltage Grade
e) Length of the cable on the drum
f) Direction of the rotation of the drum
g) Gross mass
h) Country of manufacture
i) Year and month of manufacture
j) Purchase Order no.
k) Drum No.

ii. Following details shall be **embossed** on the **outer sheath:**

a) Sequential meter marking shall be printed.

All other details mentioned below shall be embossed.
Embossing shall be clearly visible.
At interval of every 1 meter, following details to be embossed:

b) Property of TPCODL
c) Manufacturer name
d) Month & Year of Manufacture
e) Voltage grade
f) Size of the cable
g) Purchase Order no.
h) Cable code

7.0 TESTS

Routine, Acceptance & Type tests shall be carried out in accordance with the relevant IS/IEC/ International standard.
Acceptance tests shall be witnessed by TPCODL's authorized representative.
Following tests shall be necessarily conducted on the **33 kV** underground cable in additions to others specified in IS/IEC/ANSI standards. Type tests shall be conducted from CPRI/ERDA only.
**In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.*

(A) Type Tests

S.No.	Test	Specific value		Test method	
		Clause No.	Reference Standard	Clause No.	Reference Standard
Tests on Conductor					
1	Conductor resistance test	Table 2	IS 8130	10	IS 10810 part 5
2	Conductor water penetration test	IEC 60502/ ICEA T-31-610	IEC 60502/ ICEA T-31-610	Annexure F	IEC 60502/ ICEA T-31-610
Tests on Insulation					
3	Tensile strength & Elongation at break (before ageing)	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 7
4	Ageing in air oven	Table 1 of	IS 7098	8	IS 10810

				Clause No.5	part 2		part 11
		5	Tensile strength & Elongation at break	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 7
		6	Tests for thickness of insulation	Table 4	IS 7098 part 2	8	IS 10810 part 6
		7	Eccentricity and Ovality of insulation	12.4	IS 7098 part 2	Annexure A	IS 7098 part 2
		8	Hot set test	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 30
		9	Shrinkage test	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 12
		10	Gravimetric test (Water absorption)	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 33
		11	Volume resistivity/ Insulation Resistance	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 43
		Tests on Inner Sheath					
		12	PVC thickness	Table 5	IS 7098 part 2	8	IS 10810 part 6
		Tests on Extruded semi-conducting screen					
		13	Volume resistivity test of conductor screen	Table 2	IS 7098 part 2	Annexure E	IS 7098 part 2
		14	Volume resistivity test of core screen	Table 2	IS 7098 part 2	Annexure E	IS 7098 part 2
		Tests on Outer Sheath (PVC)					
		15	Flammability test for outer sheath	Clause no. 20.8	IS 7098 part 2	8	IS 10810 part 53
		16	Thickness	Table 7	IS 7098 part 2		
		17	Tensile strength and Elongation at break (before ageing)	Table 2	IS 5831	8	IS 10810 part 7
		18	Tensile strength and Elongation at break (after ageing)	Table 2	IS 5831	8	IS 10810 part 7
		19	Variation due to ageing	Table 2	IS 5831	8	IS 10810 part 7
		20	Loss of mass test	Table 2	IS 5831	8	IS 10810 part 10
		21	Shrinkage test	Table 2	IS 5831	8	IS 10810 part 12
		22	Hot deformation test	Table 2	IS 5831	8	IS 10810 part 15
		23	Heat shock test	Table 2	IS 5831	8	IS 10810 part 14
		24	Thermal stability test	Table 2	IS 5831	Appendix B	IS 5831:1984
		25	Flammability test	As per IEC 332 part 1			

26	Oxygen index	As per ASTM 2863			
27	Temperature index	ASTM 2863			
28	Acid gas generation	IEC 60754			
29	Smoke density	ASTM 2843			
Tests on Armour for 3 Core Cable					
30	Tensile test	8	IS 3975	6	IS 1608
31	Torsion test	8	IS 3975	7	IS 1717
32	Wrapping test	8	IS 3975	5	IS 1755
33	Resistance test	8	IS 3975	8	IS 10810 Part 42
34	Mass of zinc coating	9	IS 4826	6	IS 6745
35	Uniformity of zinc coating	9	IS 3975	4	IS 2633
36	Adhesion test	9	IS 3975	9.3	IS 3975
Tests on Armour for 1 Core Cable					
37	Tensile test	8	IS 8130	6	IS 1608
38	Torsion test	8	IS 8130	7	IS 1717
39	Wrapping test	8	IS 8130	5	IS 1755
40	Resistance test	8	IS 8130	8	IS 10810 Part 42
Tests on complete cable					
41	Partial discharge test	20.2	IS 7098 part 2	8	IS 10810 Part 46
42	Thermal ageing test	20.9	IS 7098 part 2	20.9	IS 7098 part 2
43	Bending test	20.3	IS 7098 part 2	20.3	IS 7098 part 2
44	Dielectric power factor test	20.4	IS 7098 part 2	20.4	IS 7098 part 2
45	High voltage test	63 kV for 5 minutes As per Clause no. 20.7.2	IS 7098 part 2	20.7	IS 7098 part 2
46	Heat cycle test	20.5	IS 7098 part 2	20.5	IS 7098 part 2
47	Impulse withstand test	20.6	IS 7098 part 2	20.6	IS 7098 part 2

(B) Routine Tests

Test	Clause No.	Reference Standard
Conductor resistance test	19.3	IS 7098 part 2
Partial discharge	19.3	IS 7098 part 2
High voltage test with power frequency	19.3	IS 7098 part 2
Resistance test for Aluminium armour	19.3	IS 7098 part 2

(C) Acceptance Tests:

All acceptance tests mentioned below shall be witnessed by TPCODL's representative during inspection stage.

S.No.	Test name	Specific value		Test method	
		Clause No.	Reference Standard	Clause No.	Reference Standard
(I) Test on Conductor					
1	Conductor resistance test	Clause No. 5(A.5)	ENG-EHV-1012	10	IS 10810 part 5
2	Test for non-conductivity of water swellable tape/yarn of conductor	Clause No. 5(A.6)	ENG-EHV-1012	Through multimeter	
3	Visual inspection for conductor cleanliness	Clause No. 5(A.7)	ENG-EHV-1012	Check for presence of any Aluminium dust	
4	Conductor water penetration test	ICEA T-31-610			
(II) Test on Conductor Screen					
5	Thickness of semi-conducting tape over conductor	Clause No. 5(B.2)	ENG-EHV-1012	Value to be noted by inspector	
6	Test for conductivity of semi-conducting tape over conductor	Clause No. 5(B.2)	ENG-EHV-1012	Through multimeter	
7	Resistivity of extruded semi-conducting conductor screen	Clause No. 5(B.4)	ENG-EHV-1012	Annexure E	IS 7098 part 2
8	Thickness of extruded semi-conducting conductor screen	Clause No. 5(B.3)	ENG-EHV-1012	Value to be noted by inspector	
(III) Test on Insulation					
9	Tensile strength & Elongation at break (before ageing)	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 7
10	Insulation thickness	Clause No. 5(C.3)	ENG-EHV-1012	8	IS 10810 part 6
11	Eccentricity and Ovality of insulation	Clause No. 5(C.3)	ENG-EHV-1012	Annexure A	IS 7098 part 2
12	Hot set test	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 30
13	Volume resistivity	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 43
14	Void & contamination test on core (by silicon oil dip method)	Clause No. 5(C.5)	ENG-EHV-1012	20.1	IS 7098 part 3

15	Surface smoothness of insulation	Clause No. 5(C.5)	ENG-EHV-1012	To be checked by inspector	
(IV) Test on Insulation Screen					
16	Resistivity of insulation screen	Clause No. 5(D.2.a)	ENG-EHV-1012	Annexure E	IS 7098 part 2
17	Thickness of insulation screen	Clause No. 5(D.2)	ENG-EHV-1012	Value to be noted by inspector	
18	Visual inspection for any convolution/ protrusion between conductor screen and XLPE insulation, XLPE insulation and insulation screen	Clause no. 5(C.5)	ENG-EHV-1012	To be checked by inspector	
19	Thickness & % Overlapping of semi-conducting water swellable tape	Clause no. 5(D.2.b)	ENG-EHV-1012	Value to be noted by inspector	
20	Thickness & % Overlapping of copper tape	Clause No. 5(D.2.c)	ENG-EHV-1012	Value to be noted by inspector	
(V) Test on Inner sheath					
21	PVC thickness	Clause No. 5(F.4)	ENG-EHV-1012	8	IS 10810 part 6
22	Colour of inner sheath	Clause No. 5(F.1)	ENG-EHV-1012	To be checked by inspector	
(VI) Test on Armour					
For 3 core cable					
23	Tensile test	8	IS 3975	IS 1608	
24	Mass of zinc coating	Table 1	IS 4826	IS 6745	
25	Uniformity of zinc coating	9	IS 3975	IS 2633	
26	Adhesion test	9	IS 3975	IS 3975	
27	Diameter and no. of wires	Clause No. 5(G.3)	ENG-EHV-1012	Value to be noted by inspector	
28	Coverage %	Clause No. 5(G.6)	ENG-EHV-1012	Value to be noted by inspector	
For 1 core cable					
29	Tensile test	8	IS 8130	6	IS 1608
30	Wrapping test	8	IS 8130	5	IS 1755
31	Resistance test	8	IS 8130	8	IS 10810 Part 42
32	Diameter and no. of wires	Clause No. 5(G.3)	ENG-EHV-1012	Value to be noted by inspector	
33	Coverage %	Clause No. 5(G.6)	ENG-EHV-1012	Value to be noted by inspector	

(VII) Test on Outer Sheath									
34	Thickness	Clause No. 5(H.3)	ENG-EHV-1012	Value to be noted by inspector					
35	Tensile strength and Elongation at break (before ageing)	Table 2	IS 5831	8	IS 10810 part 7				
36	Colour of outer sheath	Clause No. 5(H.4)	ENG-EHV-1012	To be checked by inspector					
37	Surface uniformity of outer sheath (on full drum)/ shall be free from any damage- void, nick, cavity.	Clause No. 5(H.5)	ENG-EHV-1012	Through rewinding of drum (As per TPCODL specification)					
38	Presence of lead napthenate in PVC outer sheath	Chemical test Clause no. 5(H.1)	ENG-EHV-1012	To be checked by inspector					
39	Flammability test	As per IEC 332 part 1							
40	Oxygen index	As per ASTM 2863							
41	Temperature index	ASTM 2863							
42	Acid gas generation	IEC 60754							
43	Smoke density	ASTM 2843							
(VIII) Tests for complete cable									Sm
44	Partial discharge test	5 pC	As per type test	8	IS 10810 part 46				
45	High voltage test	63 kV for 5 minutes As per Clause no. 20.7.2	IS 7098 part 2	8	IS 10810 part 45				
46	Raw material consumption verification	Document verification as proof to be submitted Invoice to be shown from procurement to consumption							
(IX) Additional tests									
47	Colour coding identification over copper screen (for 3C cable)	Clause no. 5(D.2)	ENG-EHV-1012	To be checked by inspector					
48	Sequential marking check	Clause no. 6.ii	ENG-EHV-1012	To be checked by inspector					
49	Cable drum length verification	Clause no. 6	ENG-EHV-1012	To be checked by inspector					

		50	Packaging of cable on cable drum	By recyclable PVC sheet- As per Clause no.12	ENG-EHV-1012	To be checked by inspector
		51	Weight of conductor/km	Clause No. 5(A.11)	ENG-EHV-1012	Value to be noted by inspector
		52	Diameter of conductor	Clause No. 5(A.10)	ENG-EHV-1012	Value to be noted by inspector
		53	Weight of XLPE insulation plus semiconducting screen (of conductor & insulation)/ km	Value to be noted by inspector		
		54	Diameter over core	Clause no. 5(D.4)	ENG-EHV-1012	Value to be noted by inspector
		55	Weight of core	Clause no. 5(D.5)	ENG-EHV-1012	Value to be noted by inspector
		56	Weight of copper tape/km	Clause No. 5(D.6)	ENG-EHV-1012	Value to be noted by inspector
		57	Diameter over inner sheath	Value to be noted by inspector		
		58	Weight of armour/ km	Clause No. 5(G.6)	ENG-EHV-1012	Value to be noted by inspector
		59	Cable sealing end caps	Clause No. I	ENG-EHV-1012	Provision to be checked by inspector
		60	Weight of outer sheath/ km	Clause No. 5(H.7)	ENG-EHV-1012	Value to be noted by inspector
		61	Diameter of complete cable	Clause No. 5(J.1)	ENG-EHV-1012	Value to be noted by inspector

8.0	**TYPE TEST CERTIFICATES**	**Requirement:** Bidder shall furnish the type test report of **33 kV** cable for the tests as mentioned in Clause no. 7 of this specification and as per reference standards. **Test Laboratories:** Complete set of Type Tests shall be conducted at certified test laboratories, which are CPRI / ERDA only. Type test report shall be submitted for the type, size and rating of the cable mentioned in the bid/ OR for any size higher (than required) of similar type and similar voltage grade. **Type test should have been conducted in certified test laboratories during the period not exceeding 5 years from the date of opening the bid**. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all

		type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCODL. In case the type test certificates are dated beyond 5 years and up to 10 years maintaining basic component design same then deviation should be submitted on vendor letter head. TPCODL will have the rights to accept/reject the same.
9.0	**PRE-DISPATCH INSPECTION**	Inspection shall be carried out by duly authorized representative of TPCODL. Bidder shall grant free access to the places of manufacture to TPCODL's representatives at all times when the work is in progress. Inspection may be made at any stage of manufacturing at the discretion of TPCODL and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Inspection by TPCODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. **Dispatch of material:** Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL. Following documents shall be sent along with the supplied material: a) Test reports b) MDCC issued by TPCODL c) Invoice in duplicate d) Packing list e) Delivery Challan
10.	**INSPECTION AFTER RECEIPT AT STORES**	The material received at TPCODL, Odisha store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Contracts & Engineering department.
11.0	**GUARANTEE**	**Requirement:** Bidder shall confirm for guarantee towards design, material, workmanship & quality of process / manufacturing for integrated product delivered under the contract. In the event any defect is found by TPCODL, up to a period of at least 60 months from the date of commissioning or 72 months from the date of last supplies made under the contract whichever is later, bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of TPCODL, failing which TPCODL will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the TPCODL's own charges (@ 20% of expenses incurred), from the Bidder or from 'Security cum Performance Deposit' as the case may be. **Free replacement:** Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by TPCODL.
12.0	**PACKAGING**	a) **Standard length of Cable:** The cable shall be supplied in continuous **standard length** of 250 (3 cores) & 500 (Single core) running meters with +/- 5% tolerance. b) **Filling condition:** Drum shall not be overfilled. c) **Cable drum:** The cable shall be wound on non-returnable steel drums without any extra cost to TPCODL as per IS 10418 and its latest amendments. d) **Sealing of cable ends:** The ends of the cable shall be sealed by means of heat shrinkable polyolefin end caps. Additional 2 nos. end caps shall be provided with each drum. e) **Requirements for Cable drums**: Cable drums shall be so constructed as to have required mechanical strength so that the drum flanges and other components do not break during transport, in actual use or in storage. The flanges and the outside surface of the barrel shall be free from protruding materials/projections/ unevenness/ sharp edges that can damage the cable or hands of the operator during rotation of drums. A metal preservation shall be applied to the entire drum. f) Bottom end of cable should be clamped on drum by jute or nylon rope. g) All ferrous metal parts used shall be treated with a suitable rust free finish or coating to avoid rusting during transit or storage. The drums shall withstand normal handling and transport. h) **Rail/ Road transportation:** The bidder shall ensure that the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. **i) Packaging shall be as per climate change perspective. Cable wound on cable drum shall be covered by recyclable PVC sheet for dust proof. TPCODL encourages to use**

		environment friendly packaging.
13.0	**TENDER SAMPLE**	NA
14.0	**QUALITY CONTROL**	The bidder shall submit **'Quality Assurance Plan'** followed by him in respect of: Bought out items Items manufactured by him Raw materials in process Final inspection Packaging & Marking. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPCODL reserves the sole rights for the type test of random sample from the lot and in case of any discrepancy or deviation from the Type test certificates submitted along with the bid, the complete Lot shall be rejected. TPCODL's nominated representative shall have free access to the bidder's works to carry out inspections.
15.0	**MINIMUM TESTING FACILITIES**	Bidder shall have adequate in house testing facilities for carrying out all routine and acceptance tests as per relevant International / Indian standards.
16.0	**MANUFACTURING ACTIVITIES**	The successful bidder will have to submit (after placement of RC) technical compliance document and drawing of cable as per RC line items for getting approval before mass manufacturing. Manufacturing mass quantity to start only after getting CAT-A approved drawings or as per intimation from TPCODL.
17.0	**SPARES, ACCESSORIES AND TOOLS**	Not Applicable
18.0	**DRAWINGS AND DOCUMENTS**	Following documents shall be submitted along with the bid for approval after award of RC/PO: a) Completely filled–in clause wise compliance of the specification. b) General description of the equipment and all components including brochures c) Type test Certificates for each specified test d) Experience List. e) Cross sectional drawing of the cable. f) Rating factors for variation in ground and air temperature, depth of laying, thermal resistivity of soil and different laying configuration of cables. g) 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. All the Documents and Drawings shall be in English Language.
19.0	**GUARANTEED TECHNICAL PARTICULARS**	Bidder to submit clause wise compliance.

20.0 SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications.

S.No.	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company Signature :

Designation

ANNEXURE – 1

INSPECTION TEST PLAN

S.No.	Test name	Specific value		Test method	
		Clause No.	Reference Standard	Clause No.	Reference Standard
(I) Test on Conductor					
1	Conductor resistance test	Clause No. 5(A.5)	ENG-EHV-1012	10	IS 10810 part 5
2	Test for non-conductivity of water swellable tape/yarn of conductor	Clause No. 5(A.6)	ENG-EHV-1012	Through multimeter	
3	Visual inspection for conductor cleanliness	Clause No. 5(A.7)	ENG-EHV-1012	Check for presence of any Aluminium dust	
4	Conductor water penetration test	ICEA T-31-610			
(II) Test on Conductor Screen					
5	Thickness of semi-conducting tape over conductor	Clause No. 5(B.2)	ENG-EHV-1012	Value to be noted by inspector	
6	Test for conductivity of semi-conducting tape over conductor	Clause No. 5(B.2)	ENG-EHV-1012	Through multimeter	
7	Resistivity of extruded semi-conducting conductor screen	Clause No. 5(B.4)	ENG-EHV-1012	Annexure E	IS 7098 part 2
8	Thickness of extruded semi-conducting conductor screen	Clause No. 5(B.3)	ENG-EHV-1012	Value to be noted by inspector	
(III) Test on Insulation					
9	Tensile strength & Elongation at break (before ageing)	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 7
10	Insulation thickness	Clause No. 5(C.3)	ENG-EHV-1012	8	IS 10810 part 6
11	Eccentricity and Ovality of insulation	Clause No. 5(C.3)	ENG-EHV-1012	Annexure A	IS 7098 part 2
12	Hot set test	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 30
13	Volume resistivity	Table 1 of Clause No.5	IS 7098 part 2	8	IS 10810 part 43
14	Void & contamination test on core (by silicon dip method)	Clause No. 5(C.5)	ENG-EHV-1012	20.1	IS 7098 part 3
15	Surface smoothness of insulation	Clause No. 5(C.5)	ENG-EHV-1012	To be checked by inspector	
(IV) Test on Insulation Screen					
16	Resistivity of insulation screen	Clause No. 5(D.2.a)	ENG-EHV-1012	Annexure E	IS 7098 part 2

17	Thickness of insulation screen	Clause No. 5(D.2)	ENG-EHV-1012	Value to be noted by inspector	
18	Visual inspection for any convolution/ protrusion between conductor screen and XLPE insulation, XLPE insulation and insulation screen	Clause no. 5(C.5)	ENG-EHV-1012	To be checked by inspector	
19	Thickness & % Overlapping of semi-conducting water swellable tape	Clause no. 5(D.2.b)	ENG-EHV-1012	Value to be noted by inspector	
20	Thickness & % Overlapping of copper tape	Clause No. 5(D.2.c)	ENG-EHV-1012	Value to be noted by inspector	
(V) Test on Inner sheath					
21	PVC thickness	Clause No. 5(F.4)	ENG-EHV-1012	8	IS 10810 part 6
22	Colour of inner sheath	Clause No. 5(F.1)	ENG-EHV-1012	To be checked by inspector	
(VI) Test on Armour					
For 3 core cable					
23	Tensile test	8	IS 3975	IS 1608	
24	Mass of zinc coating	Table 1	IS 4826	IS 6745	
25	Uniformity of zinc coating	9	IS 3975	IS 2633	
26	Adhesion test	9	IS 3975	IS 3975	
27	Diameter and no. of wires	Clause No. 5(G.3)	ENG-EHV-1012	Value to be noted by inspector	
28	Coverage %	Clause No. 5(G.7)	ENG-EHV-1012	Value to be noted by inspector	
For 1 core cable					
29	Tensile test	8	IS 8130	6	IS 1608
30	Wrapping test	8	IS 8130	5	IS 1755
31	Resistance test	8	IS 8130	8	IS 10810 Part 42
32	Diameter and no. of wires	Clause No. 5(G.3)	ENG-EHV-1012	Value to be noted by inspector	
33	Coverage %	Clause No. 5(G.7)	ENG-EHV-1012	Value to be noted by inspector	
(VII) Test on Outer Sheath					
34	Thickness	Clause No. 5(H.3)	ENG-EHV-1012	Value to be noted by inspector	
35	Tensile strength and Elongation at break (before ageing)	Table 2	IS 5831	8	IS 10810 part 7
36	Colour of outer sheath	Clause No. 5(H.4)	ENG-EHV-1012	To be checked by inspector	
37	Surface uniformity of outer sheath (on full drum)/ shall be free from any damage- void, nick, cavity.	Clause No. 5(H.5)	ENG-EHV-1012	Through rewinding of drum (As per TPCODL specification)	

38	Presence of lead napthenate in PVC outer sheath	Chemical test Clause no. 5(H.1)	ENG-EHV-1012	To be checked by inspector	
39	Flammability test	As per IEC 332 part 1			
40	Oxygen index	As per ASTM 2863			
41	Temperature index	As per ASTM 2863			
42	Acid gas generation	As per IEC 60754			
43	Smoke density	As per ASTM 2843			
(VIII) Tests for complete cable					
44	Partial discharge test	5 pC	As per type test	8	IS 10810 part 46
45	High voltage test	63 kV for 5 minutes As per Clause no. 20.7.2	IS 7098 part 2	8	IS 10810 part 45
46	Raw material consumption verification	Document verification as proof to be submitted			
		Invoice to be shown from procurement to consumption			
(IX) Additional tests					
47	Colour coding identification over copper screen (for 3C cable)	Clause no. 5(D.2)	ENG-EHV-1012	To be checked by inspector	
48	Sequential marking check	Clause no. 6.ii	ENG-EHV-1012	To be checked by inspector	
49	Cable drum length verification	Clause no. 6	ENG-EHV-1012	To be checked by inspector	
50	Packaging of cable on cable drum	By recyclable PVC sheet- As per Clause no.12	ENG-EHV-1012	To be checked by inspector	
51	Weight of conductor/km	Clause No. 5(A.11)	ENG-EHV-1012	Value to be noted by inspector	
52	Diameter of conductor	Clause No. 5(A.10)	ENG-EHV-1012	Value to be noted by inspector	
53	Weight of XLPE insulation plus semiconducting screen (of conductor & insulation)/ km	Value to be noted by inspector			
54	Diameter over core	Clause no. 5(D.4)	ENG-EHV-1012	Value to be noted by inspector	
55	Weight of core	Clause no. 5(D.5)	ENG-EHV-1012	Value to be noted by inspector	
56	Weight of copper tape/km	Clause No. 5(D.6)	ENG-EHV-1012	Value to be noted by inspector	
57	Diameter over inner sheath	Value to be noted by inspector			
58	Weight of armour/ km	Clause No. 5(G.6)	ENG-EHV-1012	Value to be noted by inspector	
59	Cable sealing end caps	Clause No. I	ENG-EHV-1012	Provision to be checked by inspector	
60	Weight of outer sheath/ km	Clause No. 5(H.7)	ENG-EHV-1012	Value to be noted by inspector	
61	Diameter of complete cable	Clause No. 5(J.1)	ENG-EHV-1012	Value to be noted by inspector	

Technical Specification – Heat Shrinkable Straight Through Joint and Termination for 33 kV Power Cable

CONTENTS

<table>
<tr><td>1.0</td><td>Scope</td><td>Technical Specification – covering requirements wrt Design, Manufacturing, Material, Testing at manufacturer's work/CPRI/ERDA lab, Packaging, Supply and Delivery, Unloading at site/store of 33 kV Heat Shrink Cable Straight through Joints and Terminations with all accessories for contributing to trouble free and efficient network operation.
The equipment shall conform in all respects to high standards of Engineering, Design and Workmanship and be capable of performance in continuous operation.</td></tr>
<tr><td>2.0</td><td>Applicable Standards</td><td>The equipment covered in the Specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International standards / IEC and shall conform to the regulations of the local authorities.
<table>
<tr><th>S. No.</th><th>Standards</th><th>Title</th></tr>
<tr><td>1</td><td>IS-13573(part2): 2011</td><td>Test requirements - Cable accessories for extruded power cables
(for working voltages 3.3 kV and up to including 33 kV)</td></tr>
<tr><td>2</td><td>IS 7098(part2):2011</td><td>Cross-linked polyethylene insulated thermoplastic sheathed cables
(for working voltages from 3.3 kV up to and including 33 kV)</td></tr>
<tr><td>3</td><td>IS 692 : 1994</td><td>Paper insulated lead sheathed cables for rated voltages up to and including 33 kV</td></tr>
<tr><td>4</td><td>IEC 60502 : 2009</td><td>Power cables with extruded insulation and their accessories for rated voltages from 1 kV up to 30 kV</td></tr>
<tr><td>5</td><td>ASTM D-2303</td><td>Standard Test Methods for Liquid Contaminant, Inclined-plane tracking and Erosion of insulating materials</td></tr>
<tr><td>6</td><td>ASTM D-2671</td><td>Standard Test Methods for Heat Shrinkable Tubing</td></tr>
<tr><td>7</td><td>ENA TS 09-13:1981</td><td>High Voltage Heat Shrinkable Components for use with HV solid type cables up to and including 33 kV</td></tr>
<tr><td>8</td><td>IEC 61238(part1) : 2003</td><td>Test methods and requirements - Compression and mechanical connectors for power cables for rated voltages up to 30 kV</td></tr>
<tr><td>9</td><td>IS 2633:1986</td><td>Method for testing of uniformity of zinc coating</td></tr>
<tr><td>10</td><td>IS 4826 : 1979</td><td>Hot dipped galvanized coatings on round steel wires</td></tr>
<tr><td>11</td><td>IS 12444:1988</td><td>Continuously Cast and Rolled Electrolytic Copper Wire Rods for electrical conductors</td></tr>
<tr><td>12</td><td>IS 191</td><td>Copper</td></tr>
<tr><td>13</td><td>IS 10810</td><td>Methods of test for cables</td></tr>
<tr><td>14</td><td>IEC 60216 part 2</td><td>Determination of thermal endurance properties of electrical insulating materials</td></tr>
<tr><td>15</td><td>IEC 60216 part 8</td><td>Instructions for calculating thermal endurance characteristics using simplified procedures</td></tr>
</table></td></tr>
<tr><td>3.0</td><td>Climate conditions of the installation</td><td>The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g
(g being acceleration due to gravity)
11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.
Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden.</td></tr>
</table>

<table>
<tr><td></td><td></td><td>On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.</td></tr>
<tr><td>4.0</td><td>General Technical Requirements</td><td>4.1. General design and sizes of 33 kV XLPE / PILC insulated cables operated in TPCODL network are as mentioned below:

A. XLPE Insulated Underground Cables as per IS 7098 – 2: 33 kV(E)
A2XCWY- (Aluminum stranded compacted conductor, XLPE insulation, copper tape screen, wire GI armour, PVC sheath)

A2XCFY- (Aluminum stranded compacted conductor, XLPE insulation, copper tape screen, Flat wire GI armour, PVC sheath)

A2XCWaY (Aluminum conductor, XLPE insulation, copper tape screen, wire Aluminum armour, PVC sheath)

i) 3CX300 sq.mm. A2XCWY/A2XCFY
ii) 3CX400 sq.mm. A2XCWY/A2XCFY
iii) 1CX400 sq.mm. A2XCWaY
iv) 1CX630 sq.mm. A2XCWaY
v) 1CX1000 sq.mm. A2XCWaY
B. PILCA Insulated Cables as per IS 692: 33 kV(‘E)
Screened APLST (Al stranded sector shaped, paper insulated, lead sheath, steel tape sheath

3CX300 sq.mm.

4.2. According to standard sizes of cables, following types of cable joints and terminations shall be required.
Tinned coated Mechanical Lugs and mechanical connectors are applicable for all sizes of 33 kV cable terminations and straight through joints respectively.

<table>
<tr><th>Type & size of cable</th><th>Type of Joint</th></tr>
<tr><td rowspan="3">3CX300 and 400 sq.mm. XLPE insulated cable</td><td>Indoor termination with tinned coated 300-400mm2 mechanical lugs</td></tr>
<tr><td>Indoor termination joint GIS</td></tr>
<tr><td>Outdoor termination with tinned coated 300-400mm2 mechanical lugs</td></tr>
<tr><td>3CX300 / 400 sq.mm. XLPE insulated cable</td><td>Straight through joint 300-400 sq.mm. with mechanical connector</td></tr>
<tr><td rowspan="4">1CX400 & 1CX630 sq.mm. XLPE insulated cable</td><td>Indoor termination joint GIS</td></tr>
<tr><td>Indoor termination screen type (for RMU) with tinned coated mechanical lugs</td></tr>
<tr><td>Outdoor termination with tinned coated mechanical lugs</td></tr>
<tr><td>Straight through joint with mechanical connector</td></tr>
<tr><td rowspan="3">1CX1000 sq.mm. XLPE insulated cable</td><td>Indoor termination joint GIS</td></tr>
<tr><td>Outdoor termination with tinned coated mechanical lugs</td></tr>
<tr><td>Straight through joint with mechanical connector</td></tr>
<tr><td>PILCA to XLPE transition joints</td><td>Screened Transition joint
3CX300/400 sq.mm. XLPE insulated cable WITH
3CX300/400 sq.mm PILCA cable
(with mechanical connector)</td></tr>
</table>
4.3 General requirement for Heat Shrinkable Jointing and Termination kit:</td></tr>
</table>

- The jointing kit containing heat shrinkable tubing, mastics and other accessories for making a complete joint and termination shall be designed to meet TPCODL specification, ENA TS 09-13, IEC 60502 and IS 13573, part-2 and other relevant standards.
- Cable joint and termination material shall not be adversely affected in any manner even after contact with material used in cable construction and material used as accessories in the construction of cable joints and terminations and there will be no chance of corrosion developing on any metal surface.
- Assembled jointing kit components shall perform without distress in system with parameters(mentioned below):

S. No.	Parameter	Units	Requirement
1	Max. Withstand System Voltage	kV	36
2	Partial Discharge at 1.73 Uo	pC	<10
3	Impulse Peak Withstand	kV	170 kV
4	Continuous operation withstand Temperature	ºC	90
	Short Circuit withstand temperature	ºC	250
5	Withstand short circuit current	kA/1Sec	a) 3CX300 Sq.mm Cable : 28.2 kA b) 3CX400 sq.mm Cable : 37.7 kA c) 1CX1000 Sq.mm Cable : 94.0 kA d) 1CX630 Sq.mm Cable :59.4 kA e) 1CX400 Sq.mm Cable :37.6 kA
6	Storage Temperature Range	ºC	-10ºC to + 45ºC
7	Shelf life of kit components excluding mastic and solution	Years	Min. 5
8	Shelf life of mastic and solution	Years	Min. 2

4.4 General Technical Particulars for Heat Shrinkable Insulation Tubing/ Sleeves/ Wrap Around Sleeve:

S.No.	Parameter	Requirement
1	Visual Examination	Free from protrusions, pin holes, cracks, nicks and other visible defects.
2	Wall thickness Ratio	0.6 or 60% (Minimum at any two points of measurements)
3	Internal dia of tube after full recovery	Shall not be higher than as specified in approved BOM / GTP.
4	Longitudinal change	10% Max.
5	Electric Strength	10 KV /mm (Minimum)
6	Tensile Strength	10 N/mm2 (Minimum) (8N/mm2 for anti-tracking)
7	Ultimate Elongation	200% (Minimum)
8	Heat Shock	No splitting, cracking, dripping or flowing after 30 minutes at 200ºC Min. (For stress control tube: 30 Minutes at 200ºC Min.)
9	Low Temperature Flexibility	No cracking after 4 Hrs at minus -20ºC Max.
10	Tracking resistance	No tracking, erosion to top surface or flame failure after 1hr @ 2.5KV 1hr @2.7KV 1Hr@ 3.0 KV 20 min@ 3.25KV

		11	Volume Resistivity	1x 1010 Ohm- meter (Minimum) (For stress control tube VR: 1x 107 Ohm- meter Min.)
		12	Flame Retardant (Applicable only for Anti tracking Tubes/ sleeves)	After 1 minute burn: Burnt or charred length 250mm Max.

4.5 General Technical Particulars for Heat Shrinkable moulded components/ Breakouts/Weather sheds:

S.No.	Parameter	Specified limit
1	Visual Examination	Free from protrusions, pin holes, cracks, nicks and other visible defects.
2	Wall thickness Ratio	0.6 or 60% (Minimum at any two points of measurements)
3	Internal dia of tube after full recovery	Shall not be higher than as specified in approved BOM / GTP.
4	Longitudinal change	25% Max.
5	Electric Strength	10 KV /mm (Minimum)
6	Tensile Strength	8 N/mm2 (Minimum)
7	Ultimate Elongation	200% (Minimum)
8	Heat Shock	No splitting, cracking, dripping or flowing after 30 minutes at 250ºC Min.
9	Low Temperature Flexibility	No cracking after 4 Hrs at minus -20ºC Max.
10	Volume Resistivity	1x 10 10 Ohm- meter (Minimum)
11	Flame Retardant (For anti-tracking moulded components)	After 1 minute burn: Burnt or charred length 250mm Max.

4.6. Service Support

Bidder shall have own setup in Bhubaneswar, Odisha for jointing and termination services along with supervision and other necessary allied services for ensuring quality of installed jointing and terminations.

5.0 General Construction

5.1. Termination Joints:

a) Termination kit shall be designed based on heat shrink technology and shall be suitable for installation for 33 kV, three core and single core aluminum conductor, XLPE insulated (in line with TPCODL Specification for underground IS 7098-part 2, IS 13573 Part 2 &3).

a.1 Length of 33 KV terminations (from bottom of breakout to center of lug hole) shall be:

i) 1core cable I/D & O/D and 3 core cable (I/D)Indoor terminations - 1500 mm

ii) 3 core cable O/D (Outdoor terminations) - 3000 mm

S. No.	Components	Requirement
1	Tinned coated Mechanical Lugs	Mechanical Lugs: - Tinned coated Aluminium 300-400 mm^2/ 630mm^2/1000mm^2 - As per IEC 61238(part1): 2003. - Dimensions shall be as annexure-I of this

		specification.
2	Lug Seal, Anti-tracking tube, weather sheds, Stress control tube	- Heat Shrinkable - Fire resistant and weather resistant as per ENA TS 09-13 – for lug seals, weather sheds and Anti-tracking tubes
3	Mastic tape	- Mastic tape shall be electrically insulating, non-tracking and water/humidity resistant. - Volume resistivity of mastic shall not be less than volume resistivity of insulating tube as specified in ENA TS 09-13.
4	Heat Shrink Breakout	- Fire resistant and weather resistant as per ENA TS 09-13. - Adhesive coated Breakouts shall be provided on outer sheath of the cable to prevent water ingress.
5	Tinned coated copper braid	- Shall be completely insulated by adhesive coated fire retardant and weather resistant HS tube/sleeve up to copper lug. - Fire resistant and weather resistant as per ENA TS 09-13. - Size and length is as follows: For 3C cables: 70 mm^2 X 750 mm X 1 Run for 300/ 400 mm^2 cables. For 1C cables: 50 mm^2 X 750 mm X 1 Run for 400 mm^2, 630 mm^2 & 1000 mm^2 cables. Additionally 3 nos. X 150 mm2 Al lugs with sealing sleeves/ mastic for armor back fold for earth bonding.
6	Tinned coated copper braid as a Leakage Current Collector	- Leakage current collector tinned copper braid - 1R X 7 mm^2 X 150 mm per core shall be provided for terminations.
7	Tinned copper wire mesh	- Minimum 2.5mm^2 tinned copper mesh shall be provided on armour circumference beneath the copper braid. - Length of copper wire mesh shall be provided in BOM submission.
8	Sub-kit components	- Tapes, Mastic, GI back-up rings, Worm Drive clip/ Jubilee clip of stainless steel, adhesive cloth, cleaning solvents and other necessary items. - Compatible Supporting ring with SS jubilee clips shall be provided to connect tinned copper braids. - Soldering on copper screen is not acceptable. - Roll spring shall be provided for screen connections. - Plumb earthing on PILCA side is unacceptable. Constant pressure roll spring should be used for same.
9	Submission of BOM and instruction sheet	- Participating bidder shall submit BOM (during pre-bid) with dimensions of each size and quantity of HS joint and termination. Also instruction sheet shall be provided in each kit. - *Note: BOM shall be approved by TPCODL authorized official at the time of pre-bid.

5.2. Components of Straight Through jointing kit:

S. No.	Components	Requirement
1	Heat Shrinkable insulating tube/ Sleeve	- Surface of material: shall be smooth and free from protrusion, voids and nicks. - Recovered thickness: Recovered thickness of insulation tubes over ferrule or connector circumference shall not be less than 10.56 mm at any point of measurement. - Wall thickness ratio (before recovery) of all sleeves/

					tubes shall not be less than 60% at any two points of measurement.
		2	Mechanical Connectors		- Aluminum Mechanical connectors 300-400 m2/630mm^2/1000mm^2 as per IEC 61238. - Dimensions as per **Annexure-I** of this Specification - Conductivity of ferrules/mechanical connectors shall be as per IEC 61238(part1).
		3	Mastic Tape		- Mastic tape shall be electrically insulating, non-tracking and water/humidity resistant. - Volume resistivity of mastic shall not be less than volume resistivity of insulating tube as specified in ENA TS 09-13.
		4	Tinned coated copper braid for GI armour continuity / Ferrules for Aluminium armour continuity		**Tinned coated copper braid for GI armour continuity:** Uniformly tinned coated copper braid shall be provided for armour continuity. - Wrap tinned copper wire mesh with 50% overlap around the joint area and continue 25 mm over the copper screen on both sides. Bind the copper wire mesh on copper screen. - Uniformly tinned coated copper braid shall be provided for armor continuity. - Tinned copper braid shall be provided for wrapping over armour circumference beneath the copper braid and size shall be: For 3C Cables: 70 mm^2 X1 Run for 300/ 400mm^2 cables. Length of copper braid shall be submitted in the BOM. For 1C Cables: In single core cables, 1CX400,1CX630 and 1CX1000 sq.mm. cables, Aluminium armor continuity shall be done using 2 nos. each size of 150 sq.mm. and 185 sq.mm. ferrules respectively.
		5	Tinned copper wire mesh		- Uniformly tinned coated copper mesh shall be provided for screen continuity. - Minimum 2.5mm^2 tinned copper mesh shall be provided on both sides of armour circumference beneath the copper braid. - Length of copper wire mesh shall be provided in BOM submission.
		6	GI wire mesh/ Copper wire mesh		- Mechanical protection shall be provided in GI armored cables by means of heavily zinc coated GI mesh as per IS 4826. - In 1C Aluminium armored cables, for mechanical protection, copper wire mesh shall be provided.
		7	Breakouts		- Adhesive coated Breakouts shall be provided on outer sheath at both sides on the cable to prevent water ingress.
		8	Wrap around insulating tube/Sleeve as outer most tube		- Material: cross-linked polyolefin (Heat Shrinkable) as a waterproof seal. - Shape: Wrap around form with hot-melt adhesive liner on the inner surface of the sleeve (Upon heating, the sleeve shrinks and the adhesive melts, creating a water-tight bond between the sleeve and the cable). - Stainless steel channel shall be provided along the wrap around to close the sleeve during installation. - Excellent mechanical and corrosion protection, and atmospheric sealing. - High split resistance. - *Note: Overlapping of wrap around sleeve is not acceptable.

				- Additionally, adhesive coated sleeve approx. 300 mm length shall be provided at ferrule joint area beneath the wrap around sleeve.
		9	Sub-kit Components	- Tapes, Mastic, GI back-up rings, Worm Drive clip/ Jubilee clip of stainless steel, adhesive cloth, cleaning solvents and other necessary items. - Compatible support rings (Aluminium for single core and GI for three core cables) with four nos. SS jubli clips shall be provided to connect tinned copper braid. - For copper screen bonding, roll spring shall be provided. - Plumb earthing on PILCA side is unacceptable. Constant pressure roll spring shall be provided for earthing continuity.
		10	Submission of BOM and instruction sheet	- Participating bidder shall submit BOM (during pre-bid) with dimensions of each size and quantity of HS joint and termination. Also instruction sheet shall be provided in each kit. *Note: BOM shall be approved by TPCODL authorized official at the time of pre-bid.

6.0 Name plate and Marking

Following details shall be printed on the box:

a) Manufacturer's name
b) Month & Year of manufacturing
c) Voltage Grade
d) Property of TPCODL
e) Material code
f) PO No.

HS Sleeves/ tubes and breakout components shall be embossed with:

a) Month and year of manufacturing
b) Manufacturer name
c) Batch no. / Lot no.
d) Shrink ratio
e) Size
f) Type

7.0 Tests

All Routine, Acceptance & Type tests shall be carried out in accordance with the Relevant IS/IEC/ ENA TS 09-13.
Acceptance tests shall be witnessed by TPCODL authorized representative.
All the components shall also be type tested as per the relevant standards mentioned below.
Following tests shall be necessarily conducted on the Joint and Termination Kits in addition to others specified in IS/IEC/ ENA-TS 09-13 standards:-

A. Type Tests:

(I) Terminations & Straight Through joints

Test	Clause No.	Reference Standard
Conductor resistance with Ferrule/Lugs/Mechanical connectors	4.1	IS 13573(Part-2)
AC Voltage withstand Test (Air)	4.2	IS 13573(Part-2)
AC Voltage withstand test (under wet conditions) (for outdoor termination only)	4.2	IS 13573(Part-2)
Partial Discharge	7.0	IS 13573(Part-2)
Impulse voltage test	6	IS 13573(Part-2)
Heat Cycle test in air and water	9.1 and 9.2	IS 13573(Part-2)
Thermal Short Circuit Test for Screen	10	IS 13573(Part-2)
Thermal Short Circuit Test for Conductor	11	IS 13573(Part-2)
DC Voltage Withstand	5	IS 13573(Part-2)
Dynamic short circuit test	12	IS 13573(Part-2)

Thermal Endurance test	IEC 60216 part 2 & 8	
Salt fog test (Only for Outdoor terminations only)	13	IS 13573(Part-2)

(II) Kit Components

a) For Tubing and Moulded Components

Test	Clause No.	Reference Standard
Corrosion Resistance	3.1	ENA -TS 09-13
Density	3.2	ENA -TS 09-13
Dimensions	3.3	ENA -TS 09-13
Electric Strength	3.4	ENA -TS 09-13
Flame Retardance	3.5	ENA -TS 09-13
Heat Shock	3.7	ENA -TS 09-13
Low temperature flexibility	3.8	ENA -TS 09-13
Relative Permittivity	3.9	ENA -TS 09-13
Tensile strength and Ultimate elongation	3.12	ENA -TS 09-13
Thermal Ageing	3.13	ENA -TS 09-13
Tracking Resistance	3.14	ENA -TS 09-13
Visual Examination	3.15	ENA -TS 09-13
Volume Resistivity	3.16	ENA -TS 09-13
Water Absorption	3.17	ENA -TS 09-13

b) For Mechanical lugs and connectors

Test	Clause No.	Reference Standard
Conductivity test	as per IEC 61238, part - 1	

B. Routine Tests:

Test	Clause No.	Reference Standard
Visual inspection of tubing and moulded components for free from pin holes, cracks, nicks, protrusion and other defects	3.15	ENA -TS 09-13
Dimension check	As per TPCODL approved BOM	
Electric Strength	3.4	ENA -TS 09-13
Ultimate Elongation	3.12	ENA -TS 09-13
Tensile Strength	3.12	ENA -TS 09-13
Volume Resistivity	3.16	ENA -TS 09-13
Wall thickness ratio	3.3	ENA -TS 09-13
Expanded and recovered diameters of tubes	3.3	ENA -TS 09-13

C. Acceptance tests:

Test	Clause No.	Reference Standard
Visual inspection	3.15	ENA -TS 09-13
Physical verification of kit contents and dimensions	As per TPCODL approved BOM	
Electric Strength test	3.4	ENA -TS 09-13
Ultimate Elongation tests	3.12	ENA -TS 09-13
Tensile Strength	3.12	ENA -TS 09-13
Volume Resistivity	3.16	ENA -TS 09-13
Wall thickness ratio	3.3	ENA -TS 09-13

		Expanded and recovered diameters	3.3	ENA -TS 09-13
		Longitudinal change after recovery	3.3	ENA -TS 09-13
		Heat shock test	3.7.1/3.7.2	ENA -TS 09-13
		Low temperature flexibility	4.5	ENA -TS 09-13
		Insulation build up thickness after shrink on Ferrule	8.1	IS 10810 -6
		Flame retardant test on anti-tracking tubes and anti-tracking moulded components and earth braid protective tube after shrink on mandrill for terminations	3.5.1/ 3.5.2	ENA -TS 09-13
		Area measurement of tinned copper braids (Area of one wire x no. of wires x no. of carriers)	As per TPCODL specification/ approved BOM	
		Conductivity test on ferrules/ connectors/ lugs	8.3	IS 8309
		Uniformity of zinc coating on GI mesh	4.1	IS 2633
8.0	**Type Test Certificate**	The bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per the relevant standards not exceeding 5 years from the date of opening of bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to TPCODL. TPCODL has rights for Surveillance test of random selected samples from third party lab for quality checks of item. TPCODL shall be intimated in case revision is done by manufacturer in product design/ dimension/ material during execution of contract. Subsequently Type test certificate shall be produced.		
9.0	**Pre-dispatch inspection**	Equipment shall be subject to inspection by a duly authorized representative of TPCODL. Inspection may be made at any stage of manufacturing at the option of TPCODL and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture TPCODL's representatives at all times when the work is in progress. Inspection by TPCODL's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL. The pre-dispatch inspection shall be carried out as per annexure-II.Following documents shall be sent along with material: a) Test reports b) MDCC issued by TPCODL c) Invoice in duplicate d) Packing list e) Drawings & catalogue f) Guarantee / Warrantee card g) Delivery Challan h) Other Documents (as applicable)		
10.0	**Inspection after receipt at Stores**	Material received at TPCODL's Bhubaneswar, Odisha store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.		
11.0	**Guarantee**	Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by TPCODL up to a period of at least 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract whichever is later. Further Bidder shall also stand guarantee towards poor workmanship in installation of straight through joint and terminations installed by bidder's jointer up to 60 months from the date of installation. Bidder shall be liable to undertake to replace/rectify such defects at own costs, within mutually agreed time frame, and to the entire satisfaction of TPCODL, failing which TPCODL shall be at liberty to get it replaced/rectified at bidder's risks and costs and recover all such expenses plus the Company's own charges (@ 20% of expenses incurred), from the bidder or from the "Security cum Performance Deposit" as the case may be. Bidder shall further be responsible for free replacement for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by TPCODL.		
12.0	**Packaging**	Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.		

<table>
<tr><td></td><td></td><td>Each components shall be supplied in a single package as a complete kit for one termination/joint.</td></tr>
<tr><td>13.0</td><td>Tender Sample</td><td>Bidder shall be submit the sample of material during tender evaluation process with the offer (in case of first supply to TPCODL).</td></tr>
<tr><td>14.0</td><td>Training</td><td>Detailed Installation instruction with drawings for all joints and termination shall be provided by Bidder with tender documents in English and Hindi & Odia Language.
Updated installation manual shall be provided in the kit.
Hands-on-training shall be conducted annually at our site location for BA and TPCODL jointers.

Bidder shall provide installation/operational services at site.</td></tr>
<tr><td>15.0</td><td>Quality Control</td><td>The bidder shall submit with the offer, ‘Quality Assurance Plan’ indicating the various stages of inspection, the tests and checks which shall be carried out on the material of construction, components and bought out items.
TPCODL’s engineer or its nominated representative shall have free access to the manufacturer’s/sub-supplier's works to carry out inspections.</td></tr>
<tr><td>16.0</td><td>Minimum Testing facilities</td><td>Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests as per Indian /International standards.</td></tr>
<tr><td>17.0</td><td>Manufacturing activities</td><td>The successful bidder shall submit bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart shall be submitted within 15 days from the release of the order.</td></tr>
<tr><td>18.0</td><td>Spares, Accessories and Tools</td><td>Not applicable.</td></tr>
<tr><td>19.0</td><td>Drawings and Documents</td><td>After the award of the contract four (4) copies of following drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval.
<table>
<tr><th>S. No.</th><th>Description</th><th>For Approval</th><th>For Review Information</th><th>Final Submission</th></tr>
<tr><td>1</td><td>Technical Parameters</td><td>√</td><td></td><td>√</td></tr>
<tr><td>2</td><td>BOM (at the time of pre-bid)</td><td>√</td><td></td><td></td></tr>
<tr><td>3</td><td>Drawing showing Joints Details</td><td>√</td><td></td><td>√</td></tr>
<tr><td>5</td><td>Termination drawings</td><td>√</td><td></td><td></td></tr>
<tr><td>6</td><td>Manual/Catalogues</td><td></td><td>√</td><td>√</td></tr>
<tr><td>7</td><td>Transport/ Shipping dimension drawing</td><td></td><td>√</td><td>√</td></tr>
<tr><td>8</td><td>QA &QC Plan</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>9</td><td>Routine, Acceptance and Type Test Certificates</td><td>√</td><td>√</td><td>√</td></tr>
</table>
All the documents & drawings shall be in English language.</td></tr>
<tr><td>20.0</td><td>Guaranteed Technical Particulars</td><td>Bidder to comply all above clauses as per specification.</td></tr>
<tr><td>21.0</td><td>Schedule of Deviations</td><td>The bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the purchaser’s specifications.
(TO BE ENCLOSED WITH THE BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:
<table>
<tr><th>S.No.</th><th>Clause No.</th><th>Details of deviation with justifications</th></tr>
<tr><td></td><td></td><td></td></tr>
</table>
We confirm that there are no deviations apart from those detailed above.</td></tr>
</table>

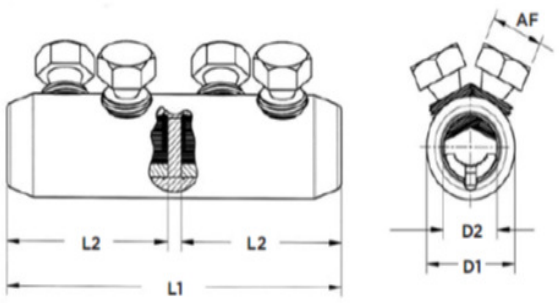
		Seal of the Company: Signature: Designation:

Annexure-I

Annexure- Dimensions Mechanical connectors & Mechanical Lugs

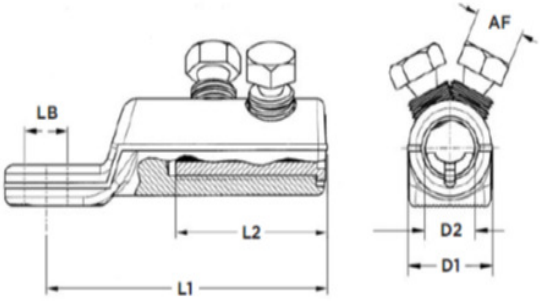
Aluminium Mechanical connectors

Cable Size in MM^2	ϕD1 (mm)	ϕD2 (mm)	L (mm)
185-400	42	25.5-26	170-200
500- 630	50	33- 33.5	180-230
1000	60	40	180-230



Tinned Aluminium Mechanical Lugs

Cable Size in MM^2	ϕLB (mm)	ϕD1 (mm)	ϕD2 (mm)	L (mm)
185-400	17	42	25.5-26	137-150
500- 630	17	50	33- 33.5	150-180
1000	2x17	60	40- 40.5	180- 240



Annexure- II

Inspection Test Plan for HS Jointing kit components

S. No.	Name of test	Specified value(Range)	Reference documents	Test Result	Pass/Fail
1	Visual inspection	Free from pin holes, cracks, nicks, protrusion and other visible defects.	ENA-TS-09-13 Clause No. 3.15 & TPCODL specification		
2	Physical verification of kit contents and dimensions	Dimensions as per TPCODL approved BOM			
3	Electric Strength test	10 KV /mm (Minimum)	ENA-TS-09-13 Clause No. 3.4		
4	Ultimate Elongation tests	200% (Minimum)	ENA-TS-09-13 Clause No. 3.12		
5	Tensile Strength	10 N/mm2 (Minimum) For anti-track tube-8 N/mm2	ENA-TS-09-13 Clause No. 3.12		
6	Tracking resistance test(Anti-tracking Tube)	NO Tracing erosion to top surface /flash failure after 1 hr 2.5 KV 1hr 2.75KV 20 min 3.5 KV	ENA-TS-09-13 Clause No. 3.14		
7	Volume Resistivity	1x10 10 Ohm- meter (Minimum	ENA-TS-09-13 Clause No. 3.16		
8	Wall thickness ratio	0.6 or 60% (Minimum at any two points of measurements)	ENA-TS-09-13 Clause No. 3.3		
9	Expanded and recovered diameters	As per TPCODL approved BOM	ENA-TS-09-13 Clause No. 3.3(i)		
10	Longitudinal change after recovery	10% max	ENA-TS-09-13 Clause No. 3.3(ii)		
11	Heat shock test	No splitting, cracking, dripping or flowing after 30 min @200ºC min	ENA-TS-09-13 Clause No. 3.7.1/ 3.7.2		
12	Low temperature flexibility	No cracking after 4 Hrs @ Minus 20ºC max	ENA-TS-09-13 Clause No. 4.5		
13	Insulation build up thickness after shrink on Ferrule as per IS 10810 -6	Not less than as specified in specification	as per IS 10810 -6 Clause No. 8.1		

14	Flame retardant test	After one min burn: burnt or charred length 250 mm max.	ENA-TS-09-13 Clause No. 3.5.1/ 3.5.2		
15	Area measurement of tinned copper braids (Area of one wire x no. of wires x no. of carriers)	As per TPCODL specification/ approved BOM			
16	Ferrules/ connectors/ lugs dimension and conductivity test	As per annexure-I in this specification	as per IS 8309 Clause 8.3 and IEC 61238		
17	Uniformity of zinc coating on GI mesh as per IS 2633	No reddish color after one dip for ½ minute in CuSO4 solution	as per IS 2633 Clause 4.1		

Specification for G I Earth pipe(Nominal bore - 40 mm : length -3.0 Meter)

CONTENTS

1.0 SCOPE

The scope of this document is to give design & constructional features, inspection, supply and transportation guidelines for GI earth pipe 40 mm nominal bore, 3.0 meter length for TPDDL.

2.0 APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with latest editions of the following standards/IEC and shall conform to the regulations of local statutory authorities.

a) IS 1239-Part1 - For Steel tubes, tubulars and other wrought steel fittings- specifications
b) IS 2062:2011 - For Hot rolled medium and high tensile structural steel- specification
c) IS 1852-1985 - For Rolling and cutting tolerances for hot rolled steel products
d) IS 4759-1996 - For Hot dip zinc coatings on structural steel and other allied products- specification

3.0 CLIMATIC CONDITIONS OF THE INSTALLATION:

The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g
(g being acceleration due to gravity)
11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.

Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

4.0 GENERAL CONSTRUCTION:

The material shall be-

a) MS grade E 250 as per IS 2062:2011
b) Heavy class as per IS- 1239/IS 1161-1979.
c) Galvanizing to be done after fabrication as per IS 4759-1996
d) The design shall be suitable for the climatic condition stated above.
e) Fabrication tolerances should be ± 2% until and unless otherwise specified
f) Dimensional tolerance shall be as per IS 1852-1985
g) Zinc electroplated/painted material will not be accepted
h) The constructional details shall be as per the attached drawing no TPD-S-116-E-008

5.0 GENERAL TECHNICAL REQUIREMENTS:

Sr. No.	DESCRIPTION	REQUIREMENT

1	Nominal bore (mm)	**40**
2	Outside diameter (mm)	**48.3**
3	Class	**HEAVY**
4	Thickness (mm)	**4**
5	Length (meter)	**3**
6	Mass of tube (Plain end) (kg/m)	**4.37**
7	Area of cross section (cm2)	**5.56**
8	Internal volume (cm3/m)	**1275**
9	Surface (cm3/m)	
	External	**1517**
	Internal	**1265**
10	Moment of inertia (cm4)	**13.77**
11	Modulus of section	**5.70**
12	Radiation of gyration	**1.57**
13	Square of radiation of gyration	**2.47**
14	Maximum permissible temperature	**260 °C**

6.**0 MARKING:**

The unit shall be appropriately marked as **"PROPERTY OF TPCL, BHUBANESWAR"** and with the name of the vendor and year of manufacturing at suitable location.

7.0 TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC.
All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. All components shall also be type tested as per the relevant standards.

Tests	**IS to be referred**
Visual test	As a routine test
Dimensional tests	As per the drawing
Tensile strength	IS 1608 & IS 12278
Bend test	IS 2062
Hot dip galvanizing	IS 4759
Determination of mass of zinc coating on zinc coated iron and steel	IS 4759

8.0 TYPE TEST CERTIFICATE

The bidder shall furnish the type test certificates of the GI Earth pipe for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at NABL accredited as per the relevant standards. Type test should have been conducted during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCL.

9.0 PRE DISPATCH INSPECTION

Equipment shall be subjected to inspection by a duly authorized representative of TPCL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCL's representatives at all times when the work is in progress. Inspection by TPCL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCL.

Following documents shall be sent along with material.

f) Test reports

g) MDCC issued by TPCL
h) Invoice in duplicate
i) Packing list
j) Drawings & catalogue
k) Guarantee / Warrantee card
l) Delivery Challan
h) Other Documents (as applicable)

10.0 INSPECTION AFTER RECEIPT AT STORES

The material received at TPCL, Bhubaneswar, Odisha store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.

11.0 GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Company up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later. In the event any defect is found by the Company up to a period of 12 months from the date of commissioning or 24months from the date of last supplies made under the contract, whichever is earlier, supplier shall be liable to undertake to replace/rectify such defects at his own costs.

12.0 PACKING

Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

13.0 TENDER SAMPLE

Not Applicable.

14.0 QUALITY CONTROL

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPCL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

15.0 MINIMUM TESTING FACILITIES

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards

16.0 MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

17.0 SPARES, ACCESSORIES AND TOOLS

NA

18.0 DRAWINGS

Following drawings & documents shall be prepared based on Purchaser's specifications and statutory requirements with complete BOM and shall be submitted with the bid:

a) Completely filled-in Technical Parameters (refer Cl. 5)
b) General description of the equipment and all components including brochures
c) General arrangement drawings
d) Type Test Certificates.
e) Experience List
f) Manufacturing schedule and test schedule after the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the

dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

Following Drawings/Documents shall be submitted after the award of the contract:
Drawings/documents to be submitted after the award of the contract:

S.No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	General Arrangement drawings	√		√
3	Bill Of Material	√		√
4	Instruction for Use		√	√
5	QA &QC Plan	√	√	√
6	Routine, Acceptance & Type Test Certificates	√	√	√

All the documents & drawings shall be in English language.

19.0 SCHEDULE OF DEVIATIONS

SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S.No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature
Designation

SPECIFICATION FOR BOLT, NUT, WASHERS AND SPRING WASHERS

CONTENTS

TP CENTRAL ODISHA DISTRIBUTION LIMITED
TECHNICAL SPECIFICATION

1 **SCOPE:**

This specification covers technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding and unloading at TPDDL stores/site of M.S. Bolt, Nuts, Washers and spring washers for 66kV, 33 kV & 11 kV distribution network operation & maintenance work.

2. APPLICABLE STANDARDS:

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall conform to the regulations of the local Statutory authorities:

IS 1367: Technical supply condition for threaded steel fasteners.

- IS 12427: Fasteners – Threaded steel fasteners – Hexagonal head transmission tower bolts.
- IS 14394: Industrial fasteners –Nuts of product grade C - Hot dip Galvanized.
- IS 3063: Fasteners-Single Coil Rectangular section lock washers.
- IS 2629-1996: recommended practice for hot-dip galvanizing of iron and steel.
- IS 2016-1997: Specification for plain washers.

3. CLIMATIC CONDITIONS OF THE INSTALLATION:

The service conditions shall be as follows:

1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g

(g being acceleration due to gravity)

11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.

Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere

The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

4. GENERAL TECHNICAL REQUIREMENTS

S.N.	Description	Units	Requirement
Mechanical Properties of Hexagonal Bolts as per (IS:1367 Part-III/1979)			
1	Tensile Strength (To be arranged on size 150 mm & above) Min.	N/sq. mm.	400
2	Stress under proof load Min.	N/sq. mm.	225
3	Brinell Hardness		HB 114(min.) to 238 max.
4	Rockwell hardness		HRB-Max. 67(min) to 99.5 max.

5	Vickers hardness		HV 120 (min) to 250 max.
6	Elongation after fracture	%	3 Min. 22%
7	Yield Stress ,min.	N/sq. mm	340
8	Strength under wedge loading min.	N/sq. mm.	400
9	Impact Strength, min.		25
10	Head soundness		No fracture
Hexagonal Nuts(IS:1367 Part-IV/1980 Table 4)			
11	Proof stress min.	N/sq. mm.	610
12	Vickers Hardness		HV-Min. 130 HV-Max. 302

5. GENERAL CONSTRUCTIONS FOR NUTS & BOLTS

The Nut & bolt are made of low or medium carbon steel, the quality of zinc, bath temperature and the process of galvanizing in general shall conform to IS 2629-1996.Galvanizing shall be carried out by hot dip process only. The galvanizing process shall provide for substantial diffusion of hydrogen. Bolts & Nuts shall be taken at a temperature of 200 degree. C for a period of 30 minutes. The fasteners after galvanizing shall meet the physical properties of the relevant standards. The minimum average thickness of coating shall be 54µm and mass shall be 375 gm/sq. meter. However minimum individual thickness of coating shall be 43 µm and mass shall be 300 gm/sq. meter.

Fasteners with Internal Threads-Prior to galvanizing and subsequent tapping the dimensions of fasteners with internal threads shall conform to the relevant standards. Internal threads shall be tapped over-size after galvanizing and they shall be oiled for corrosion protection.

Fasteners with External Threads- Prior to galvanizing, the dimensions of fasteners with external threads shall conform to the relevant standards including thread sizes. The thickness of galvanized coating on external threads shall be so controlled in the galvanizing process that galvanized fasteners with external threads can be assembled by hand with internally threaded fasteners.
Galvanized external threads shall not be recut.

Allowances for Internal threads to Accommodate Galvanized External threads:

Nominal size of Internal Threads	Diameter Allowance (mm)
Below M16	+ 0.40
M16 to M22	+ 0.50
Over M22 and up to and including M36	+ 0.65

All fasteners, spring washers and pack washers shall be suitable as per IS: 1363.

The length of thread of Hexagonal bolts of length more than 100 mm shall be as per IS 1363 (Part-2) 2002 with amendments up to date.

Hexagonal bolts of length less than 100 mm shall be full threaded as per IS 1363 (Part-3)/2002 with amendments up to date.

The length of Hexagonal bolt & Nuts shall be as per IS 1363(Part-3)/2002 with amendments up to date.

The design of material shall be suitable for the climatic condition as stated above and should be galvanized properly so that no rust can be found in any part of fasteners.

Chemical compositions for Bolts & Nuts are in below:
For Bolts:
Carbon: 0.55% (max.)
Phosphorous: 0.05%.
Sulphur: 0.06%

For Nuts:
Carbon: 0.50% (max.)
Phosphorous: 0.12%.
Sulphur: 0.34%.

GENERAL CONSTRUCTIONS FOR WASHER

A washer is a thin plate (typically disk-shaped) with a hole (typically in the middle) that is normally used to distribute the load of a threaded fastener. Washers have an outer diameter (OD) about twice the width of the inner diameter (ID).

Washers will be of hardened steel to prevent the loss of pre-load due to Brinelling after the torque is applied.

Washers shall be made of steel or aluminium as per requirement. The washers shall be free from cracks, burrs, pits and other defects. The holes shall be reasonably concentric with the outer periphery; all sharp edges shall be removed.

Two type of washers used in TPCL Electricity network:

1) Plain Washers.
2) Spring washers.

Plain Washer:

A plain washer (or 'flat washer') is a flat annulus or ring, often of metal, used to spread the load of a screwed fastening. Additionally, a plain washer may be used when the hole is a larger diameter than the fixing nut.

Plain washers of the following types:

a) Machined washers, for precision and semi-precision grade of general purpose bolts and screws, in the diameter range 1.7 to 155 mm.

b) Punched washers, type A, for black grade general purpose bolts and screws, in the diameter range 1.8 to 52 mm and

c) Punched washers type B, for slotted head screws in the diameter range 1.8 to 22 mm.

The diameter for machined washers, punched washers, types A & B, shall be as per IS: 2016.

Spring Washer:

Spring washers, sometimes called disc springs, are a subtype of washers. They lend their mechanical capabilities to the unique profile of the material: when subject to a load, the irregularities of the washer compress with a proportionate resistance to return to their predeflected shape. Spring washers are employed in applications where assemblies need a part to take up play, eliminate rattle, maintain assembly tension, compensate for expansion or contraction in materials after assembly, or to absorb intermittent shock loads and provide a controlled reaction under dynamic loads.

Types of Spring Washer:

There are two types of spring washers which we use in TPCL Electricity Distribution Network:

Belleville washers can support high loads with small deflections. The load and deflection capability is dependent on height/thickness ratio. These are common in thermal expansion applications.

Crescent washer is meant for lighter loads and produces a small deflection. There is a uniform spring rate throughout the washer's deflection. This is used in flexible, load-cycling applications..

Wave washers offer moderate load capacity and deflection, and are typically used as cushions or spacers. These have multiple waves within the washer.

A diagram of Spring washer:

f TPCODL

6. MARKING

The body of the device shall be appropriately embossed/marked with **"PROPERTY OF TPCL"** such that it is permanent and does not harm the body of the device.

7. TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS. All Routine /acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. The device shall be calibrated against standards which are traceable to National / International standards.

TYPE TEST:

The following tests shall constitute the type tests and shall be carried out as per relevant IS: 1367 Part-III (Latest amended).

1) Chemical Composition Test.
2) Test for Mechanical Properties for Hexagonal Bolts
   - Tensile strength.
   - Yield stress.
   - Stress under proof load
   - Brinell Hardness
   - Rockwell Hardness
   - Vickers Hardness
   - Elongation after fracture
   - Strength under Wedge loading
   - Head soundness

3) Test for Mechanical Properties for hexagonal Nuts.
   - Proof Stress.
   - Vickers Hardness.

ROUTINE/ACCEPTANCE TEST:

The following tests shall be got conducted in presence of purchaser representative as per relevant IS: 1367 Part-III/1991 with latest amendment for bolts and IS: 1367 Part-VI/1980 with latest amendment for nuts on the samples taken from the offered lot material for the purpose of acceptance of that lot of material.

1) Chemical Composition Test.
2) Test for Mechanical Properties for Hexagonal Bolts
   - Tensile strength.
   - Yield stress.
   - Stress under proof load
   - Brinell Hardness
   - Rockwell Hardness
   - Vickers Hardness
   - Elongation after fracture
   - Strength under Wedge loading
   - Head soundness

3) Test for Mechanical Properties for hexagonal Nuts.
   - Proof Stress.

- Vickers Hardness.

8. TYPE TEST CERTIFICATES

The bidder shall furnish the type test certificates of the individual component for the tests as mentioned as above as per the corresponding standards, if asked for by TPCL. All the tests shall be conducted by NABL accredited Lab as per the relevant standards. Type test should have been conducted in certified Test Laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to TPCL.

9. PRE DISPATCH INSPECTION

The Material shall be subject to inspection by a duly authorized representative of the TPCL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCL's representatives at all times when the work is in progress. Inspection by the TPCL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCL.

Following documents shall be sent along with material

a) Test reports
b) MDCC issued by TPCL
c) TPCL Invoice in duplicate
d) Packing list
e) Drawings & catalogue
f) Guarantee / Warrantee card
g) Delivery Challan
h) Other Documents (as applicable)

10. INSPECTION AFTER RECEIPT AT STORES

The material received at TPCL, Bhubaneswar, Odisha store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to each Contracts and Engineering department.

11. GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of 12 months from the date of commissioning or 18 months from the date of last supplies made under the contract whichever is earlier, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

12. PACKING

Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit.

13. TENDER SAMPLE

Bidder should submit 3 Nos. (Three) sample along with offer.

14. QUALITY CONTROL

The bidder shall have a prove track of not less than 10 years in Ultrasonic device manufacturing and servicing in international market. The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after

finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

15. MINIMUM TESTING FACILITIES

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.

16. MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

17. SPARES, ACCESSORIES AND TOOLS

Not applicable.

18. DRAWINGS AND DOCUMENTS

Following documents shall be prepared based on TPCL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

h) Completely filled in Technical Particulars.
i) General description of the equipment and all components including brochures.
j) Bill of Material
k) Type test Certificates
l) Experience List.

After the after of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

Following Drawings/Documents shall be submitted after the award of the contract:

S. No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/drawings for all components.		√	
3	Technical details and test certificates of the component.		√	√
4	Instructions for use		√	√
5	Transport/shipping dimension drawing		√	√
6	QA & QC Plan	√	√	√
7	Routine, Acceptance and Type test Certificates	√	√	√

All the Documents and Drawings shall be in English Language.

Instruction Manuals: Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in English Language) covering erection and maintenance instructions and all relevant Information pertaining to the main equipment as well as auxiliary devices.

19. GUARANTEED TECHNICAL PARTICULARS

S.N.	Description	Units	Requirement
Mechanical Properties of Hexagonal Bolts as per (IS:1367 Part-III/1979)			
1	Tensile Strength (To be arranged on size 150 mm & above) Min.	N/sq. mm.	Bidder should provide
2	Stress under proof load Min.	N/sq. mm.	
3	Brinell Hardness		
4	Rockwell hardness		
5	Vickers hardness		
6	Elongation after fracture	%	
7	Yield Stress ,min.	N/sq. mm	
8	Strength under wedge loading min.	N/sq. mm.	
9	Impact Strength, min.		
10	Head soundness		
Hexagonal Nuts(IS:1367 Part-IV/1980 Table 4)			
11	Proof stress min.	N/sq. mm.	Bidder should provide
12	Vickers Hardness		

20. SCHEDULE OF DEVIATIONS
(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

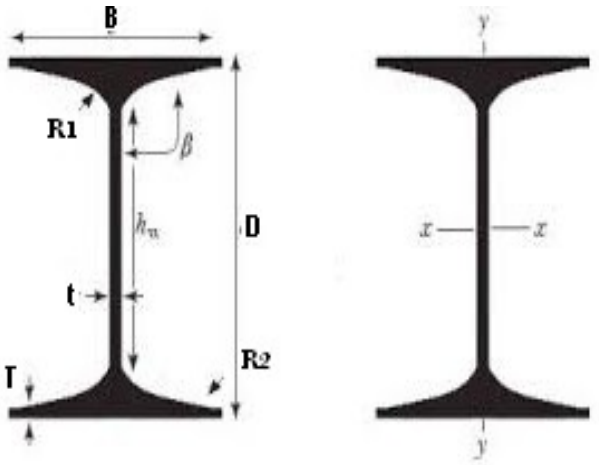
S. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature
Designation

SPECIFICATION FOR RS JOIST



TP CENTRAL ODISHA DISTRIBUTION LIMITED
TECHNICAL SPECIFICATION

GUARENTED TECHNICAL
PERTICULARS

	Make	**Company Name :**			
SL No.	**Description**	**Parameter (Unit)**	**Joist (150x150)**		
1	Type of Steel	MS	MS		
2	Grade	E250	E250 Fe410WA		
3	Steel Standard	IS	IS:2062 (Gr.-A),808		
4	Section (D x B)	mm	150 x150		
5	Thickness (T x t)	mm	9 & 11.8		
6	Radius (R1 & R2)	Dig	8 & 4		
7	Yield Stress	N/sq.mm	250 N/mm^2		
8	Tensile Strength	N/sq.mm	410 N/mm^2		
9	Dimension Tolerance	±	As per IS:1852 & 12779		
10	Galvanizing Standard	IS	2629 & 2633		
11	Zinc Coating	gms/sq.mtr	610		
12	Uniformity	Withstand	Six Dips in Standard precede test		
13	**Average Weight / Mtr. (GI)**	**Kg**	**34.6**		
14	Standard Cutting length	mtr			
15	Cutting length Tolerance As per IS 12779/1989	mm	+100 -0		
16	Fabrication	One Hole 18Ø at (1) 1800 mm from root level for Earthing. (2) 100 & 200mm from top.			
17	Overall specifications as per IS:800 /2007				

TECHNICAL SPECIFICATION OF AB SWITCH

1. SCOPE:-

This specification covers manufacturing testing and supply of 3 Pole, 400 AMP, 50 Hz, Single break, 33 KV & 11 KV class Air Break switches for out door installations to be used at 33/11 KV Sub-stations and for incoming & outgoing Lines suitable for operation under off load conditions.

1.1 DESCRIPTION OF THE MATERIALS:-

The A.B. Switch sets shall confirm to the following parameters:-

Sl. No.	Description	Parameters of AB Switch	
		33 KV	11 KV
i)	Number of poles	3	
ii)	Number of Post insulator per pole	4 nos. 22/24 KV class	2 nos. 12 KV class
iii)	Nominal system voltage (KV)	33	11
iv)	Highest System Voltage (KV)	36	12
v)	Rated frequency	50HZ	
vI)	System earthing	effectively earthed.	
vII)	Rated nominal current Amp.	400 **630**	
viii)	Altitude of installation	Not exceeding 1000 M	

The post insulators used in the A.B. Switches shall have the following ratings

Sl. No.	Description	Parameters P.I. of AB Switches for	
		33 KV	11 KV
i)	Power frequency withstand voltage (dry) KV (RMS)	75	35
ii)	Power frequency withstand voltage (wet) KV (RMS)	95	35
iii)	Impulse withstand voltage (dry) KV (Peak)	170	75
iv)	Power frequency puncture withstand voltage	1.3 times the actual dry flashover voltage of the unit	

1.2 STANDARDS:- The AB Switch Set shall conform to the following standards:-

i) IS-9920 (Part-I to V.)
ii) IS-2544/1973 (for porcelain post insulators)
iii) Is-2633 (for galvanization of ferrous parts.) or its latest amendments if any.

1.3 INSULATORS:-

12 KV class (for 11 KV AB Switches) and 22 KV / 24 KV class (for 33 KV AB Switches) Post Insulators complete with pedestal cap duly cemented to be used in the AB Switch Set conforming to IS-2544/1973

The tenderer shall furnish the type test certificate of the post insulators from their manufacturer for reference.

The tenderer shall mention make, type of insulation materials, metal fittings, Creep age distance, protected Creep age distance, tensile strength, compression strength, torsion strength and cantilever strength.

1.4 CLIMATIC CONDITIONS:-

The A.B. Switch set shall be suitable for operation under the following climatic conditions.

1.	Maximum ambient air temperature (shade).	45 ^{0} C
2.	Maximum daily average air temperature	35 ^{0} C
3.	Maximum yearly average ambient air temperature	30 ^{0} C
4.	Maximum temperature attainable by a body exposed to the sun.	50 ^{0} C
5.	Minimum ambient air temperature	5 ^{0} C
6.	Maximum relative humidity.	100%
7.	Minimum number of rainy days per annum	70
8.	Average number of rainy days per annum	120
9.	Average annual rain fall.	150 cm.
10.	Number of months of tropical monsoon conditions	4
11.	Maximum wind pressure.	260 Kg./ m^2
12.	Degree of exposure to atmospheric pollution.	Normally polluted atmosphere.

1.5 TECHNICAL DETAILS:-

1.5.1 The 33 KV A.B. Switch Set shall be gang operated **(with double tandem pipe)** single air break outdoor type horizontal mounting having 4 nos. 22/24 KV post insulator per phase and the 11 KV A.B. Switch Set shall be gang operated single **(with double tandem pipe)** air break outdoor type horizontal mounting having 2 nos.

12 KV post insulator per phase. The operating mechanism shall be suitable for manual operation from the ground level and shall be so designed that all the three phases shall open or close simultaneously. The Switches shall be robust in construction, easy in operation and shall be protected against over travel or straining that might adversely affect any of its parts. The required base M.S. Channel, phase coupling rod, operating rod with intermediate guide braided with flexible electrolytic copper, tail piece of required current carrying capacity and operating mechanism with 'ON' & 'OFF' positions shall be provided. The operating rod shall be medium gauge of 32mm diameter nominal bore G.I. pipe single piece 6 meters. The phase coupling rod for gang operation shall medium gauge 25mm dia nominal bore G.I. Pipe. Rotating post insulators shall be provided with suitable bearing mounted on a base channel with 6 mm thick thrust collar and 6mm split pin made out of stainless steel. The operating down rod shall be coupled to the spindle (minimum dia - 32mm) for gang operation through another suitable bearing by two numbers 10mm dia through stainless steel bolts with double nuts. The post insulators should be fixed with the base channel using Galvanized Nuts and Bolts.

All the bearings shall be provided with grease nipple. All ferrous parts shall be galvanized and polished. The pipes shall be galvanized in accordance with IS-4736/1968.

1.5.2 **Mounting:-** The A.B. Switches shall be suitable for horizontal mounting in all type of sub-station structures.

1.5.3 **Switching Blades**:- It shall be made out of electrolytic copper with silver plated. The approximate size shall be 250mm x 50 x 8mm for 11 KV. The switch shall have such a spring mechanism so as to ensure that the speed of the opening of contact is independent of speed of manual operation

1.5.4 **Fixed Contracts:**- The fixed jaw type female contracts (50x8x95)mm for 11 KV shall be made of electrolytic copper (minimum 95 % copper composition) duly electroplated controlled by Phosphor bronze high pressure spring housed in robust G.I. Cover.

It is essential that provision shall be made in fixed female contracts to take the shock arising from the closing of moving contract blade without the same being transmitted to the post insulator. The arrangement made in this regard shall be specifically shown in the drawing.

1.5.5 **Arcing Horn**:- As the switches are generally meant for isolating transmission line and distribution transformers, suitable arcing horns shall be provided for breaking the charging current horn shall be made of 10 mm dia G.I. Rod with spring assisted operation.

1.5.6 **Terminal Connectors**:- Terminal connectors shall be robust in design. The size of fixed connector shall be (80 x 50 x8 mm) and size of movable connector shall be of (80 x 50) x (80 x 50) x 8 mm of copper casting with uniform machine finishing duly silver plated made out of minimum 95 % copper composition with 2 nos. 12 mm dia holes provided with suitable brass bolts and double nuts, flat washers & 2 nos. bimetallic solderless sockets suitable up to ACSR Panther or AAAC 232 mm^2 conductor.

1.5.7 **Spacing**:- The minimum clearance between phase to the switch shall be 1200 mm. The operating down rod shall be at a transverse distance of 300 mm from the outer limb of the switch. The centre spacing between

two post insulators of the same phase shall be 560 mm. In the open position of the A.B. Switches the moving blade shall rotate through an angle of 90^0. This shall be exhibited in the drawing.

1.5.8 Drawing & Literatures:- Drawings of each item i.e. 11 KV, 630 amp and 33 KV 400 amp, 3 Pole, single break A.B. Switch shall be furnished along with the tender.

The details of construction and materials of different parts of the A.B. Switches shall clearly be indicated in the tender and illustrative pamphlet / literature for the same shall be submitted along with the tender.

1.6 TESTS & TEST CERTIFICATE

1.6.1 Type Test:- Certificates for the following type tests conducted within five years proceeding to the date of opening of tender on prototype set of A.B Switch in a Govt. Approved Testing Laboratory preferably at CPRI, Bhopal/ Bangalore shall have to be submitted for reference and scrutiny.

i. Impulse voltage dry test
ii. Power frequency voltage dry test
iii. Power frequency voltage wet test
iv. Temperature of resistance.
v. Measurement of resistance.
vi. Test to prove the capability of carrying the rated peak short circuit current and the rated short time current.
vii. Mainly active load breaking capacity test.
viii. Transformer off-load breaking test.
ix. Line charging breaking capacity test.
x. Operation tests.
xi. Mechanical endurance test.
xii. Mechanical strength test for the post insulator as per IS-2544/1973.
xiii. Test for galvanization of metal (ferrous) parts as perm IS-2633/1973.

Besides, mechanical endurance test will have to be conduct on one set in the presence of our authorized person who shall be deputed to carryout acceptance tests before delivery of the materials.

1.6.2 Routine Tests:- The following routine tests shall have to be conducted on each sets and results are to be furnished for consideration of deputing inspecting officer for inspection and conducting testing of the materials.

1. Power frequency voltage dry test
2. Measurement of resistance of main circuit
3. Tests to prove satisfactory operation.
4. Dimension check
5. Galvanization test.

1.7 GUARANTEED TECHNICAL PARTICULARS:-

The tenderer shall furnish the guaranteed technical particulars duly filled in the format at Appendix-I along with the tender.

1.8 COMPLETENESS OF EQUIPMENT:-

Any fittings, accessories for apparatus which may not have been specifically mentioned in this specification but which are usual or necessary in equipment of similar plant shall be deemed to be included in the specification and shall be supplied by the Tender without extra charge. All plant and equipment shall be completed in all details whether such details are mentioned in the specification or not.

1.7 INSPECTION:-

Routine and acceptance tests shall be conducted at the place of manufacturer. The tenderers are requested to furnish details of equipment which will be used for testing along with tender. The tenderers of those manufacturers who do not have adequate testing facilities for conducting routine and acceptance test are liable for cancellation. The successful bidder has to furnish routine test certificate and guaranteed certificate for approval prior to offer of materials for inspection for each consignment of offer.

APPENDIX - I

GUARANTEED TECHNICAL PARTICULARS FOR 33KV, 400A, 50 HZ,

3 POLE, SINGLE BREAK TYPE

Sl. No	Particulars	Desired values	Bidder's offer
1	2	3	4
1.	Maker's name and country of origin	To be specified by the tenderer	
2.	Type of Switch	Rotating type only	
3.	Suitable for mounting	Horizontal only	
4.	Number of supporting post insulators per phase	4 nos.22 KV / 24 KV Post Insulators per phase as per ISS-2544/1973.	
5.	Post Insulator.		
a)	Maker's name and country of origin	To be specified by the tenderer	
b)	Type of cementing	To be quoted for original cemented only & as per IS-2544-1973 & relevant IEC.	
c)	One minute power frequency withstand voltage Dry	95 KV RMS.	

d)	One minute power frequency withstand voltage Wet	75 KV RMS.	
e)	Visible discharge voltage	27 KV RMS.	
f)	Dry Flashover Voltage	To be specified by the tenderer	
g)	Power frequency puncture with stand voltage	1.3 times of actual dry flash over voltage	
h)	Impulse withstand voltage (switch in position)	170 KV (peak)	
i)	Creepage distance (mm)	380 mm minimum. (actual creepage distance for which type test have been conducted is to be specified by the tenderer	
6.	Impulse withstand voltage for positive and negative polarity 1.2 / 50 mircro-second wave		
a)	Across the isolating distance	195 KV (peak)	
b)	To earth & between poles	170 KV (peak)	
7.	One minute power frequency withstand voltage		
a)	Across the isolating distance	80 KV (RMS)	
b)	To earth & between poles	70 KV (RMS)	
8.	Rated normal current and rated frequency	400 amps. 50 Hz	
9.	Rated short time current.	16 KA (RMS)	
10.	Rated short circuit making capacity	25 KA (RMS)	
11.	Rated peak withstand current	40 KA (Peak)	
12.	Rated cable charging breaking capacity	40 KA (RMS)	
13.	Rated Transformer off load breaking capacity	16 Amp (RMS)	

14.	Rated line charging breaking capacity	5.3 Amps (RMS)	
15.	Minimum clearance between adjacent phases		
a)	Switch Closed (centre to centre)	1200 mm	
b)	Switch Opened (centre to edge of blade)	640 mm	
16.	Temperature rise		
a)	Temperature rise shall not exceed the maximum limit as specified below at an ambient temperature not exceeding in 40 ^{0} C		
b)	Copper contacts in air	65 ^{0} C	
c)	Terminal of switch intended to be connected to external conductor by bolts	50 ^{0} C	
17.	Vertical Clearance from top of insulator cap to mounting channel	508 mm (minimum)	
18.	Type of Contact: -	a) Self aligned, high pressure jaw type fixed contacts of electrolytic copper of size 80 mm x 50 mm x 8 mm duly silver plated. Each contact should be revetted with three nos. Copper rivets with a bunch (minimum 3 mm thick) consisting of copper foils, each may vary from 0.15 mm to 0.25 mm. These total thickness of copper foils per jaw should be 6 mm. Jaw assemblies are to be bolted through stainless steel bolts and nuts with stainless steel flat and spring washer.	
		b) Solid rectangular blade type moving contact of electrolytic copper size 250 mm x 50 mm x 8 mm duly silver plated ensuring a minimum deposit of 10 micron of silver on copper contacts or as may be prescribed under relevant ISS / IEC.	
		c) Pressure spring to be used in jaw contacts shall be Stainless Steel having 8 nos of turn x 28 mm height x 14.4 mm diameter with 14 SWG wire (minimum six nos springs shall be used)	

19.	Connectors:-	Terminal connectors for both movable and fixed should be of copper flats of same size similar to that of moving contact blades (minimum 95% copper composition). The fixed connector shall of size 80 mm x 50 x 8 mm and the size of movable connector shall be size 80 x 50 x 8 mm with machine finishing duly silver plated with 2 nos. of 3/8" stainless steel bolts, nuts, plain washers & spring washers should be provided along with 2 nos solder less bimetallic sockets for each connector suitable sockets for each connector suitable up to 232 mm^2 AAA conductor.				
20.	Moving Contacts:-	Movable contact is to be supported by galvanized angle of 50 x 50 x 5 mm in each phase and the moving contact are to be bolted through 2 no stainless steel bolts and nuts with suitable stainless steel flat and spring washers.				
21.	Galvanization	a) Iron parts shall be dip galvanized as per IS-2633/1972.				
		b) b) The pipe shall be galvanized as per IS-4736/1968.				
22.	Details of Phase					
a)	Coupling Rod	25 mm nominal bore G.I. pipe medium gauge.				
b)	Operating Rod	32 mm nominal bore G.I. pipe medium gauge single length 6 mtrs. The detailed dimension of the G. I. pipe as per IS-1239 (Pt. I) as mentioned below :-				
		Nominal base (mm)	Outside diameter (mm)		Diameter thickness (mm)	
			Max	Min		
		25	34.2	33.3	3.25	
		32	42.9	42	3.25	
c)	Arcing Horns	10 mm dia G.I. rod with spring assisted operation.				
d)	Force of Fixed contact spring	To be specified by the tenderer.				

e)	Copper braided flexible tapes:-	450 mm length of flexible electrolytic copper tape or braided chord (with tin coated) having minimum weight 450 gms per meter and both ends shall be crimped with copper sockets through brass bolts and nuts with brass flat washers. Two nos of suitable copper sockets shall be used at both ends. The minimum no. of flexible wires should be 1536 of 36 SWG for each flexible chord.	
f)	Quick break device	Lever mechanism.	
g)	Bearings	4 nos. self lubricated bearing to be provided with grease nipple including 4th bearing being a thrust bearing.	
h)	Locking arrangement	Pad Lock & Key arrangement at both 'ON' & 'OFF' position.	
i)	Earth Terminal:	To be provided at base channels.	
23.	Supporting Channels	100 mm x 50 mm M.S. Channel hot dip galvanized.	
24.	Weight of each pole complete	To be specified by the tender	

Technical Specification

For

Specification for All Aluminium Alloy Conductor (AAAC) for 80sqmm and 100sqmm

CONTENTS

1. SCOPE

This specification covers design, Engineering, Manufacture, Testing, Inspection before dispatch, forwarding, packing, transportation to sites, Insurance (both during transit & storage), storage, erection, supervision testing & commissioning of all sizes of All Aluminum Alloy Conductors of the aluminum – magnesium- silicon type for use in the distribution overhead power lines of TPCODL of Odisha.

The equipment offered shall have been successfully type testes and the design shall have been satisfactory operation for a period not less than two years on the date of bid opening. Compliance shall be demonstrated by submitting with the bid,

(i) authenticated copies of the type test reports and (ii) performance certificates from the users.

The scope of supply includes the provision of type test, Rates of type tests shall be given in the appropriate price schedule of the bidding document and will be considered for evaluation. The Purchaser reserves the right to waive type tests as indicated in the section on Quality Assurance, Inspection and Testing in the specification.

The Aluminum Alloy Conductor shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer and the Purchaser shall have the power to reject any work or materials, which, in his judgment, is not in full accordance therewith.

2. STANDARDS

Except where modified by the specification, the Aluminum Alloy Conductor shall be designed, manufactured and tested in accordance with latest editions of the following standards.

IEC1089 - Round wire concentric lay overhead electrical standard conductors

IS 398- Aluminum Alloy Stranded Conductors

IS 9997- Aluminum Alloy redraw rods for electrical purposes

IEC 502 : 1994- Extruded solid dielectric insulated power cables for rated voltages 1.0 KV up to 30 KV

IEC 104- Aluminum Magnesium Silicon alloy wire for overhead line conductors

IS 1778- Reels and and drums of bare conductor

BS : 6485- PVC covered conductors for overhead power lines.

This list is not to be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the contractor of the necessity of providing the goods complying with other relevant standards or recommendations.

3. GENERAL

The wires shall be of heat treated aluminum, magnesium silicon alloy containing approximately silcon-0.5 to 0.9 %. magnesium-0.6 % to 0.9%,Fe-0.5% (maximum) , Copper- 0.1% (max), mn- 0.03% , Cr-0.03%, Zn-0.1%, B-0.06%, and having the mechanical and electrical properties specified in the table and be smooth and free from all imperfections, such as, spills, splits and scratches.

Neutral grease shall be applied between the layers of wires. The drop point temperature of the grease shall not be less than 1200 C

3.1 Mechanical and Electrical Characteristics of Aluminium Alloy Wires used in the Construction of Stranded Aluminium Alloy Conductors

Nominal Diameter	Minimum Diameter	Max. Diameter	Cross Sectional Area	Mass	Minimum Breaking Load		Maximum Resistance at 200C
					Before stranding	After stranding	
1	2	3	4	5	6	7	8
mm	Mm	mm	mm2	Kg/km	KN	KN	ohms/ km
3.15	3.12	3.18	7.793	21.04	2.37	2.29	4.290
3.81	3.77	3.85	11.40	30.78	3.52	3.34	2.938
3.94	3.90	3.98	12.19	32.92	3.77	3.58	2.746
4.26	4.22	4.30	14.25	38.48	4.40	4.18	2.345

Maximum resistance values given in column 8 have been calculated from the maximum values of the resistively as specified and the cross sectional area based on the minimum diameter.

The minimum breaking load is calculated on nominal diameter at ultimate tensile strength of 0.309 KN / mm2 for wire before stranding and 95% of the ultimate tensile strength after stranding.

4. PHYSICAL CONSTANTS FOR ALUMINIUM ALLOY WIRES

4.1 Resistively :

For the purpose of this specification, the standard value of resistively of aluminum alloy wire which shall be used for calculation is to be taken as 0.0325 ohm mm2 /m at 200 C. the maximum value of resistively of any single wire shall not , however, exceed 0.0328 ohm. mm2/m at 200 C . the maximum value of resistively of any single wire shall not , however exceed 0.0328 ohm. mm2/m at 200 C

5. TESTS

5.1 Type Tests

The following tests shall be carried out as per relevant ISS once on samples of completed line conductor during each production run of up to 500 kms of the conductor from each manufacturing facility.

5.1.1 Ultimate Tensile Strength Test

This test is intended to confirm not only the breaking strength of the finished conductor but also that the conductor has been uniformly stranded.

A conductor sample of minimum 5 m length fitted with compression dead end clamps at either end shall be mounted in a suitable tensile test machine. Circles perpendicular to the axis of the conductor shall be marked at two places on its surface. Tension on the conductor sample shall be increased at a steady rate upto 50% of the minimum UTS specified and held for one minute. The circles drawn shall not be distorted due to relative movement of the individual strands. Thereafter the load shall be increased at a steady rate to the specified minimum UTS and held at that load for one minute. The conductor sample shall not fail during this period. The applied load shall then be increased until the failing load is reached and the value recorded.

5.1.2 D.C Resistance Test

On a conductor sample of minimum 5 m length two contact clamps shall be fitted with a pre-determined bolt torque. The resistance between the clamps shall be measured using a Kelvin double bridge by initially placing the clamps at zero separation and subsequently one meter apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 200 C, which shall conform to the requirements of this specification.

5.2 Routine Tests

Measurement of Physical Dimensions : The samples should meet the desired dimensional requirements before conducting following Routine Tests as per relevant ISS.

5.2.1 Selection of Test Samples

Samples for the tests specified in this specification shall be taken by the manufacturer before stranding, from not less than 10% of the individual lengths of aluminium alloy wire included in any one final heat-treatment batch and which will be included in any one consignment of the stranded conductors to be supplied.

Alternatively, if desired by TPCODL at the time of placing an order, that the tests be made in the presence of his representative, samples of wire shall be taken from length of stranded conductor.

Samples shall then be obtained by cutting 1.2 meters from the outer end of t he finished conductor from not more than 10% of the finished reels or drums.

Tests for electrical and mechanical properties of aluminum alloy wire shall ordinarily be made before stranding since wires unlaid from conductors may have different physical properties from those of the wire prior to stranding because of the deformation brought about by stranding and by straightening for test.

Spools offered for inspection shall be divided into equal lots, the number of lots being equal to the number of samples to be selected, a fraction of a lot being counted as s complete lot. One sample spool shall be selected at random from each lot.

The following test shall be carried out once on samples of completed line conductor during each production run of up to 500 kms of the conductor from each manufacturing facility.

5.2.2 Breaking Load Test

The breaking load of one specimen, cut from each of the samples taken shall be determined by means of a suitable tensile testing machine. The load shall be applied gradually and the rate of separation of the jaws of the testing machine shall be not less than 25 mm / min and not greater than 100mm /min.

5.2.3 Elongation Test

The elongation of one specimen cut from each of the samples taken shall be determined as follows:

The specimen shall be straightened by hand and an original gauge length of 200 mm shall be marked on the wire. A tensile load shall be applied as described above and the elongation shall be measured after the fractured ends have been fitted together. If the fracture occurs outside the gauge marks, or within 25 mm of eithermark, and the required elongation is not obtained, the test shall be disregarded and another test should be made.

When tested before and after stranding, the elongation shall not be less than 4% on a gauge length of 200 mm.

5.2.4 D.C Resistance Test

The electrical resistance test of one specimen cut from each of the samples taken shall be measured at ambient temperature. The measured resistance shall be corrected to the value at 200 C by means of the formula :

1

$$R20 = RT \quad \frac{}{1 + (T-20)\ \alpha}$$

where ,

R20 = resistance corrected at 200 C RT = resistance measured T0C

α = constant – mass temperature coefficient of resistance, 0.0036, and T = ambient temperature during measurement.

The resistance corrected at 200 C shall not be more than the maximum values specified.

5.2.5 Chemical Analysis of Aluminum Alloy

Samples taken from the alloy coils / strands shall be chemically / spectrographically analyzed. The results shall conform to the requirements stated in this specification. The contractor shall make available material analyses, control documents and certificates from each batch as and when required by the Purchaser.

Test should be conducted at the independent test house by the purchaser in the case of absence

Of facility at manufacturer. However the cost of such testing shall be borne by the manufacturer.

5.2.6 Dimensional and Lay Length Check

The individual strands of the conductors shall be dimensionally checked and the lay lengths checked to ensure that they conform to the requirements of this specification.

Ten percent drums from each lot shall be rewound in the presence of the Purchaser or his representative to allow visual checking of the conductor for joints, scratches or other surface imperfections and to ensure that the conductor generally conforms to the requirements this specification. The length of conductor wound on the drum shall be re-measured by means of an approved counter / meter during the rewinding process.

5.2.7 Visual and dimensional Checks on the Conductor Drums.

The drums shall be visually and dimensionally checked to ensure that they conform to the requirements of this specification and of IS 1778: Specification for reels and drums of bare conductors. For wooden drums, a suitable barrel batten strength test procedure is required. The Bidder shall state in his bid the tests to be carried out on the drums and shall include those tests in the Quality Assurance Programme.

5.2.8 Acceptance Tests :
All tests required to confirm enclosed Guaranteed Technical Particulars (GTP)

requirements of this specification needs to be conducted as Acceptance Tests.

9 . 3 Test Reports.

a) Copies of type test reports shall be furnished in at least six copies along with one original. One copy will be returned duly certified by the Owner only after which the commercial production of the material shall start.

b) Record of routine test reports shall be maintained by the Supplier at his works for periodic inspection by the Owner's representative.

c) Test certificate of tests during manufacture shall be maintained by the Contractor. These shall be produced for verification as and when desired by the owner.

6. Packing.

a) The conductor shall be supplied in returnable, strong, wooden drums provided with lagging of adequate strength, constructed to protect the conductor against any damage and displacement during transit, storage and subsequent handling and stringing operations in the field. The Contractor shall be responsible for any loss or damage during transportation handling and storage due to improper packing. The drums shall generally conform to IS: 1778-1980, except as otherwise specified hereinafter.

b) The drums shall be suitable for wheel mounting and for letting off the conductor under a minimum controlled tension of the order of 5 KN.

c) The Contractor should submit their proposed drum drawings along with the bid.

d) The Contractor may offer more than one length of the conductor in a single drum.

e) All wooden components shall be manufactured out of seasoned soft wood free from defects that may materially weaken the component parts of the drums. Preservative treatment shall be applied to the entire drum with preservatives of a quality, which is not harmful to the conductor.

f) The flanges shall be of two ply construction with a total thickness of 64 mm with each ply at right angles to the adjacent ply and nailed together. The nails shall be driven from the inside face flange, punched and then clenched on the outer face. Flange boards shall not be less than the nominal thickness by more than 2mm. There shall not be less than 2 nails per board in each circle. Where a slot is cut in the flange to receive the inner end of the conductor the entrance shall be in line with the periphery of the barrel.

g) The wooden battens used for making the barrel of the conductor shall be of segmental type. These shall be nailed to the barrel supports with at least two nails. The batten shall be closely butted and shall provide a round barrel with smooth external surface. The edges of the battens shall be rounded or chamfered to avoid damage to the conductor.

h) Barrel studs shall be used for the construction of drums. The flanges shall be holed and the barrel supports slotted to receive them. The barrel studs shall be treaded over a length on either end, sufficient to accommodate washers, spindle plates and nuts for fixing flanges at the required spacing.

i) Normally, the nuts on the studs shall stand protruded of the flanges. All the nails used on the inner surface of the flanges and the drum barrel shall be counter sunk. The ends of barrel shall generally be flushed with the top of the nuts.

j) The inner cheek of the flanges and drum barrel surface shall be painted with bitumen based paint.

k) Before reeling, card board or double corrugated or thick bituminous water proof bamboo paper shall be secured to the drum barrel and inside of flanges of the drum by means of a suitable commercial adhesive material. The paper should be dried before use. After reeling the conductor, the exposed surface of the outer layer of conductor shall be wrapped with water proof thick bituminous bamboo paper to preserve the conductor from dirt, grit and damage during transport and handling.

l) A minimum space of 75 mm for conductor shall be provided between the inner surface of the external protective lagging and outer layer of the conductor. Outside the protective lagging, there shall be minimum of two binders consisting of hoop iron/galvanized steel wire. Each protective lagging shall have tow recesses to accommodate the binders.

m) Each batten shall be securely nailed across grains as far as possible to the flange, edges with at least 2 nails per end. The length of the nails shall not be less than twice the thickness of the battens. The nails shall not protrude above the general surface and shall not have exposes sharp, edges or allow the battens to be released due to corrosion.

n) The nuts on the barrel studs shall be tack welded on the one side in order to fully secure them. On the second end, a spring washer shall be used.

o) A steel collar shall be sued to secure all barrel studs. This collar shall be located between the washers and the steal drum and secured to the central steel plate by welding.

p) Outside the protective lagging, there shall be minimum of two binders consisting of hoop iron/ galvanized steel wire. Each protective lagging shall have two recesses to accommodate the binders.

q) The conductor ends shall be property sealed and secured with the help of U-nail on the side of one of the flanges to avoid loosening of the conductor layers during transit and handling.

r) As an alternative to wooden drum Contractor may also supply the conductors in non-returnable painted steel drums. After preparation of steel surface according to IS: 9954, synthetic enamel paint shall be applied after application of one coat of primer. Wooden/Steel drum will be treated at par for evaluation purpose and accordingly the Contractor should quote in the package.

11.0 Marking.

Each drum shall have the following information stenciled on it in indelible ink along with other essential data:

(a) Contract/Award letter number

(b) Name and address of consignee.

(c) Manufacture's name and address.

(d) Drum and lot number

(e) Size and type of conductor

(f) Length of conductor in meters

(g) Arrow marking for unwinding

(h) Position of the conductor ends

(i) Number of turns in the outer most layer.

(j) Gross weight of the drum after putting lagging.

(k) Average weight of the drum without lagging.

(l) Net weight of the conductor in the drum

(m) Month and year of manufacture of conductor The above

should be indicated in the packing list also

12. Verification Conductor length

The Owner reserves the right to verify the length of conductor after unreeling at least five

(5) percent of the drums in a lot offered for inspection. For the balance drums, length verification shall be done by the owner based on report/certification from Manufacturer/ Contractor.

13. REJECTION AND RETESTS

13.1 Type Tests

Should the conductor fail any of the type tests specified above, the Purchaser will not accept any conductor manufactured from the material, nor conductor made by the manufacturing methods used for the conductor which failed the test.

The manufacturer shall propose suitable modifications to his materials and techniques in order that he can produce conductor which will satisfactorily pass the type test requirements.

13.2 Routine Tests

Should any one of the test pieces first selected fail the requirements of the tests, two further samples from the same batch shall be selected for testings, one of which shall be from the length from which the original test sample was taken

unless that length has been withdrawn by the manufacturer.

Should the test pieces from both these additional samples satisfy the requirements of the tests, the batch represented by these samples shall be deemed to comply with the standard. Should the test pieces from either of the two additional samples fail, the batch represented shall be deemed not to comply with the standard.

If checks on individual strand diameters, conductor lay lengths and conductor surface condition indicate non-compliance with the requirements of the specification, the particular drum will be rejected. Inspection will then be carried out on two further drums within the same batch. If the conductor on either of the drums is non-complaint, the complete batch will be rejected.

GTP FOR ALL ALUMINIUM ALLOY CONDUCTOR

Sl. No.	Particulars		Specified Requirement		Details furnished by the bidder size wise
1.	Nominal Aluminium Alloy area of conductor in Sq.mm	:	80	100	
2.	No. of stands	:	7	7	
3.	Wire dia. in mm				
	a) Nominal	:	3.81	4.26	
	b) Minimum	:	3.77	4.22	
	c) Maximum	:	3.85	4.3	
4.	Approximate Over all diameter of conductor in mm	:	11.43	12.78	
5.	Cross sectional area in Sq.mm				
	i) Individual wire	:	11.4	14.25	
	ii) Standard Conductor	:	80	99.81	

6.	Minimum breaking load in KN				
	i) Individual wire	:	3.34	4.18	
	ii) Standard Conductor (U.T.S)	:	23.41	29.26	
7.	Approximate mass in Kg. Per KM of Aluminium Alloy conductor				
	i) Individual wire	:	30.78	38.48	
	ii) Standard Conductor	:	218.26	272.86	
8.	Calculated maximum DC resistance at 200C in Ohm/Km				
	i) Individual wire	:	2.938	2.345	
	ii) Standard Conductor	:	0.425	0.339	
13.	Modulus of Elasticity of Aluminium Alloy conductor Kg/Sq.mm	:	0.6324X106		
16.	Co-efficient of linear expansion per degree centigrade for a) Individual /0C b) Standard conductor/0C	: :	23X106		

Technical Specification

For

DANGER BOARD

CONTENTS

TP CENTRAL ODISHA DISTRIBUTION LIMITED
TECHNICAL SPECIFICATION

<table>
<tr><td>1</td><td>SCOPE</td><td>This specification covers technical requirements of design, manufacture, testing at manufacturer’s works, packing, forwarding, supply and unloading at stores/site, performance of danger plates</td></tr>
<tr><td>2</td><td>APPLICABLE STANDARDS</td><td>The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall conform to the regulations of the local authorities.
The danger plate shall comply with the Indian Standard IS 2551- 1982</td></tr>
<tr><td>3</td><td>CLIMATIC CONDITIONS OF THE INSTALLATION</td><td>The service conditions shall be as follows:
1. Maximum altitude above sea level 1,000m
2. Maximum ambient air temperature 50°C
3. Maximum daily average ambient air temperature 35°C
4. Minimum ambient air temperature 0°C
5. Maximum relative humidity 95%
6. Average number of thunderstorm days per annum (isokeraunic level) 70
7. Average number of rainy days per annum 120
8. Average annual rainfall 150cm
9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g
10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g
(g being acceleration due to gravity)
11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr. environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas. Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere
12. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.</td></tr>
<tr><td>4</td><td>GENERAL TECHNICAL REQUIREMENTS</td><td>
<table>
<tr><th></th><th>DESCRIPTION</th><th>UNITS</th><th>REQUIREMENTS</th></tr>
<tr><td>1</td><td>Plate material</td><td></td><td>Mild steel</td></tr>
<tr><td>2</td><td>Plate thickness, min</td><td>mm</td><td>1.6</td></tr>
<tr><td>3</td><td>Front side paint</td><td></td><td>Vitreous enameled white</td></tr>
<tr><td>4</td><td>Letters/ figure/skull/cross bones colour</td><td></td><td>Red color</td></tr>
<tr><td>5</td><td>Rear side of plate</td><td></td><td>enamelled</td></tr>
<tr><td>6</td><td>Dimension</td><td>mm</td><td>250 x200</td></tr>
<tr><td>7</td><td>Corners of the plate</td><td></td><td>Rounded off</td></tr>
</table>
</td></tr>
<tr><td>5</td><td>GENERAL CONSTRUCTIONS</td><td>5.1.Dimensions:
5.1.1 For 415V, 11kV, and 33kV voltage installations: 250x200mm (see figure given in Annexure).
5.1.2 All letterings shall be centrally spaced. The dimensions of the letters, figures and their respective positions shall be as given in figure. The size of each letter in the word in each language, and the spacing between them for purposes of scribing shall be so chosen that they are uniformly written in the space earmarked for them.
5.1.3 The corners of the plate shall be rounded off.
5.1.4 The locations of the fixing holes shall be left to the choice of the user.
LANGUAGES
ENGLISH: for denoting in English, the type of lettering recommended is as shown in the figure.</td></tr>
</table>

		Local Language: for denoting in Local Language, the type of lettering recommended is as shown in the figure.

6	NAME PLATE AND MARKING	The essential information that would be necessary to identify the manufacturer of the danger board plates shall be marked, in such a manner and position on the plates that it does not interfere with the other information. The danger board plates shall also be marked with ISI certification mark. "PROPERTY OF TATA POWER COMPANY LIMITED, BUBANESHWAR" to be written in blue color (PANTONE 300C) along with the logo.
7	TESTS	**General** 7.0.1 In order to ensure that the notice plates conform to this specification, the following essential tests are specified. The number of samples to be tested shall be as agreed to between the supplier and the user. 7.0.2 the following shall constitute the tests: a) Visual examination b) Dimentional check, and c) Test for weather proofness. 7.1 Visual Examination The samples of notice shall be examined visually for conformity to the various requirements of this standard in respect of the works and letters used their relative positive and size. The colour of the paint used shall be visually compared with the signal red colour as specified in IS:5-1978 7.2 Dimensional Check The dimension of the plate, its thickness and the size of lettering, figures, etc. shall conform generally to the stipulations in 5.1.2 to 5.1.4 7.3 Tests for weather proofness For the purpose of verifying colour retention of the vitreous enamel coatings, the method of test specified in IS 8709-1977 shall apply.
8	TYPE TEST CERTIFICATES	Supplies shall be tested and five duly attested/certified copies of test certificates for respective items shall be submitted for approval and issuing Material Dispatch Clearance Certificate called MDCC.
9	PRE-DISPATCH INSPECTION	A) TESTS: the material shall be subjected to following tests: 1) Visual Inspection B) The Material shall be subject to inspection by a duly authorized representative of the TPCL, Bhubaneshwar. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCL's representatives at all times when the work is in progress. Inspection by the TPCL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCL, Bhubaneshwar. Following documents shall be sent along with material: a. Test reports b. MDCC issued by TPCL, Bhubaneshwar c. Invoice in duplicate d. Packing list e. Drawings & catalogue f. Guarantee / Warrantee card

		g. Delivery Challan h. Other Documents (as applicable).

10	INSPECTION AFTER RECEIPT AT STORES	The material received at TPCL, Bhubaneshwar store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering & Contracts department
11	GUARANTEE	11 Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 12 months from the date of commissioning or 24 months from the date of last supplies made under the contract whichever is later, (the time scale of 12/24 months could be enhanced subject to mutual agreements). Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser
12	PACKING	Suppliers shall ensure that all the equipments covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit.
13	TENDER SAMPLE	As and when required.
14	QUALITY CONTROL	The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material.
15	. TESTING FACILITIES	Supplier/Manufacturer shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.
16	MANUFACTURING ACTIVITIES	The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order
17	SPARES, ACCESSORIES AND TOOLS	The bidder shall provide a list of complete set of accessories and tools required for erection and maintenance of danger board plate along with the installation procedure
18	DRAWINGS AND DOCUMENTS	Following documents shall be prepared based on TPCL specifications and statutory requirements with complete BOM and shall be submitted with the bid: a) Completely filled in Technical Particulars. b) General description of the equipment and all components including brochures. c) Type test Certificates d) Experience List. After the after of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

<table>
<tr><td>19</td><td>GENERAL TECHNICAL PARTICULARS</td><td>
<table>
<tr><th></th><th>DESCRIPTION</th><th>UNITS</th><th>REQUIREMENTS</th></tr>
<tr><td>1</td><td>Plate material</td><td></td><td rowspan="7">To be furnished by the bidder.</td></tr>
<tr><td>2</td><td>Plate thickness, min</td><td>mm</td></tr>
<tr><td>3</td><td>Front side paint</td><td></td></tr>
<tr><td>4</td><td>Letters/ figure/skull/cross bones colour</td><td></td></tr>
<tr><td>5</td><td>Rear side of plate</td><td></td></tr>
<tr><td>6</td><td>Dimension</td><td>mm</td></tr>
<tr><td>7</td><td>Corners of the plate</td><td></td></tr>
</table>
</td></tr>
<tr><td>20</td><td colspan="2">

SCHEDULE OF DEVIATIONS

(TO BE ENCLOSED WITH TECHNICAL BID)

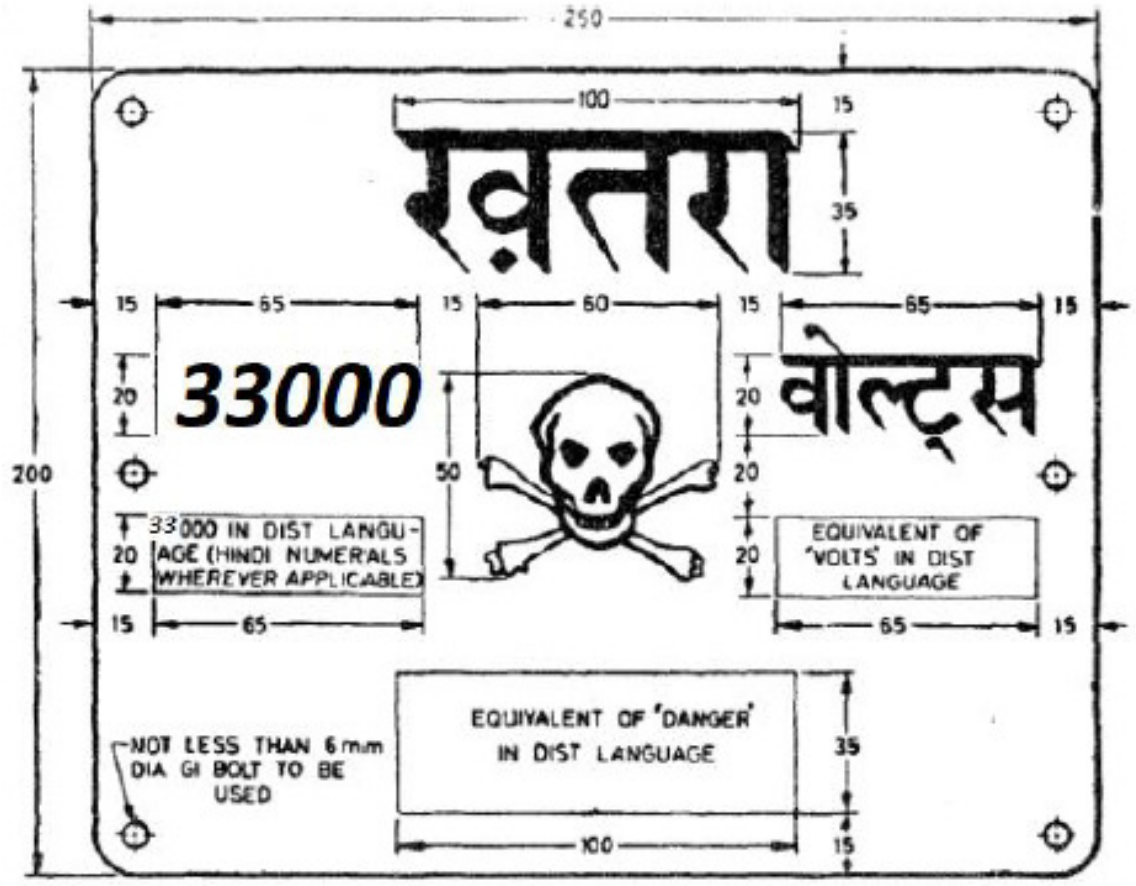
All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No	**Clause No.**	**Details of deviation with justifications**

We confirm that there are no deviations apart from those detailed above.
Seal of the Company:

</td></tr>
</table>

ANNEXURE



NOTE 1 — All letterings should be centrally spaced.

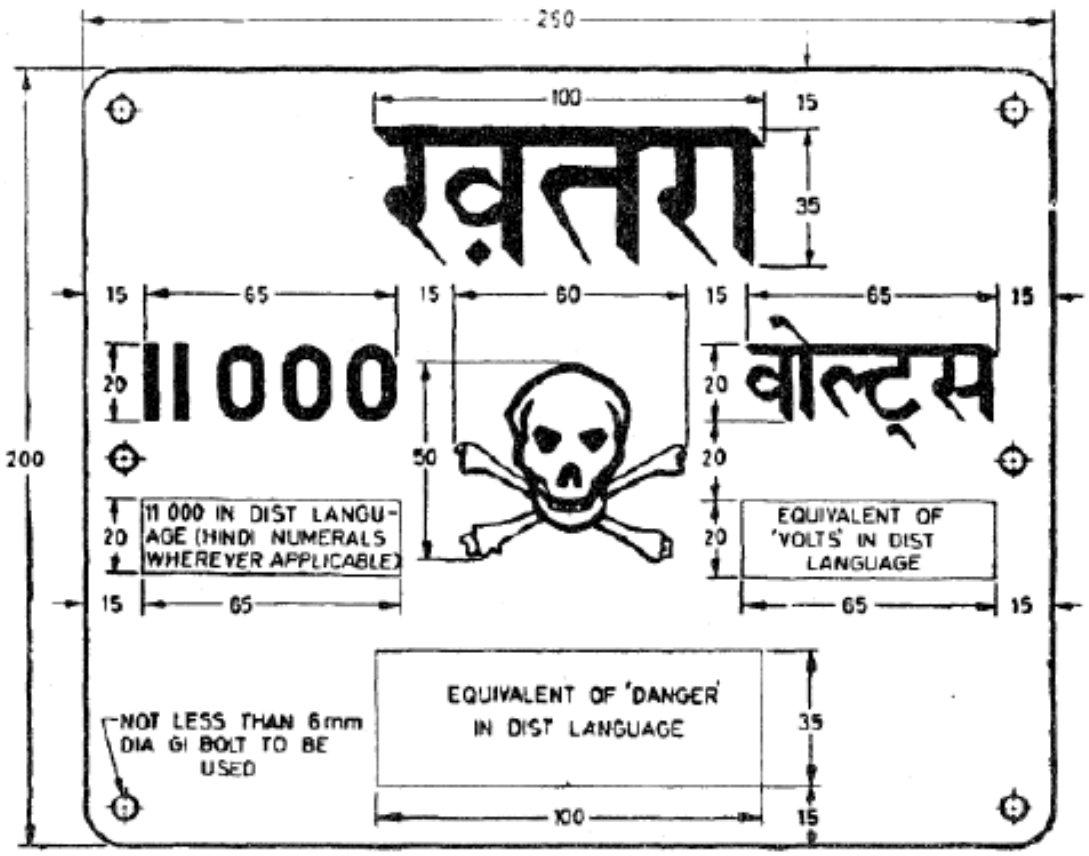
NOTE 2 — The dimensions for the words in district language are mainly for guidance, however, care should be taken to space them centrally between the edges and the area of the skull and bones.

NOTE 3 — The location of the fixing holes shall be left to the choice of the user.

NOTE 4 — 33 000 volts is just specimen, actual voltage is to be inserted for different system voltages.

NOTE 5 — The corners of the plates should be rounded off.

All dimensions in millimetres.



NOTE 1 — All letterings should be centrally spaced.

NOTE 2 — The dimensions for the words in district language are mainly for guidance, however, care should be taken to space them centrally between the edges and the area of the skull and bones.

NOTE 3 — The location of the fixing holes shall be left to the choice of the user.

NOTE 4 — 11 000 volts is just specimen, actual voltage is to be inserted for different system voltages.

NOTE 5 — The corners of the plates should be rounded off.

All dimensions in millimetres.

Technical Specification

For

11KV / 33KV LA with Porcelain Polymer insulator

CONTENTS

<table>
<tr><td>1.0</td><td>SCOPE</td><td>1. This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading of 9 kV,10kA, DH class and SM class Lightning Arrester at site/stores complete with all accessories for efficient and trouble free-operation. The specific requirements are covered in the enclosed technical data sheet.

2. The material shall be complete with all components and accessories, which are necessary or usual for their efficient performance and trouble free operation under the various operating and atmospheric conditions specified in clause no. 3

3. Such of the parts that may have not been specifically included, but otherwise form part of the Lightening arrester as per standard trade and/or professional practice and/or are necessary for proper operation, will be deemed to be also included in this specification. The successful bidder shall not be eligible for any extra charges for such accessories etc. notwithstanding the fact that at the time of an initial offer bidder had segregated such items and quoted for them separately.</td></tr>
<tr><td>2.0</td><td>APPLICABLE STANDARDS</td><td>The equipment (and the materials used) covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian standards & other relevant standards for components, BEE & CEA guidelines with latest amendment from time to time, thereof, some of which are listed below:

<table>
<tr><th>Indian Standards (IS /IEC</th><th>Title</th></tr>
<tr><td>IS-3070:1993 (Part-3)</td><td>Specification for Lightning arresters for alternating current system.</td></tr>
<tr><td>IS-4759:1996

Reaffirmed 2006</td><td>Hot dip-zinc-coating on structural steel and other allied products.</td></tr>
<tr><td>IS-2633:1986

Reaffirmed 2006</td><td>Method for testing uniformity of coating on zinc coated particles.</td></tr>
<tr><td>IS-6209:1982

Reaffirmed 2006</td><td>Method of Partial Discharge Measurement</td></tr>
<tr><td>IS:6745:19824</td><td>Method for determination of mass of zinc coating on zinc coated iron</td></tr>
</table>
</td></tr>
</table>

		<table><tr><td>Reaffirmed 2006</td><td>and steel articles.</td></tr><tr><td>IEC 60099-4 :2014 ed 03</td><td>Surge arrestor without gap for AC System.</td></tr></table> **In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.*
3.0	**CLIMATIC CONDITIONS OF THE INSTALLATION**	The material shall be suitable for following climatic conditions, 1. Maximum altitude above sea level 1,000m 2. Maximum ambient air temperature 50°C 3. Maximum daily average ambient air temperature 35°C 4. Minimum ambient air temperature 0°C 5. Maximum relative humidity 95% 6. Average number of thunderstorm days per annum (isokeraunic level) 70 7. Average number of rainy days per annum 120 8. Average annual rainfall 150cm 9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g 10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity) 11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr. Environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas.

		Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.

4.0	**GENERAL TECHNICAL REQUIREMENTS**		
S No	Description	**Requirements for 9kV 10kA Distribution Class (DH)**	**Requirements for 9kV 10kA Station Class (SM)**
1	Installation	Outdoor	Outdoor
2	Type	Metal Oxide gapless with adhesive coated single wrap type / nylon direct injection moulding	Metal Oxide gapless cage type
3	Housing Material	Injection moulded silicone rubber	Injection moulded silicone rubber
4	Service Voltage	11 kV	11 kV
5	Rated Voltage	12 kV (for 9kV LA)	12 kV (for 9kV LA)
6	Rated Frequency	50 Hz	50 Hz
7	Maximum Continuous Operating Voltage (MCOV) , Uc	7.2 kV (rms)	7.2 kV (rms)
8	Arrester Rating Ur	9 kV (rms)	9 kV (rms)
9	Nominal Discharge Current In	10 kA	10 kA
10	**Distribution Class**	**Station Class -DH**	**Station Class- SM**
11	**Repetitive Charge transfer withstand (Coulombs) Qrs**	**>0.4 C**	**>1.6 C**

12	**Thermal Energy withstand rating**	**Qth (C)**	**>1.1 C**	**-**
		Wth (kJ/kV)	**-**	**> 7 KJ/kV Ur (2 shots)**
13	Insulation Voltage Withstand on Arrester Housing			
13.1	Power Frequency Voltage (Dry/ Wet) for one minute.		28 kV (rms)	28 kV (rms)
13.2	Lightning Impulse Voltage kV Peak		75kV (Peak)	75kV (Peak)
14	Rated Short Circuit Current		16KA or better	16kA or better
15	High Current impulse Operating Duty (4/10μs impulse wave) (kAp)		**100 (kAp)**	100 (kAp)
16	Partial Discharge at 1.05 times M.C.O.V		<10 pC	<10 pC
15	Disconnector		As per IEC 60099 ed 03	As per IEC 60099 ed 03
15.1	**Disconnector connecting lead**		**Insulated flexible tinned plated copper braid with lugs**	**Insulated flexible tinned plated copper braid with lugs**
15.2	**Size of Insulated Tinned copper braid**		**25 sqmm**	**25 sqmm**
15.3	**Length of Insulated Tinned copper braid**		**300 mm**	**300 mm**
16	**Material of Insulating Bracket**		**UV resistant Fire retardant DMC**	**UV resistant Fire retardant DMC**
17	**Material of End fittings**		**Machined / pressure die casted Aluminium**	**Machined / pressure die casted Aluminium**
18	Pull Strength (Min.)		1000N	1000N
19	Cantilever Strength (Min.)		12 KGM	12 KGM

20	Total creepage length of the arrester (Min.)	400mm	500mm
21	Stack Height	To be submitted by bidder	To be submitted by bidder
22	Rating of individual ZnO blocks used for assembly	3kV /4.5kV	3kV/ 4.5kV
23	**Temporary Over Voltage rating (TOV) kVp**	**Bidders to submit the offered product values**	**Bidders to submit the offered product values**
23.1	**1Sec**	**Min. 12kV**	**Min. 12kV**
23.2	**10 Sec**	**Min. 12kV**	**Min. 10kV**
23.3	**100Sec**	**Min. 11kV**	**Min. 9.5kV**
24	Maximum Residual Voltage during impulse discharge of 8/20microsec.	Desired Maximum Values	Desired Maximum Values
24.1	**5kAp**	**28 kVpeak**	**26kVpeak**
24.2	**10kAp**	**28 kVpeak**	**28kVpeak**
25	Max Steep lightning current impulse 1/20µs residual voltage	40 kVpeak	33kVpeak
26	**Material of Insulating terminal cap**	**Polyolefin**	**Polyolefin**
27	**Material of Nut Bolt washers**	**Stainless Steel**	**Stainless Steel**
28	Current at MCOV		
28.1	a. Resistive Current	Bidders to submit	Bidders to submit
28.2	b. Capacitive Current	Bidders to submit	Bidders to submit
29	The bolt grade	All hardware bolt shall be of 8.8 grade	All hardware bolt shall be of 8.8 grade

5.0	**GENERAL CONSTRUCTION**	1. Lightning arresters shall be designed with gapless metal oxide elements with silicon housing suitable for operation under the system conditions specified.

		2. Arresters shall be completely moulded units with ***absolutely no air volume inside***, suitable for mounting on bracket. ***Arresters of tubular construction i.e arresters assembled in hollow core insulators with enclosed air volume are not acceptable*** 3. The end fittings shall be non-magnetic and of corrosion proof material. 4. The end fittings used in polymer arrester shall be made from aluminium through machining process/pressure die-casting process. Sand casted and gravity casted end fittings are not acceptable. 5. MOV blocks shall have full metallization to have full face contact and to reduce contact resistance between adjacent discs. 6. Each unit of arrester assembly shall be hermetically sealed, leak tested and protected against ingress of moisture. 7. The seal shall be properly designed and tested for operation under extreme weather conditions. 8. Lightning arrester construction shall be suitable to withstand Seismic Loading, Short Circuit Forces and wind load and the force exerted on the arrestor base and to the terminal imposed by the line conductor.
5.1	**ASSEMBLY**	1. Lightning arrester shall be supplied along with disconnector, insulating bracket, Insulating terminal Cap, disconnector, Insulated tinned copper braid and necessary hard-wares. 2. The Assembly consists of stack of nonlinear Metal Oxide (ZnO) elements with highly non-linear voltage current characteristics, connected in series. 3. All the contact surfaces of metal oxide elements and Aluminium blocks must be smooth to have uniform contact surface. 4. Housing shall be made of Silicon rubber via injection molding to provide thermal dissipation of heat generated in the metal oxide elements during overvoltage and line discharge. 5. Polymeric housing shall be free from air bubble, flaws affecting the mechanical and electrical strength of the arrester. 6. Housing shall be capable to withstand the desired pollution stresses without flashover. 7. The polymer material used for the arrester housing must be tracking and erosion resistant, stabilized against UV radiation. 8. All metal parts shall be of non-rusting and non-corroding metal. 9. The arrester disconnector shall be suitable for screwing directly to L.A with terminal of M10. 10. Stainless Steel Bolts, Nuts, washers shall be provided. 11. All similar parts, particularly removable ones, shall be interchangeable. 12. The arrestor shall have thermal stability to withstand the heat generated from the ZnO element due to continuous operating voltage and surges. 13. The 9kV 10kA station class Lightning Arrester shall have L-shaped terminal clamp suitable for conductor size of 9mm-16mm diameter.
5.2	**DISCONNECTOR**	1. Each individual unit of Lightning Arrester with disconnector shall be hermetically sealed and fully protected against ingress of moisture. 2. The hermetic seal shall be effective for the entire life time of the

		Lightning Arrester with disconnector under the specified service conditions. 3. Disconnectors shall give the visible indication of the failed arrestor. 4. The Lightning Arrestor with disconnector shall be suitable for bracket type mounting. . 5. The corresponding units of Lightning Arrester with disconnector of the same rating shall be interchangeable without adversely affecting the performance. 6. All the necessary flanges, bolts, nuts, clamps etc. required for assembly of complete Lightning Arrester with disconnector and accessories and mounting on purchaser's support structure shall be included in bidder's scope of supply. 7. The mounting details for mounting the Lightning Arrester with disconnector on purchaser's support shall be given along with the bid.
5.3	**MOUTING BRACKET**	1. The 9kV 10kA Distribution class Lightning Arrester shall be fixed over a mounting bracket made of UV resistance, Fire retardant DMC material. 2. The 9kV 10kA Station class Lightning Arrester shall be fixed over a mounting arrangement made of Hot dip galvanized MS material and additionally one mounting bracket shall be provided
5.4	**MECHANICAL STRENGTH**	1. The Lightning Arrester and it base shall withstand rated mechanical terminal load and electromagnetic forces without impairing their operational reliability. 2. The Lightning Arrester shall not come out of their positions by gravity, wind pressure, vibrations or reasonable shocks.
6.0	**NAME PLATE AND MARKING**	1. The Lightning Arrester shall be provided with durable and legible name plate embossing, effectively secured against removal. 2. The name plate shall be indelibly and distinctly marked with all essential particulars as per the relevant standards along with the following : 3. The Name plate/product shall have marking of "PO no. with date" & "Property of TPCL" 4. The following information shall be mentioned on the Name Plate: i. Continuous operating Voltage ii. Rated Voltage iii. Rated Frequency iv. Nominal Discharge Current v. Manufacturer's Name vi. Type and Identification of the complete arrester vii. Year of Manufacture viii. Serial Number
7.0	**TESTS**	1. All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. 2. All acceptance tests shall be witnessed by the purchaser/his authorized representative.

		3. All the components and fittings shall also be type tested as per the relevant standards. 4. Following tests shall be necessarily conducted on the Lightning Arrester in addition to others specified in IS/IEC standards. **In case of any conflict on any technical particular in the specification, the stricter requirement mentioned in the relevant standard shall be valid.*
7.1	**TYPE TEST**	**List of type test Reports to be submitted along with offer as per IEC 60099-4 Ed.3**

Sr. No.	Test to be done	Reference BIS / Document
1	Power Frequency reference Voltage test (Both in Dry and Wet condition)	As per IEC 60099-4 Ed.3 clause 10.8.2
2	Lightning impulse residual voltage on complete arrester	As per IEC 60099-4 Ed.3 clause 10.8.2
3	Residual voltage tests	As per IEC 60099-4 Ed.3 clause 10.8.3
4	Test to verify long term stability under continuous operating voltage	As per IEC 60099-4 Ed.3 clause 10.8.4
5	Test to verify the repetitive charge transfer rating, Qrs	As per IEC 60099-4 Ed.3 clause 10.8.5
6	Heat dissipation behaviour	As per IEC 60099-4 Ed.3 clause 10.8.6
7	Operating duty test	As per IEC 60099-4 Ed.3 clause 10.8.7
8	Power-frequency voltage-versus-time test characteristic	As per IEC 60099-4 Ed.3 clause 10.8.8
9	Tests of arrester disconnector	As per IEC 60099-4 Ed.3 clause 10. 8.9
10	Operating withstand Test for Disconnector	As per IEC 60099-4 Ed.3 clause 8.9.2
11	Disconnector operation test –	As per IEC 60099-4 Ed.3 clause

			Current vs time	8.9.3
		12	Mechanical tests on Disconnector	As per IEC 60099-4 Ed.3 clause 8.9.4
		13	Temperature cycling and seal pumping test on Disconnector	As per IEC 60099-4 Ed.3 clause 8.9.5
		14	Short-circuit tests a. High current SC b. Low current SC	As per IEC 60099-4 Ed.3 clause 10.8.10
		15	Bending moment test	As per IEC 60099-4 Ed.3 clause 10.8.11
		16	Seal leak rate test	As per IEC 60099-4 Ed.3 clause 10.8.13
		17	Radio interference voltage (RIV) test	As per IEC 60099-4 Ed.3 clause 10.8.14
		18	Test to verify the dielectric withstand of internal components	As per IEC 60099-4 Ed.3 clause 10.8.15
		19	Test of internal grading components	As per IEC 60099-4 Ed.3 clause 10.8.16
		20	Thermal cyclic test	As per IEC 60099-4 Ed.3 clause 8.16.2
		21	Weather aging Test for 1000 hours of slat fog test and 1000 hours of UV test	As per IEC 60099-4 Ed.3 clause 10.8.17
7.2	**ROUTINE TEST**	The test shall be as per IEC 60099-4 Ed.3 clause no. 9.1 and or IS3070 latest editions, 1. Measurement of reference voltage test 2. Residual Voltage Test on complete arrester 3. Internal partial discharge test. This test shall be performed on each arrester unit. The test sample may be shielded against external partial discharges. Internal partial discharge shall not exceed 10 pC 4. Satisfactory absence from partial discharges and contact noise shall be checked on each unit by any sensitive method adopted by the manufacturer.		

5. For arrester for arrester units with an enclosed gas volume and separate sealing system the sealed housing leakage check shall be made on each unit by any sensitive method adopted by the manufacturer on the arrester and on surge monitor.
6. Disconnector Assembly- Proper assembly of each disconnector has to be demonstrated by either measurement of resistance / capacitance or partial discharges.

7.3 ACCEPTANCE TEST

Sr. No.	Test to be done	Reference BIS / Document
1	Measurement of power-frequency voltage on the arrester at the reference current.	As per IEC 60099-4 Ed.3 clause no. 9.2.1.a or IS:3070 part3 cl.6.2.8
2	Lightning impulse residual voltage on the arrester at nominal discharge current	As per IEC 60099-4 Ed.3 clause no. 9.2.1.b or IS:3070 part3 cl.6.4. and table 8
3	Partial Discharge Test (Both in Dry and Wet condition)	As per IEC60099 part4 cl.9.1
4	Visual Inspection	No damage and loose fitting
5	On disconnector used in combination with NGLA, bending moment and tensile load tests shall be performed.	As per IEC 60099-4 Ed.3 clause no. 9.2.1.d
6	Verification of components and dimensions.	As per Approved GTP/TPCL Specification
7	Verification of type test of ZnO Blocks	Document Verification
8	Peel off test (removal of housing)	Samples shall confirm to the specified design. Samples shall be free from air void, cavity and other visual defects. shall be Design conformation verification.
9	Thermal stability test	Shall be done randomly on any lot material as per IEC 60099-4 Ed.3 clause 9.2.2 and clause 8.7 or IS:3070 part3 cl.7.3

7.4	**SPECIAL TEST as acceptance test**	**SPECIAL THERMAL STABILITY TEST** as per As per IEC 60099-4 Ed.3 clause 9.2.2 and 8.7 or IS:3070 part3 cl.7.3- TPCL. Reserves right to perform special thermal stability test during acceptance if required. No failure from the randomly selected sample shall qualify for acceptance.
8.0	**TYPE TEST** **CERTIFICATES**	1. The bidder shall furnish the type test certificates as mentioned above as per the corresponding standards. 2. All the tests shall be conducted at CPRI / ERDA as per the relevant standards. 3. Type tests should have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. 4. In the event of any discrepancy in the test reports, i.e. any test report not acceptable same shall be carried out without any cost implication to TPCL.
9.0	**PRE-DESPATCH INSPECTION**	1. Equipment shall be subject to inspection by a duly authorized representative of TPCL. 2. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. 3. Bidder shall grant free access to the places of manufacture to TPCL's representatives at all times when the work is in progress. 4. Inspection by TPCL or authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. 5. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCL. 6. Following documents shall be sent along with material: i) Test report j) MDCC issued by TPCL k) Invoice in duplicate l) Packing list m) Drawings & catalogue n) Guarantee / Warrantee card o) Delivery Challan p) Other Documents (as applicable)
10.0	**INSPECTION AFTER RECEIPT AT STORE**	The material received at TPCL, Bhubaneswar, Odisha store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.
11.0	**GUARANTEE:**	1. Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. 2. In the event any defect is found by the Company up to a period of 18 months from the date of commissioning or 24 months from the

		date of last supplies made under the contract, whichever is earlier, supplier shall be liable to undertake to replace/rectify such defects at his own costs. within mutually agreed timeframe, and to the entire satisfaction of the Company, failing which the Company will be at liberty to get it replaced/rectified at supplier's risks and costs and recover all such expenses plus the Company's own charges(@ 20% of expenses incurred), from the supplier or from the " Security cum Performance Deposit" as the case may be. Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Company
12.0	**PACKING**	1. Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. 2. The material should be packed in vertical position in individual box in such a way that the shape of rain shed does not get deformed during transportation and storage. **Note: Single use plastic not to be used for packing of the material.**
13.0	**TENDER SAMPLE**	One sample to be submitted during technical bid submission. This shall be Non-returnable basis as we shall perform destructive tests on sample.
14.0	**TRAINING**	NA
15.0	**QUALITY CONTROL**	The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. TPCL's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The following information shall necessarily be submitted with the bid: 1. List of important raw materials, names of sub-suppliers for raw materials, standards to which raw material is tested and the copies of test reports of the tests carried out on raw materials in presence of Bidder's representatives. 2. List of manufacturing facilities available, level of automation achieved and the areas where manual process exists. 3. List of areas in manufacturing process where stage inspections are normally carried out for quality control and details of these tests and inspections 4. List of testing equipment for final testing with valid calibration reports. Manufacturer shall possess 0.1 class instruments for measurement of losses. 5. QAP withhold points for TPCL 6. inspection.

16.0	**MINIMUM TESTING FACILITIES**	Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests and pre-dispatch inspection as per relevant International / Indian standards.
17.0	**MANUFACTURING ACTIVITIES**	The successful bidder will have to submit technical compliance document and drawing as per RC line items for getting approval before mass manufacturing. Manufacturing shall start only after getting CAT-A approved drawings or as per intimation from TPCL. .
18.0	**SPARES, ACCESSORIES ND TOOLS**	Not Applicable
19.0	**DRAWINGS AND DOCUMENTS**	Following drawings and documents shall be prepared based on TPCL specifications and statutory requirements and shall be submitted with the bid: a. Completely filled in Technical Particulars and compliance to each clause of the specification General Technical Requirements to Additional Details. b. Description of the equipment and all components including brochures. c. General Drawing arrangement of lightening arrester. d. Sectional drawing showing internal blocks etc. e. Bill of material. f. Experience Certificate and list. g. Type test certificates. h. List of makes of major components. **Drawings / documents to be submitted after the award of the contract are as under**: **List of Drawings/Parameters to be submitted:** 1. Technical Parameters as asked in Specification (General Technical Particulars, General Technical Requirements, Additional Details, Fittings, Type test Reports and Routine test certificates of bought out accessories). 2. General Arrangement Drawing of the Lightening arrester (Front view and Top view. Complete list of fittings to be displayed and quantities to be mentioned with the drawing). 3. Sectional drawing showing the blocks arrangement. 4. Terminal and connection drawings 5. Type Test Certificates. 6. Installation/ Mounting Instructions/Drawing.

		Additional Documents to be submitted : a. List of raw materials as well as bought out accessories and the names of sub-suppliers selected from those furnished along with offer. b. Type test certificates of the raw materials and bought out accessories. c. The successful Bidder shall submit the **routine test certificates of bought out accessories** and central excise passes for raw material at the time of routine testing. All the documents & drawings shall be in English language. After the receipt of the order, the successful bidder will be required to furnish all relevant drawings/parameters/calculation to TPCL for approval. **Instruction Manuals:** Bidder shall furnish softcopies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.
20.0	**GUARANTEED TECHNICAL PARTICULARS**	**All clauses and points in the Specification to be complied for along with GTR.**
21.0	**SCHEDULE OF DEVIATIONS**	

(TO BE ENCLOSED WITH THE BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S.No.	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

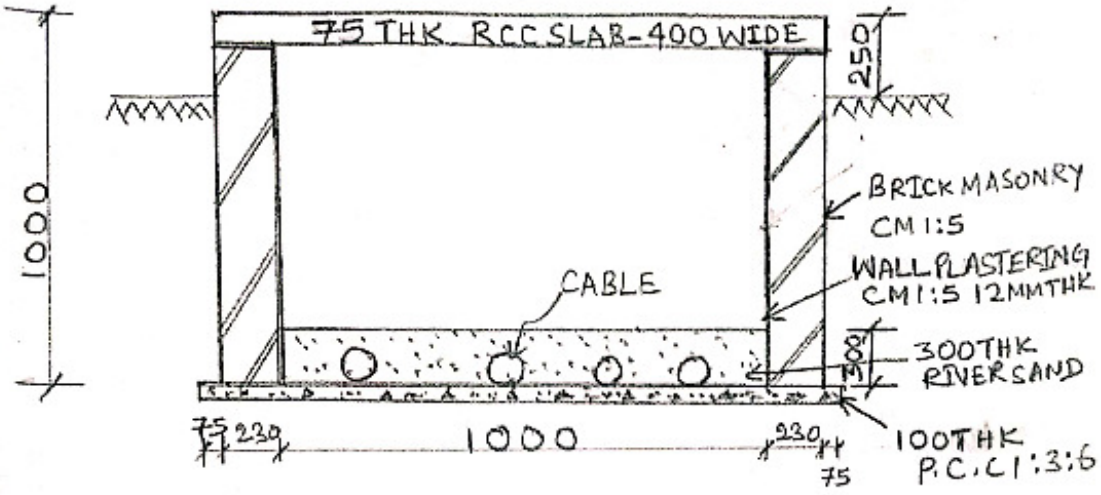
Designation

ANNEXURE-I

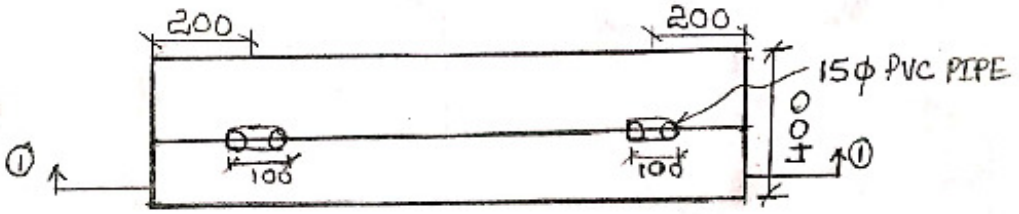
INSPECTION TEST PLAN FOR PRE-DELIVERY OF LIGHTENING ARRESTER

Sr. No.	Test to be done	Reference BIS / Document	Acceptance criteria
1	Power Frequency reference Voltage test (Both in Dry and Wet condition)	As per IEC 60099-4 Ed.3 clause no. 9.2.1.a or IS:3070 part3 cl.6.2.8	Should withstand as per Specification requirements.
2	Lightning impulse residual voltage on the arrester at nominal discharge current	As per IEC 60099-4 Ed.3 clause no. 9.2.1.b or IS:3070 part3 cl.6.4. and table 8	Should withstand as per Specification requirements.
3	Partial Discharge Test (Both in Dry and Wet condition)	As per IEC60099 part4 cl.9.1	Should withstand as per Specification requirements.
4	Visual Inspection	No damage and loose fitting	Compliance as per Specification requirements and approved drawings
5	Verification of components and dimensions.	As per Approved GTP/TPCL Specification	Compliance as per Specification requirements and approved drawings
6	Verification of type test of ZnO Blocks	Document Verification	Compliance as per Specification requirements and IS/IEC standards
7	Peel off test (removal of housing)	Samples shall confirm to the specified design. Samples shall be free from air void, cavity and other visual defects. shall be Design conformation verification, free	Should meet the Specification requirements without any defect
8	On dis-connector used in combination with NGLA, bending moment and tensile load tests shall be performed.	As per IEC 60099-4 Ed.3 clause no. 9.2.1.d	Dis-connector should withstand parameters as per approved documents.
9	Thermal stability test	Shall be done randomly on any lot material as per IEC 60099-4 Ed.3 clause 9.2.2 or IS:3070 part3 cl.7.3	Shall withstand the variations.

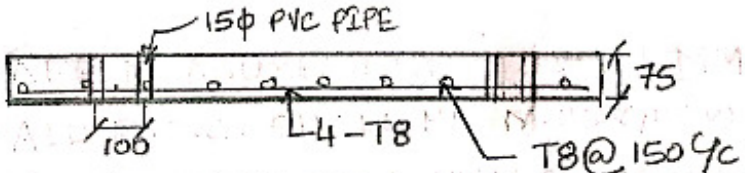
Cable Trench Methodology



SECTION OF MASONRY TRENCH



DETAIL OF TRENCH COVER

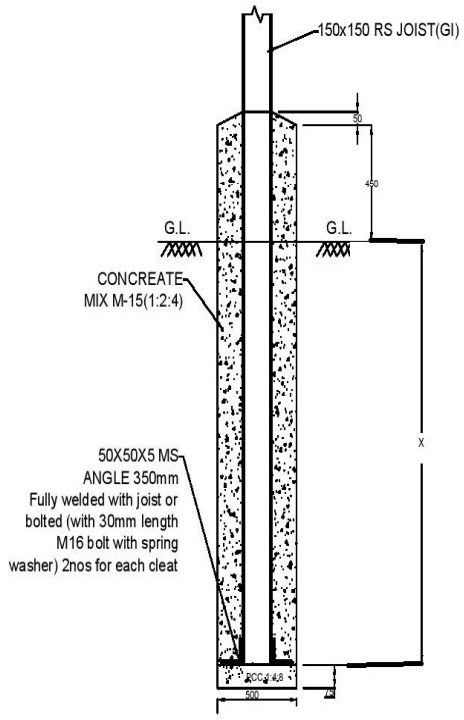


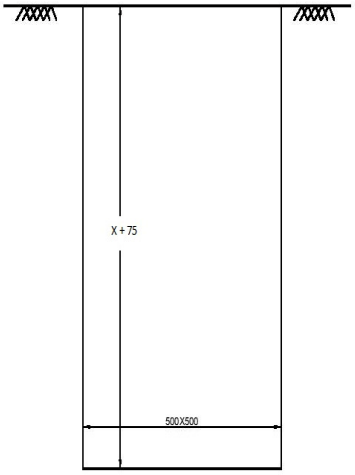
SECTION ①-①

NOTE : 1. ALL MEASUREMENTS ARE IN MM ONLY
2. ALL RCC SHALL BE OF GRADE M25
3. ALL REINFORCEMENT STEEL BARS SHALL CONFORM TO IS 1786-1985 of GRADE FE-500D
4. CLEAR COVER TO MAIN REINFORCEMENT STEEL IS 25MM

Conceeting and cooping of pole

DRAWING FOR CONCREATING OF RS JOIST 150X150X FOR NORMAL POLES





POLE PIT TO BE EXCAVATED

NOTE:

1.MS ANGLE, Fully welded with joist or bolted (with 30mm length M16 bolt with spring washer) 2nos for each cleat = 0.35X(3.8kg/mtr)=1.33kg

2. A 'X" WILL VARY DEPENDING UPON THE LENGTH OF THE POLE.
   B) ALL OTHER DIMENSIONS WILL REMAIN AS IT IS.
   C) RODS HAS TO BE PROVIDED IN ANGLE LOCATION MORE THEN 10 degree.
   D) X = (1/6)* LENGTH OF POLE

Technical Specifications :

100x50x6mm MS Channel 75x40x5 mm MS Channel 50x50x6 mm Angle

No.	Description	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
		Anil Sah	Niranjan Khuntia	Pourush Garg
		05/08/2020	05/08/2020	05/08/2020

Clause No.	TECHNICAL SPECIFICATIONS OF MILD STEEL CHANNEL & ANGLE
1.0	**SCOPE** **This specification covers design, manufacture, testing and dispatch to owner's stores of M.S. Channel & Angle for use in structures in distribution system.**
2.0	**APPLICABLE STANDARD** **Materials shall conform to the latest applicable Indian standards. In case bidders offer steel section and supports conforming to any other international specifications which shall be equivalent or better than IS, the same is also acceptable.** **S.No. Standard No. Title** 1 **IS: 2062 Grade 'A'Quality Specification for M.S.Angles, M.S.Channel** 2 3 **IS: 2062 Chemical and Physical composition of material** 4 **IS: 1852 Rolling and Cutting Tolerances for Hot Rolled Steel products**
3.0 3.1	**GENERAL REQUIREMENTS** **Raw material** The Steel Sections shall be re-rolled from the BILLETS/INGOTS of tested quality as per latest version of IS: 2830 or to any equivalent International Standard and shall be arranged by the bidder from their own sources. The Chemical composition and Physical properties of the finished material shall be as per the equivalent standards

No.	Description	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
		Anil Sah	Niranjan Khuntia	Pourush Garg
		05/08/2020	05/08/2020	05/08/2020

3.2 **Length**

The GS Flat to be supplied shall be in 5.5 meters length.

3.3 **Weightment**

The weighnment of GS Flat shall be witnessed by the consignee at the time of taking delivery. The weight recorded in the material receipt certificate issued by the consignees shall be final.

3.4 **Chemical Composition** and Physical Properties of M.S. Angles, M.S. Channels, and M.S.Flat conforming to IS: Conforming to IS:2062/84

Chemical Composition

3.5

Chemical composition			For Fe 410 WA Grade
1 C	-	0.23%	MAX
2 Mn	-	1.5%	MAX
3 S	-	0.050%	MAX
4 P	-	0.050%	MAX
5 SI	-	0.40%	MAX
6 CE (Carbon Equivalent)	-	0.42%	MAX

Mechanical Properties

3.6

1. Tensile strength Kgf/mm²– - 410
2. Yield stress Min. for thickness/diameter
   - < 20 mm - 26 Kgf/mm² OR 250 N/ mm²
   - 20-40 mm - 24 Kgf/mm² OR 240 N/ mm²
   - > 40 mm - 23 Kgf/mm² OR 230 N/ mm²
3. Elongation % - 23%
4. Bend Test (Internal Dia) - Min-3t

(t – is the thickness of the material)

Tolerance

3.7 Variation in ordered quantity for any destination and overall ordered quantity be only to the extent of ±2%. Rolling and weight tolerances shall be as per version of IS: 1852 or to any equivalent International Standard.

No.	Description	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
		Anil Sah	Niranjan Khuntia	Pourush Garg
		05/08/2020	05/08/2020	05/08/2020

4.0	**TEST** Steel Section shall be tested in IS approved Laboratory or Standard Laboratory the Bidder country having all facilities available for conducting all the test prescribed in relevant IS or IEC or to any equivalent International Standard or any recognized and reputable International Laboratory or Institutions. The bidders are required to specifically indicate that; i) They hold valid IS (or equivalent IEC) License. ii) Steel Section offered are bearing requisite IS certification or equivalent marks. The bidders are required to submit a copy of the valid IS (or equivalent IEC) License clearly indicating size and range of product against respective ISS or any equivalent International Standards along with their offer.
5.0	**MARKING** It is desirable that the bidder should put his identification marks on the finished material. The mark shall be in "legible English letter" given with marking dies of minimum 18 mm size.
6.0	**INSPECTION AND TEST CERTIFICATES** The material to be supplied will be subject to inspection and approval by the purchaser's representative before dispatch and/or on arrival at the destination. Inspection before dispatch shall not however, relieve the bidder of his responsibility to supply the Steel Sections strictly in accordance with the specification.

No.	Description	Prepared By & Date	Checked By & Date	Approved for Issue By & Date
		Anil Sah	Niranjan Khuntia	Pourush Garg
		05/08/2020	05/08/2020	05/08/2020

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval for New Grids & Bay ext. jobs.

66 KV CT / PT / CVT		BHEL / CGL / ABB / AREVA / MEHRU / KAPCO/HEPTACARE
C&R Panels		ABB/SIEMENS/ALSTOM/HAIL
66 KV CB		ABB / SIEMENS
LIGHTNING ARRESTORS		AREVA / CGL / ELPRO / OLBUM/ RAYCHEMM/LAMCO
INSULATORS		WSI / BHEL / BIRLA NGK (ABIL)/ GENERAL POWER, CJI, IEC
HARDWARE FITTINGS		RASHTRA UDYOG LTD (RUL) / SUPREME/LIGEON ENERGY/ELECTROMECH/TRANSTECH
11 KV CAPACITORS		SHREEM / EPCOS/ UNIVERSAL/ABB
LIGHT FITTINGS (INDOOR/ OUTDOOR)		PHILIPS / CGL / GE / BAJAJ / WIPRO
250 KVA DISTRIBUTION TRANSFORMER		CGL / AREVA /VOLTAMP / PATSON / KOTSON / VIJAY ELECTRICALS / CAPITAL / NUCON / RAYCHEM / SPEC/ATLANTA/TOSHIBA
CIRCUIT BREAKER/ SWITCHGEARPANELS (33 KV VCB PANELS)		SIEMENS / SCHNEIDER / ABB
CIRCUIT BREAKER/ SWITCHGEARPANELS (11 KV VCB PANELS)		SIEMENS / SCHNEIDER / ABB
11 KV POWER CABLE (XLPE)		RPG / CCI / NICCO / FORT GLOSTER / POLYCAB / TORRENT/UNIVERSAL/ STERLITE/KEC/KEI
1.1 KV POWER AND CONTROL CABLE		RPG / POLYCAB / KRISHNA ELECTRICALS / TORRENT / GEMSCAB / ALCON / GENUS / ELECTROTECH / PARAGAON / TCL /RAVIN CABLES / MP TELELINK/CAPITAL URJATECH/EMPIRE / PARAMOUNT/KEI
33 KV CABLE		UNIVERSAL / NICCO / RPG / TORRENT / FORT GLOSTER / CCI / ILGIN / LS /STERLITE
Power Connector	:	TYCO-Wedge type connector / Sun Electric
1.1KV, Electrical wire		Finolex / POLYCAB/CAPITAL URJATECH/TCL/Havells/KEI

TATA POWER DELHI DISTRIBUTION LTD. DELHI

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval

Cables Termination Kits / Joints	:	RAYCHEM / 3M
Cable tray		BHARATI / SLOTCO / STEEL WAYS, AR enterprises, MME
Battery Charger/ DCDB	:	MASSTECH / EMERSON
Battery (Ni-Cd)	:	HBL, AMAR RAJA, AMCO
LT Moulded case circuit breaker (MCCB)	:	GE POWER/ SIEMENS / L & T/ABB /SCHNEIDER/ELESCON ENGG. / C & S
AC LT panel Boards		L&T/ Siemens/ Kaybee/Advance/ A TO Z
LT Fuse Switches / Switch Fuses	:	GE POWER / SIEMENS / L & T
AFDAS (Fire detection system)		Honeywell, Agni Suraksha, System sensor
Indication Meters	:	IMP/ AE
Static Type Energy Meter	:	SECURE / L & T/ ABB/ ELSTER
Control Switches	:	SIEMENS / KAYCEE / SALZER
Select Switches	:	SIEMENS / KAYCEE / SALZER
Contactors	:	SIEMENS / L & T / GE POWER / C & S
Push Button	:	SIEMENS / Telemechnic/ L & T
Indication Lamp	:	SIEMENS / Telemechnic/ L & T
Annunciator	:	MINILEC / AREVA / PROCON
Fuses (LT)	:	Areva / SIEMENS / L & T
Miniature Circuit Breaker (MCB) /ELCB	:	MDS / HAGER / MERLIN GERIN
Cable glands	:	COMET/AXIS
ERW Conduit / PVC Conduit	:	AKG /Supreme/Finolex
6A & 16 A Switch - Socket	:	MK / ANCHOR/ MDS
63 A & 20A Industrial Socket	:	MDS /CGL
Ceiling fan / Exhaust Fan	:	KHAITAN / CROMPTON GREAVES / USHA/ GEC
Inverter	:	Exide, Microtech, Sukam
Metal clad socket	:	B & C / CROMPTON / MDS

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval

TMU	:	a-eberle,
Terminal Blocks		ELMEX / ESSEN
Reinforcement steel (TMT)		Rathi / TISCO/SAIL
Fire Extinguisher		Ceasefire/Minimax/ Safex
Air Conditioner		Voltas
Isolator		ABB,SEIMENS,S&S chennai
Marshalling Kiosk		A To Z / Telmos / ECS/ Advance
Earth Enhancement Material		Terec + , Erico Gem
Galvanized Structural Steel		Nexo/Techno/NL Engineers/RS Steel/ M J engg/Sangam/Jyoti/Good Luck/Mann/Ferro Gelva/salasar Techno/UCIC/Balakra fabricon/ VSP Enterprises
LED Lighting		Nichia,cree,seoul, osram, Philips, Bajaj
Pump		CGL / Kirloskar
RTU/Data Concentrator / Protection relays		Please refer latest revision of protection specification ENG-EHV-105 & automation specification ENG-EHV-106

Note: Below relay approved make list is subject to fulfillment of all the protection and automation requirement as per protection specification ENG-EHV-105 & automation specification ENG-EHV-106

Protection		O/C E/F	Trafo Diff	Line Diff (with distance backup)
Schneider	66KV/33KV	S- 80	P642	P543
	11 KV	S- 80	N.A.	N.A.
ABB	66KV/33KV	REC 670	RET 650	RED 670
	11 KV	REF615 with RIO 600	N.A.	N.A.
Siemens	66KV/33KV	It shall be as per TPDDL protection & automation specification & to be finalized during detailed engineering	7UT61	7SD5
	11 KV	7SJ66	N.A.	N.A.
GE	66KV/33KV	F650	T60	L90
	11 KV	F650	N.A.	N.A.
Alstom	66KV/33KV	It shall be as per TPDDL protection & automation specification & to be finalized during detailed engineering	P642	P543
	11 KV	It shall be as per TPDDL protection & automation specification & to be finalized during detailed engineering	N.A.	N.A.

TATA POWER DELHI DISTRIBUTION LTD. DELHI

24/5/16

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval

Note: The list indicates the make of manufacturers for equipment & material and successful bidder may supply above materials as approved by TPDDL. In addition, Bidder may refer to the attached QR for purchasing the material from other bidders.

List of Approved Makes(Civil,Sanitary Items)

S.No.	Material Description	Make
1	Cement PPC	Ultratech / Birla Uttam / Binani / Shree Ultra / Gujrat Ambuja / ACC
2	White Cement	Birla / JK
3	Structural Steel	TATA / SAIL / RINL / IISCO **(For quantity more than 10 tonnes)**
		Capital, Rana, MC
4	Reinforcement Steel	Tisco, SAIL **(For quantity more than 10 tonnes)**
		Rathi, Kamdhenu
5	Acid Resistant Tiles	Corromandel
6	Floatglass / Mirror	Modi Guard / Saint Gobain
7	Enamel Paint / Primer	Premium Quality of Asian / Berger / Nerolac / Dulux
8	Cement Paint / Primer	Snowcem India
9	Interlocking Tiles	Nimco / Dalal / HPL
10	Aluminium	Hindalco / Jindal / Mahabir
11	PVC Water Tank	Syntex
12	Wash Basin, IWC, EWC etc.	Parryware / Hindware
13	Kitchen Sink	Neelkanth
14	PVC Pipes and Fittings	Supreme, Finolex, Prakash
15	CI Soil Pipes / Waste / Rainwater Pipes	S.I.F, R.I.F
16	CP Brass Bib Cock, Stop Cock etc.	Parko, Chilli
		Jaguar (Base model) **(For Distt. Offices and other major buildings like Corporate, Scada, KPM, Cenpied)**
17	GI Pipe	Jindal B
18	GI Fittings	Unik
19	Laminates	Formica, Greenlam, Merino
20	Flush doors	ISI mark water proof
21	Board / Ply	National, Kitply, Durian, Greenlam,Century
22	MDF Board - Exterior / Interior Grade	Nuwud, Duratuff, Bajaj Echotech, Action Tesa
23	Particle Board	Bajaj, Action tesa, Novapan
24	Door Closer / Floor Spring	Everite, Doorking, Doorset
		Ozone, Dorma) **(For Distt. Offices and other major buildings like Corporate, Scada, KPM, Cenpied)**
25	Door Locks and Handles	Godrej, Hettich, Doorset
26	Adhesive	Fevicol, Vamicol
27	Melamine Polish	Asian Paints, ICI, MRF, Touchwood, Wemblay
28	Fire Retardent Paint (For all frame works)	Viper FR.881 or Approved Equivalent
29	Terxtured paint	Spectrum, Unitex, Dulux
30	Wood For Framing	Jammu Kail, Marandi, African Hard Wood
31	Veneered Ply	Jacksons, United Veneers, Donear, Duro

TATA POWER DELHI DISTRIBUTION LTD.

24/5/16

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval

32	Glazed / Vitrified Tiles	Kajaria, Somani, Jhonson & Jhonson, Marbonite
33	PTMT Fittings	Prayag or Equivalent
34	Exhaust Fan	Crompton
35	Monoblock Pump Sets	Kirloskar, Crompton Greaves
36	Submersible Pump and Starter	KSB
37	Brass Bib Cock / Stop Cock	Benson, Pace
38	Brass Ferrule, Gunmetal Valves	DRP

LIST OF APPROVED MAKES OF MATERIALS: (ELECTRICAL-Building)

	Material	Approved Makes
1.	M.S. Conduit Pipe (ISI Marked-ERW)	BEC / SENCO(CALCUTTA) /AKG
2.	M.S. Conduit Accessories	SHARMA/RAMA/PEI
3. a)	PVC Insulated Copper Stranded Conductor 1.1 KV Grade Cable	NATIONAL / SKYLINE / FINOLEX / BATRA-HENALY / RR KABLES
b)	PVC Insulated PVC Sheathed Aluminium /Copper Conductor armoured L.T Cable (1.1 KV)	GLOSTER / UNIVERSAL / ICC / INCAB / POLYCAB
4.	Moulded Plate Switch Socket with Switch Boxes & accessories / As per Item : Telephone/Music / Sockets	MK
5.	Lugs/Ferrules	DOWELLS/JAINSON
6.	Brass Compression Gland (Heavy Duty)	COMMEX/GRIPWELL
7	MCCB Thermal Magnetic O/C,S/C, E/F (Variable type)	SIEMENS / L&T / ABB
8.	ELCB / MCB (10 KA)	HAGER / MDS (Legrand) / MERLIN GERIN
9.	Distributions Board (Double Door & Metal Clad Socket Outlet)	HANGER / MDS (Legrand) / MERLIN GERIN
10.	Telephone Cable	DELTON / NATIONAL / SKYLINE / FINOLEX
11.	Telephone Tag Block with Boxes	KRONE/POUYET
12.	Cable Trays	BHARATI / SLOTCO / STEEL WAYS, AR enterprises, MME
13.	Selector Switch	L&T / SIEMENS / BCH / SALZER
14.	L.T. Switch by M.V. Switch Boards (Powder Coated)	TRICOLITE / ELECTRO CONTROL SYSTEM / MADHU ELECTRICAL./ KAYBEE Electricals (Noida) / KMG ATOZ (NOIDA)
15.	PVC Conduit (ISI)	BEC / POLYPACK / PRECISION / AKG
16.	Measuring Meters	DUCATI / ENERCON / L&T / AE
17.	Control Fuses	SIEMENS / GE/ L&T
18.	CT'S (Cast Resin)	AEI / KAPPA / PRAGATI / C & S
19.	MCCB'S	SIEMENS / L&T / SCHNEIDER / LEGRAND (MDS)
20.	GICU. Strip & Earthing Material	BHARATI / INDIANA
21.	Ceiling Fan (High Breeze)	CROMPTON / GEC
22.	Braket Fan	ALMONARD / CROMPTON / GEC
23.	G.I. Pipe & Accessories (ISI)	TATA/JINDAL/PRAKASH/HISSAR
24	Light Fixture	PHILIPS / DECON / WIPRO, OR APPROVED MAKE
25.	Smoke/Heat Defector	APOLLO/EST (EDWARD), TATA HONEWELL
26.	Fire Alarm Panel with SMF Battery & Battery Charger	MCE / MINIMAX /STYLUSS / AGNI SURAKSHA

TATA POWER DELHI DISTRIBUTION LTD DELHI

24/5/16

APPROVED MAKE LIST – Product to be of the following make or equivalent subject to TPDDL approval

27.	Response Indicator	APOLLO /EDWARDS /TAT HONEYWELL / AGNI
28.	Speaker/ Hooter	PHILIPS/EDWARD/TAT HONEYWELL / AGNI
29.	M.S. Conduit ISI	BEC / SENCO
30.	Conduit Accessories Heavy Duty (ISI)	SHARMA /PIE EQUIVALENT
31.	FRLS PVC Insulated Copper Wire 1.1 KV Grade (ISI)	SKYLINE / NATIONAL / FINOLEX / BATRA HANELY/ RR KABLES
32.	Manual Call Station	APOLLO/EDWARD/TAT HONEYWELL / AGNI
33	Exhaust fans	CROMPTON / Newtec / Alsthom
34	Ceiling Rose, Piano type Switches/ Sockets & lamp holders	ANCHOR
35	Changeover Switch / Main switch	L & T / SCHNEIDER / ABB / Siemens

TATA POWER DELHI DISTRIBUTION LTD. DELHI
24/5/16

CONTENTS

CONTENTS	
CLAUSE NO.	**DESCRIPTION**

CONTENTS	
CLAUSE NO.	**DESCRIPTION**

CONTENTS	
CLAUSE NO.	**DESCRIPTION**

1.0 ORGANIZATIONAL VALUES

The TPCODL has always been a value driven organization. These values continue to direct the growth and businesses.

Integrity - We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.

Understanding - We must be caring, respectful, compassionate and humanitarian towards our colleagues and customers around the world and always work for the benefit of India.

Excellence - We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of goods and services we provide.

Unity - We must work cohesively with our colleagues across the group and with our customers and partners around the world to build strong relationships based on tolerance, understanding and mutual co-operation.

Responsibility - We must continue to be responsible and sensitive to the countries, communities and environments in which we work, always ensuring that what comes from the people goes back to the people many times over.

Agility - We must work in a speedy and responsive manner and be proactive and innovative in our approach.

2.0 ETHICS

In our effort towards Excellence and in Management of Business Ethics at TPCODL, an Ethics Management Team is constituted.

The main objective of the Ethics Management Team is to:

1. Record, address and allay the issues and concerns on ethics raised by different stakeholders like employees, consumers, vendors, Associates etc. by initiating immediate corrective actions.
2. Ensure proper communication of the ethics policies and guidelines through prominent displays at all offices of TPCODL and through printed declarations in all concerned documents where external stakeholders are involved.
3. Ensure proper framework of policies as preventive measures against any ethics violation recorded by them.
4. Prepare and submit MIS of all issues and concerns, corrective and preventive actions on monthly basis to the top management for their information.

All members of Team TPCODL, Associates and Stakeholders are requested to register any grievance on ethics violation on Central Control Telephone No. 011-66404040.

3.0 CONTRACT PARAMETERS

3.1 Issue/Award of Contract

TPCODL awards the contract to the Associate in writing in the form of Purchase order or Rate Contract (RC) hereafter referred as Contract, through in any or all of following modes- physical handover / post / e-mail / web document / fax with all the attachments/enclosures which shall be part of the contract document

On receipt of the contract, the associate shall return to TPCODL copy of the contract document duly signed by legally authorized representative of associate, within two days of Effective Date of Contract for contracts having contract execution time less than 30 days and within five days for all other contracts.

3.2 Contract Commencement Date

The date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

3.3 Contract Completion Date

The date of expiry of Guarantee Period (detailed in section 12 of this document) shall be deemed as the Contract Completion Date.

3.4 Contract Period/Time

The period from Contract Commencement Date to Contract Completion Date shall be deemed as the Contract Period/Time.

3.5 Contract Execution Completion Date

The stipulated date for completing the execution of all items in the schedule of quantities (Supply, Service and or both as applicable) shall be deemed as the Contract Execution Completion Date.

3.6 Contract Execution Period/Time

The Period from Contract Commencement Date to Contract Execution Completion Date shall be the Contract Execution Period/Time. Timely Completion of Works/Timely Delivery of Materials is the essence of the contract. The period from effective date of contract to the date stipulated for completion of delivery of all items/completion of all the works/services, as per schedule of quantities of the contract is defined as contract execution completion time. The Delivery of Materials /The Completion of Works, as applicable, should be achieved in all respects as per schedules of quantities and all the terms and conditions of the contract, in the contract execution time.

Any revision/amendment in the originally stipulated contract execution time has to be approved by authorized representative of TPCODL.

3.7 Contract Price /Value

The total all inclusive price/value mentioned in the LOI/PO/RC of the contract document is the Contract Price/Value and is based on the quantity, unit rates and prices quoted and awarded and shall be subject to adjustment based on actual quantities supplied/actual measurement of work done and accepted and certified by the authorized representative of the company unless otherwise specified in schedule of quantities or in contract documents.

3.8 Contract Document

The Contract Document shall mean and include but not limited to the following:

- NIT/Tender Enquiry, QR, Instruction to Bidders, Special Condition of Contract (SCC) of tender, GCC, Technical & Commercial Specifications including relevant annexure and attachments).
- Bids & Proposals Received from Associate including relevant annexure/attachments.

- Letter of Intent (LOI/RC/PO) with agreed deviations from the tender/bid documents.
- All the Inspection and Test reports, Detailed Engineering Drawings.
- Material Dispatch Clearance Certificate (MDCC).
- Minutes of Meeting (MoM)

3.9 Contract Language

All documents, instructions, catalogues, brochures, pamphlets, design data, norms and calculations, drawings, operation, maintenance and safety manuals, reports, labels, on deliveries and any other data shall be in English Language.

The Contract documents and all correspondence between the TPCODL, Third Parties associated with the contract, and the Associate shall be in English language.

However, all signboards required indicating "Danger" and/or security at site and otherwise statutory required shall be in English, Hindi, and local languages.

3.10 Reverse Auction

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products / services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached in Annexure J. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form as mentioned in the Annexure J as a token of acceptance for the same.

4.0 SCOPE OF WORK

All the activities that are to be undertaken by the Associate to realize the contractual deliverables in completeness form Scope of Work. Following clauses list, but not limited to, major requirements of the scope of work.

The associate shall satisfy himself and undertake fully the technical/commercial requirements of items to be supplied as listed in the Schedule of Quantities together with the tests to be performed /test reports to be furnished before dispatch, arrangement of stage and final inspections during manufacturing as per terms and conditions of contract, technical parameters & delivery terms and conditions including transit insurance to be met in order to fully meet TPCODL's requirements.

Completeness: Any supplies and services which might have not been specifically mentioned in the Contract but are necessary for the scope mentioned in Special Terms & Conditions and/or completeness of the works at the highest possible level, including any royalties, licence fees & compensation to be paid, whether incurred by the associates or by a third party for the work covered in the scope, regardless of when incurred, shall be supplied/provided by the associate without any extra cost and within the time schedule for efficient , smooth and satisfactory operation and maintenance of the works at the highest possible level under Indian conditions (but according to international standards for facility of this type), unless expressly excluded from the scope of supplies and services in this Contract.

TPCODL have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the

Contract by submitting a request in writing to the Associate. The Associate shall, within fifteen days of receipt of such request from the TPCODL, provide Purchaser with a reasonably detailed estimate of the cost of the change outlined in the request.

In the event, TPCODL requests a change, the Contract price and time shall be adjusted upwards or downwards, as the case may be and shall be mutually agreed to. The associate shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Associate shall not proceed with the changes as requested till adjustment of contract price and time schedule where so applicable in terms of or otherwise directed by the TPCODL.

4.1 Technical Evaluation

TPCODL reserves the right to assign scores to different parameters including but not limited to the following while evaluating the bids. TPCODL reserves the right to change the parameters and score without prior information to the associates:

S. No.	Evaluation Parameter	Max. Score
A	**Bidders already Registered with TPCODL**	**100**
A.1.	**Quality of the Products & Services** a. <u>For Supply Part:</u> No Material Rejections in last 2 years Deduction of 3 marks for each PO/ RO (for same product category) with major rejections in last 2 years. (Major rejection shall be considered when material is taken back by the vendor for rectification and the quantity of rejected material is more than 10%). b. <u>For Service Part:</u> No violation of statutory compliances in last 1 year. Deduction of 2 marks for each instance of violation in last 1 year. c. <u>Safety</u> Deduction of 2 marks for each instance of safety violation in last 1 year. Deduction of 4 marks for each reported Non-Fatal Accident in last 1 year. In case of any reported fatal accident: *ZERO MARKS*	12 12 16
A.2.	**Timely Execution of Contracts** Total Achieved Score = {30 – 3 x (Avg. %age LD deductions in last 2 years)}	30
A.3.	**Legal Issues with TPCODL** Zero instances of Arbitration procedures / Court Cases / PBG forfeitures in last 2 years: 30 marks else 'Zero' marks	30
B	**Bidders new to TPCODL**	**100**
B.1.	**Visits** <u>For Supply Part</u>: Factory Visit and Evaluation. <u>For Service Part:</u> Client Site Visit where the bidder is providing similar services. The visits as above shall be arranged by the bidder. However all costs towards conveyance, lodging, boarding etc. shall be borne by ODL. The score assigned by TPCODL based on the above visits shall be final and binding on the bidder. **<u>Safety:</u>**	30 20

S. No.	Evaluation Parameter	Max. Score
	Score achieved against the BA safety Management System questionnaire.	
B.2.	**Client Referrals** At least 3 nos. Customer References for similar products/ services in last 3 years. All customer references shall be either of the following: ▪ Govt. Organizations/ PSUs/ Power Distribution Utilities. ▪ Private Organizations with an annual turnover of >= 500 cr. PO copies or Completion Certificates are admissible. Each reference: 10 marks	30
B.3.	**Blacklisting Information** Not blacklisted by any reputed organization / utility in last 2 years: 20 marks else 'Zero' marks.	20

- Bidder shall be considered as technically qualified if they are able to achieve a technical score of >70 marks on the above parameters. 'A' or 'B'.
- The bidder must have the PF and ESI registration. In case it is not there (provided the bidder is not exempted from the PF and ESI), bidder shall not be evaluated on the above parameters and will be considered as disqualified.

4.2 Indemnity

Associates shall undertake to fully indemnify TPCODL (also referred to as the Company in the GCC) against all kinds of liabilities or damages, of whatsoever nature, including compensation arising from any accident to the person or property of those in Associate's employment or to any other person or properties including those of TPCODL, arising due to reasons attributable to any, act, omission or negligence of the Associate the Associates, for the entire period of contract including period of guarantee.

Within 7 days of award of work, the Associates shall submit Indemnity Bond in the format as per Annexure-E to Order Issuing Authority.

Contract having value more than Rs 2 Cr per Annum, Associates shall submit Indemnity Bond on Rs 100/- Non Judicial Stamp Paper in the format as per Annexure- E to Order Issuing Authority.

4.3 Display of Notice Boards at Work Sites

The Associate shall put up display notice board at each project site where the works are in progress indicating the information given below:

- Name of the Project.
- Estimated Cost of Project.
- Date of Commencement.
- Expected date of completion.
- Name of Associate and his telephone number.
- Name of Engineer-in-Charge and his telephone number.

4.4 Disposal of Waste at Site

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change.

The associates shall follow the below criteria for disposal of waste at site during the execution of project.

- Associate shall ensure that the detailed project plan include the waste management, segregation of all designated waste material (Recyclable/ Non-Recyclable), collecting, storing, disposing and transferring the same to pre-arranged facility/destination in timely and safe manner as per environmental legislations during the execution of project. The project plan shall also include the innovative construction practice to eliminate or minimize waste, protect surface/ground water, control dust and other emissions to air and control noise during the execution of project. The copy of same shall be given to EIC before the commencement of project.
- The purchase policy of BA shall encourage the procurement of material with recycled and minimum packaging of goods during delivery. Associate shall provide the appropriate means for site to site transportation of materials to avoid damage and litter generation.
- Associate shall educate and inform to its project team about the requirement and responsibilities for waste minimization and disposal in general and provide training of practices that support this. Waste management should be treated like a safety program.
- In the event that area of contaminated or biological hazard is identified, Associate shall ensure that plant, equipment, personnel and any activity associated with the work is carried out in consultation with EIC of TPCODL.
- Associate shall ensure that the residents living near the site are kept informed about proposed working schedule and shall informed timings and duration of any abnormal noise full activity that is likely to happen.
- Associate shall ensure the regular maintenance and monitoring of vehicles and equipment for efficient fuel use so that emissions and noise are within acceptable limits to avoid air pollution.

4.5 Deployment of Work Force

Associate shall deploy adequate labour, as considered necessary by TPCODL for execution of the contract including Sundays and Holidays whenever required to do so with no extra cost to TPCODL. However, prior permission shall be taken from the site Engineer to carry out the work beyond normal working hours or on Sundays and Holidays. Female employees shall not be deployed beyond normal working hours/days and no child labour shall ever be deployed. Associate shall depute full time qualified and experienced engineers to supervise the work at site. All such staff shall be maintained from commencement to completion of all works to the entire satisfaction of the Engineer-in-Charge. Associate's employees deployed for the works under this contract will not be considered in Company's employment at any time. Associate shall continue to be responsible for all such employees, their safety, all types of statutory compliances related thereto and in any other manner whatsoever. The company will stand indemnified by the Associate in respect of all the above. At the same time Company upon noticing any breach or default on any statutory compliances, may at their sole discretion, decide to act in a manner as deemed fit at the risks and costs of the Associate.

TPCODL shall have the right to instruct the Associate to change the Sub- Associates or skilled /unskilled workers in case the conduct, the workmanship or speed of the work is not satisfactory.

Associates shall submit duly signed undertaking regarding engagement of competent staff / employee commensurate to the nature of job to Engineer–in–charge in the format attached as Annexure – H.

4.6 Damages to Properties

The Associates shall take necessary steps to ensure that the equipment and installations of the Company, Third parties, including other utility services like water supply pipelines; open drains telephone cables etc. are not damaged during execution of the works. The Associates shall be responsible for all such damages and shall have to repair/ replace and/or compensate for the entire claims in respect of such damages at its own cost.

4.7 Issuance of Material

The material issued to the Associate shall be in the custody of the Associates who shall be fully responsible for the same. After completion of the works, the Associates will reconcile the material. Any cost of material which is short or damaged/lost will be deducted from Associate bill/ deposits.

4.8 Company's Right To Use Works

If Taking Over Certificate is delayed for any reason, for which TPCODL's decision shall be final and binding upon the Associate, the Company shall be entitled to use the works or portion thereof without affecting Associate's responsibility and liability to complete the balance works as per company's directives from time to time, though Associate shall be afforded reasonable opportunity by the company to enable Associates to complete all balance works required for issuance of 'Taking Over Certificate' by the company.

4.9 Rights of TPCODL to vary the scope work

TPCODL shall have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the Contract by communicating the intent to do so in writing to the Associate. On receipt of such communication the Associate shall, within the time frame specified in the contract shall provide TPCODL with a reasonably detailed estimate of the cost of the change in scope outlined in the TPCODL communication. The change in the Contract price and time shall be revised upwards or downwards, as the case may be, and shall be mutually agreed to. The Associate shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Associate shall not proceed with the changes in the scope of work till such time revision of Contract price and time schedule are approved and communicated to the associate by TPCODL.

Any change in the Scope of Work and/or Terms & Conditions of the order shall be intimated by TPCODL through an amendment to the contract. The amendment shall be treated valid only if signed by the authorized signatory of the original contract.

5.0 PRICES/ RATES/ TAXES

5.1 For Supply part of Contract

Unless specified elsewhere in the contract document, the prices/rates are inclusive of cost of finished product for which MDCC will be issued by TPCODL, packaging and forwarding charges, freight and transit insurance charges covering loading at Associate's works, transportation to TPCODL store/site & unloading & delivery at TPCODL stores/TPCODL site, cost of documentation including all the relevant test certificates and other supportive documents to be furnished.

The Prices/Rates are inclusive of all taxes, levies, cess and duties, particularly Goods and Services Tax as applicable. All government levy / taxes shall be paid only when the invoice is submitted according to the relevant act.

The prices/rates shall remain firm till actual completion of entire supply of goods/material/equipment as per contract is achieved and shall remain valid till the completion of the contract.

The prices shall remain unchanged irrespective of TPCODL making changes in quantum in all or any of the schedules of items of contract.

5.2 For Service part of Contract

The Prices and Rates are inclusive of cost of materials supplied as per contract terms and for which MDCC is issued by TPCODL and to the extent required for completion of works, cost of service executed as per schedule of quantities, cost of testing as per contract terms, cost of documentations including all relevant test certificates and other supportive documents to be furnished as per contract terms. The rates shall remain firm till actual completion of contract.

The Prices/Rates are inclusive of all taxes, levies, cesses and duties, particularly Goods and Services Tax as applicable. All government levy / taxes shall be paid only when the invoice is submitted according to the relevant act.

The prices shall remain unchanged irrespective of TPCODL making changes in quantum in all or any of the schedules of items of contract.

5.3 Changes in Statutory Tax Structure

If rate of any or all of the statutory taxes and duties applicable to the contract changes, such changes shall be incorporated by default if the changes occur within the contract execution time and shall be applicable if the contract is executed by the Associate within the Contract Execution Time.

For execution of contracts beyond contract execution time, where the delay is not attributable to TPCODL no upward revision in tax /duties shall be considered irrespective of changes in the statutory tax structure either within the contract execution time or beyond. However, in such cases, benefits due to any downward revisions in statutory tax rates shall be passed on to TPCODL.

6.0 TERMS OF PAYMENT

A. 5% of the Release Order/ Purchase Order price shall be paid as initial interest free advance on fulfillment of the following by the Associate:

   a) Acceptance of PO/ LOI.
   b) Submission of advance payment BG of 15% of the Release Order/ Purchase Order price which shall remain valid till the advance is fully adjusted.

c) Submission of Contract Performance Bank Guarantee of 5/10% of the RC/ PO price valid till 30 days after taking over of the works.

B. 10% of the Release Order/ Purchase Order price shall be paid as interest free advance against approval of drawings under Category-1 of major drawings, Quality Plans, Pert Chart, Field Quality Plan, posting of Project Manager and commencement of the first mile stone of the work mutually agreed including C-3 Form, and submission of a true copy of 'Erection All Risk Insurance Policy' taken for the awarded jobs. The drawing list shall be mutually agreed at the time of award of work.

C. 50% on account payment of the total of item wise cost of material Release Order/ Purchase Order shall be paid against receipt of material at site in good condition and certification by TPCODL along with bills complete in all respects viz. MDCCs etc.

D. 20% on account payment of the actual executed value shall be paid against mechanical completion of erection on prorate basis against monthly bills and 70% on account of the actual executed value shall be paid against the service line item including composite line item. In case this milestone is not completed beyond 120 days for reasons attributable to TPCODL, the payment corresponding to supply part shall be released subject to submission of BG of equivalent amount by the BA valid for a period of further 12 months. If required, it shall be extended by the BA on request of TPCODL.

E. 15% payment of the actual executed Release Order/ Purchase Order shall be paid after completion of acceptance test and Taking Over of the complete systems specified in the enquiry, including clearance of Electrical Inspection, compliance of final punch point and after reconciliation & adjustment of payments, if any, towards Quantities of materials issued from purchaser's stock and consumed by the contractor for expeditious completion of the job. In case this milestone is not completed beyond 120 days beyond schedule for reasons attributable to TPCODL, the payment corresponding to supply part shall be released subject to submission of BG of equivalent amount by the BA valid for a period of further 12 months. If required, it shall be extended by the BA on request of TPCODL.

The Contractor shall submit all Operation & Maintenance manuals and "As Built Drawings" etc. and shall also submit Equipment Warranty Bank Guarantee (EWBG) equivalent to 5/10% of actual executed contract price before the release of this last payment and return of CPBG. The validity of EWBG shall be for a period of 15 months from the date of taking over of the works or specified guarantee period in drawing/tender/technical specification documents etc. whichever is later. The associate shall also submit 'No Demand Certificate' at the time of receipt of full and final payment.

6.1 Pre-Requisites for Payment

- Associate should have completed execution of that part of contract, for which payment is sought, to the satisfaction of TPCODL's Engineer-in-Charge responsible for the contract and obtained certification for execution of the work.
- Associate has undertaken joint measurement of the work executed along with TPCODL's Engineer-in-charge

- Associate's bills/invoices submitted have been certified by Engineer-In-Charge.

6.2 Bills & Invoices

Unless specified otherwise in the special conditions of contract, Associate shall raise not more than one invoice/contract per month for the services rendered in the prescribed Tax Format and the invoice shall be submitted within 15 days of the following month at Bill Inward Receipt Desk (BIRD) located at Civil Lines III Office, TPCODL**.**

All Bills shall be supported by joint measurement of work done, quality test report and a copy of wage sheet, if applicable (showing proof of having disbursed wages as per applicable law) and a copy of statement substantiating that statutory payments having been affected.

Bills/ invoices shall mention Associate's 'Sales, Service, WCT Tax Registration Number, PAN number as applicable.

Final bill submission after completion of project or execution of job must be within 30 days from the actual date of completion/execution of work awarded.

6.3 Payment & Statutory Deductions

Payment shall be released within 30 days from the submission of the bills. The associate shall submit "No Demand Certificate" in the format as per Annexure-D at the time of receipt of full and final payment. In case any non-compliance to contract conditions comes to TPCODL's notice, TPCODL will be entitled to deduct 30% of estimated wages plus 20% of wages as TPCODL's overheads. Associates would be obliged to provide the copy of monthly wage sheet in any case, failing which no payment shall be made. TPCODL at their sole discretion may deposit the PF etc. with statutory authorities. TPCODL will deduct the amounts of TDS as per statutory requirement under the income tax act and the DVAT Act and certificates (wherever applicable) will be issued to associate accordingly.

In case of non-submission of PAN No TDS @ 20% shall be deducted from all payable amounts for which no TDS certificate shall be issued. TDS once deducted as above shall not be revised in any condition.

6.3.1 Statutory Deductions

TPCODL will deduct the amounts of TDS, TCS as per statutory requirement under the income tax act, the Goods and Services tax act, BOCW Act, or any other applicable tax act and certificates (wherever applicable) will be issued to associate accordingly. For consumption of TPCODL's Water and Electricity by Associate for execution of Contract, Associate shall pay 0.5% & 1.0% respectively of contract value and it shall be deducted from the running bills. The Engineer-in-Charge as stated in the Order shall be responsible for certification of the work executed and the bills. Bills (including original) shall be submitted in triplicate at Bill Inward Receipt Desk (BIRD) located at Civil lines-III, Near Vidhan Sabha, TPCODL.

6.4 Guidelines for Raising Running/Final Bills

Contract Value Up to 5 Lakhs	One Final Bill
Contract Value More than 5 lakhs	Monthly Running Bill & One Final Bill

All Bills shall be processed only when all bank Guarantees are in place and before payments of Final Bill Associate have to furnish NDC.

6.5 Quantity Variation

Payment will be made on the basis of actual quantity of supplies/actual measurement of works accepted by TPCODL and not on the basis of contract quantity.

6.6 Full and Final Payment

Full & Final Payment in all contracts shall be made subject to the associate submitting "No Demand Certificate" in the format as per Annexure-D.

7.0 MODE OF PAYMENT

Payment shall be made through RTGS mode for which Business Associated shall submit the details of Bank Account and other details as per annexure K. Further, for any payments made, TPCODL is not responsible for any consequences/disputes Associate have among the owners channel partners, sub-Associates and all such dispute/concerns shall be settled solely by the Associate.

The quantities of items indicated are estimated and preliminary. However, payments shall be made on the basis of actual quantity of work carried out and measured jointly by the Company and the Associate. Associates shall be responsible to organize joint measurements of works with TPCODL Engineer-in-Charge before raising any bill of work done. In the event Associate fails to do so, TPCODL at their sole discretion, may take measurements of work done and proceed as deemed fit and in such an event Associate's right to lodge any subsequent claim shall stand forfeited.

8.0 SECURITY CUM PERFORMANCE DEPOSIT

Associates shall submit within 15 days from the effective date of issue of PO/RC, Security cum Performance Guarantee (SPBG) in the format as per Annexure B of this document from banks acceptable to TPCODL for:

(a) 5% of the PO value if purchase order value is more than Rs 5 Crores.
(b) 10% of the PO value if purchase order value is less than Rs 5 Crores.
This shall remain valid till the end of the Guarantee Period of contract, plus one month.

(c) 5% of the RC value in case of Rate Contract. This shall remain valid till the Guarantee period plus one month.

- For PO/RC values less than Rs. 5 lacs, Associate may request for deduction of amount equivalent to SPBG value from their first invoice. Such amount shall be withheld by TPCODL while processing the invoice and shall be released after completion of Guarantee Period plus one month.
- For PO/RC values less than Rs. 3 lacs, the clause (8.0) for Security cum Performance Bank Guarantee (SPBG) shall not be applicable..
- In case of RC (Rate Contract) after the expiry of RC validity, Associate shall have to submit SPBG. However, the Associate has the option to re-submit the SPBG as per actual RO (Release Order) value issued against the RC, valid for Guarantee Period plus one month. The Guarantee Period shall be considered as per the last RO issued against the said RC. The original SPBG as submitted against the RC shall be released on submission of the new SPBG to TPCODL. Alternatively, Associate may extend the

validity of original SPBG only till the requisite period, i.e. Guarantee Period plus one month.

9.0 STATUTORY COMPLIANCE

9.1 Compliance to Various Acts

Associate should ensure adherence to all applicable laws, rules and regulation applicable under this contract from time to time. In case of violation any risk, costs etc shall be in associates account and keep TPCODL indemnified always till completion of contracts.

9.2 SA 8000

Further being TPCODL is SA 8000 complied and expects its Associates to follow guidelines of SA8000: 2014 on the following aspects

1. Child Labour
2. Forced or Compulsory Labour
3. Health & Safety
4. Freedom of Association & Right to Collective Bargaining
5. Discrimination
6. Disciplinary Practices
7. Working Hours
8. Remuneration
9. Management System

9.3 Affirmative Action

TPCODL appreciate and welcome the engagement/employment of persons from SC/ST community or any other deprived section of society by their business associates.

Relaxation in Contract Clauses under Affirmative Action for SC/ ST Business Associates**

TPCODL believes that inclusive growth is the key to sustainable development, and to promote the same Policy on Affirmative Action for Scheduled Caste & Scheduled Tribe Communities has been adopted across the company.

Under the same pre-text, and to promote entrepreneurship among SC/ST community TPCODL has taken initiative by proposing relaxations in contract clauses as per below:

S. No.	Initiative	for SC/ ST BA's	Guideline Document
1	Tender Fees	100% waiver for SC/ST community	All Open Tenders
2	Earnest Money Deposit	50 % relaxation of estimated EMD value	All limited and Open Tenders
3	Performance Bank Guarantee	25% relaxation in PBG for order value above 50 lacs else 50% relaxation	All limited and Open tenders
4	Turnover	25% relaxation in company turnover under qualifying requirement criteria	All Open Tenders

****Classification of BA s under SC/ST shall be governed under following guidelines:**

- Proprietorship/ Single Ownership Firm: Proprietor of the firm should be from SC/ST community. Governing document shall be duly audited balance Sheet for the last FY bearing the name of proprietor.
- Partnership Firm: Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed and audited balance sheet/ ITR for last FY.
- Private limited company: Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

Certification from SC/ST commission shall be required for deciding upon SC/ST status of a person.

9.4 Compliance to Labour Laws

Bidder needs to ensure compliance to applicable labour laws including timely disbursement of wages. In case wages are not disbursed as per the stipulated timelines, then TPCODL shall pay the wages to BA employees on behalf of BA. Apart from deducting the amount of wages paid, TPCODL shall deduct an additional service charge equivalent to 25% of the wages paid from the payment due to BA.

9.5 Compliance to Construction and Demolition Waste Management Rules & Environment (Protection) Amendment Rules

BA is liable to follow the Construction and Demolition Waste Management Rules- 2016, Environment (Protection) Amendment Rules- 2018 and Guidelines on dust mitigation measures in handling construction material and C&D wastes issued by CPCB.

Following are some main points of above Rules/Guidelines for Construction work, cable laying jobs etc.

1. Barricading to be provided at site to cover complete area.
2. Construction material and waste should be inside the closed area made by using barricading.
3. Water sprinkling/fine spray from nozzles to be done to suppress the dust.
4. The board of Dust mitigation measures shall be displayed at site for public viewing with required details.
5. Loose sand or soil and construction material that causes dust shall be covered.
6. Transport material that are easily wind borne need to be covered by a sheet made of either jute, tarpaulin, plastic or any other effective material.
7. All areas for storing C&D waste/construction material to be demarcated and preferably barricaded particularly those materials that have potential to be dust borne.
8. Grinding and cutting of building materials in open area shall be prohibited.
9. Construction material and waste should be stored only within earmarked area and road side storage of construction material and waste shall be prohibited.
10. No uncovered vehicles carrying construction material and waste shall be permitted.
11. Construction and demolition waste processing and disposal site shall be identified and required dust mitigation measures to be notified at the site.

10.0 QUALITY

10.1 Knowledge of Requirements

The Associate shall be deemed to have carefully examined and to have knowledge of the equipment, the general and other conditions, specifications, schedules, drawings, etc. forming part of the Contract and also to have satisfied himself as to the nature and character of the work to be executed and the type of the equipment and duties required including wherever necessary of the site conditions and relevant matters and details. Any information thus procured or otherwise obtained from TPCODL/Consultants shall not in any way relieve the Associate from his responsibility and executing the works in accordance with the terms of contract.

10.2 Material/Equipment/Works Quality

The items / works under the scope of the Associate shall be of the best quality and workmanship according to the latest engineering practice and shall be manufactured from materials of best quality considering strength and durability for their best performance and, in any case, in accordance with the specifications set forth in this Contract. All material shall be new. Substitution of specified material or variation from the process of fabrication/construction/manufacture may be permitted but only with the prior written approval of the TPCODL.

10.3 Adherence to Rules & Regulations

The Associate shall procure and/or fabricate/erect all materials and equipment in accordance with all requirements of Central and State enactment, rules and regulations governing such work in India and at site. This shall not be construed as relieving the Associate from complying with any requirement of TPCODL as enumerated in the Contract which may be more rigid than and not contrary to the above mentioned rules, nor providing such construction as may be required by the above mentioned rules and regulations. In case of variance of the Technical Specification from the laws, ordinance, rules and regulations governing the work, the Associate shall immediately notify the same to the TPCODL. It is the sole responsibility of the Associate, however, to determine that such variance exists. Wherever required by rules and regulations, the Associate shall also obtain the statutory authorities' approval for the plant, machinery and equipment to be supplied by the Associate.

10.4 Specifications and Standards

The Associate shall follow all codes and standards referred in the Contract Document. Codes and standards of other may be followed by the Associate with the prior written approval of TPCODL, provided materials, supplies and equipment according to the standard are equal to or better than the corresponding standards specified in the Contract.

Brand names mentioned in the Contract documents are for the purpose of establishing the type and quality of products to be used. The Associate shall not change the brand name and qualities of the bought out items without the prior written approval of the TPCODL. All such products and equipment shall be used or installed in strict accordance with original manufacturer's recommendations, unless otherwise directed by the TPCODL. In any

circumstances the codes, specimen and standards prescribed by any government agency should not be violated.

11.0 SAFETY

All Associates shall strictly abide by the guidelines provided in TPCODL's Contractor Safety Management System (CSMS) as applicable at all stages during the contract period. Associate shall execute the contracts ensuring the following in and as order of priority:

- Safety of Human Beings.
- Safety of equipment/Assets.
- Timely Completion of Contract.

Safety related requirements as mentioned in our Contractor Safety Management System is attached as annexure L and is an integral part of this GCC.

12.0 INSPECTION/PARTICIPATION

12.1 Right to Carry Out Inspection

TPCODL reserves the right to send its representatives for inspection or participation at various stages of contract execution listed below, applicable as per contract construction.

- During basic design and detail engineering of material/ Equipment carried out by Associate /Outsourced Agencies.
- During manufacturing stages of the product at Associate's/Associate's Outsourced Agency's Plant/Facility.
- During Pre-dispatch Inspection and Testing of finished/manufactured product at Associate's/Associate's outsourced Agency's Plant/Facility.
- During Installation & Commissioning Activities/Stages.
- Prior to Clearing of the completed installation for commissioning.
- Any other stage as find appropriate by TPCODL during contract execution time.

All inspections and participations shall be carried out within maximum of two weeks of TPCODL giving written intimation to the Associate or receiving appropriate advance written inspection call from the Associate, unless otherwise specified elsewhere in the contract document.

12.2 Facilitating Inspection

The Associate shall provide all opportunities and information to TPCODL's engineers to get acquainted with the technical know-how and the methods and practices adopted by the Associate in basic and detail engineering. The Associate shall provide documents, drawings, calculations etc. as may be required by TPCODL's Engineers.

The Associate shall provide free of charge office accommodation, office facilities, secretarial services, communication facilities, general and drawing office stationary, etc. as may be reasonably required by the TPCODL's engineers. Similarly, facilities shall also be provided by Associate's outsource agencies/partners/authorized dealers (collectively termed as sub-associates) if such basic and detail engineering activities are carried out in the design offices of sub-Associates.

The Associate shall be responsible for the safety of employees of TPCODL/Third Party Agency when they are at the Associate's /Associate's outsource agency's plant or facility for carrying out/witnessing inspection/testing. All statutory safety precautions as applicable shall be followed by the Associate during Inspection Testing. If TPCODL inspectors are not satisfied with the safety arrangements at the plant, TPCODL have the right to call off inspection till such time corrective action is taken by the Associate.

Before raising the call for pre-dispatch final inspection and testing, the Associate shall conduct all the tests—type tests, routine tests etc-as specified in the contract document and submit copies of the test certificates to TPCODL along with the inspection call, for scrutiny of TPCODL.

The Associate and TPCODL shall jointly document all the observations, comments and action points after completion of inspection and it shall be binding on the Associate to provide compliance on all the points requiring compliance and furnish the compliance report to the designated authority of TPCODL for receiving clearance for dispatch of materials.

12.3 Third Party Nomination

TPCODL also may nominate a third party for the purpose of carrying out the inspection and such an agency shall be entitled to all the rights and privileges of TPCODL as far as conducting the inspection.

12.4 Waiver of Inspections

TPCODL on its own discretion shall chose to waive off any inspection and ask the Associate to submit all the test reports as applicable as per contract specifications, related to inspection and testing of the goods ordered for scrutiny and clearance for dispatch.

12.5 Incorrect Inspection Call

In case it is observed that the material offered for inspection is not ready at the time of TPCODL inspection visit rendering it as futile, all costs towards such inspection shall be recovered from the BA. Taxes as applicable on such recoveries shall be borne by the BA.

13.0 MDCC & DELIVERY OF MATERIALS

13.1 Material Dispatch Clearance Certificate

Associate shall deliver material/goods/equipment against Supply Contracts or Supply Part of Composite/Service Contracts only after receiving Material Dispatch Clearance Certificate (hereafter termed as MDCC) issued by designated authority of TPCODL. Material delivered at TPCODL stores or at project site without a valid MDCC issued by the designated official of TPCODL shall be rejected. MDCC shall be issued to associate furnishing compliance report on the action points documented during pre-dispatch inspection and testing at Associate's/ Sub-Associate's plant/ facility. In case Pre-dispatch inspection is waived at the discretion of TPCODL, then, MDCC shall be issued on receiving all the test reports-routine& type-from the Associate and finding them in order.

The associate shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during handling and transport by air, sea, rail and road or any other means.

All such packing shall allow to the extent possible for easy removal and checking at Site. The associate shall take special precautions to prevent rusting of steel and iron parts during

transit by sea. Gas seals or other materials shall be utilised by the associate for protection against moisture during transit of all Plant and Equipment.

Each Equipment or parts of Equipment shall be tagged with reference to the assembly drawings and corresponding part numbers. Each bale or package shall contain a packing note quoting specifically the name of the associate, item description, quantity, item / package identification.

All packing cases, containers, packing and other similar materials shall be new and supplied free by the associate and it shall not be required to be returned to the associate.

Notwithstanding anything stated in this clause, the associate shall be entirely responsible for loss, damage or depreciation or deterioration to the materials and supplies due to faulty and/or insecure packing or otherwise during transportation to the Site until otherwise provided herein.

In case of the consignments dispatched by road, the associate shall ensure that it or its sub-contractors:

i) Identify and obtain the correct type of trucks/trailers, keeping in view the nature of consignments to be dispatched.

ii) Take such actions as may be necessary to avoid all possible chances of damages during transit and to ensure that all packages are firmly secured.

Timelines for inspection and MDCC is as below:

S. No.	Inspection	MDCC issuance time including inspection time (max.)
1	Outside Bhubaneswar	12 days
2	Within Bhubaneswar	5 days
3	Waiver*	3 working days

* Associate is expected to raise the inspection call assuming that Inspection shall be carried out by TPCODL. The decision for waiver of inspection shall be on sole discretion of TPCODL.

13.2 Right to Rejection on Receipt

Goods/Material/Equipment delivered in condition physically damaged & incomplete as a product ordered, or not packed and transported as per the terms and conditions of the contract is liable to be rejected. Such item shall be lifted back by Associates within 15 days from receipt of rejection note from TPCODL and have to supply back the material within next 30 days or within the timeframe mutually decided by Associate and TPCODL.

If delivery of the material is beyond the agreed time, Liquidated damage clause, mentioned in this GCC separately shall be applicable; but the period for levy of LD shall be considered as per the original delivery schedule and not from the agreed timelines for material rectification.

13.3 Consignee

Unless otherwise specified in the Contract Document, Materials/Goods/Equipment shall be consigned to “Stores-In-Charge”, TPCODL Bhubaneswar.

13.4 Submission of mandatory documents on Delivery

Following documents shall be mandatorily submitted by BA along with supply of material to TPCODL stores/site:

S. No.	Documents	Requisite
1	Invoice copy in original	With all consignments
2	LR copy	Wherever required
3	Packing list	With all consignments
4	MDCC	With all consignments
5	Purchase order / Release order	Signed copy
6	Test certificates	With all consignments
7	Inspection/JVR report	In case pre-dispatch inspection is conducted
8	Device data in CD as per template for metering items	Wherever applicable

13.5 Dispatch and Delivery Instructions

S. No.	Instructions
1	Purchase order/ Release order no. shall be mentioned on invoice and on material
2	TPCODL material code and material description shall be mentioned in invoice and on material.
3	"Property of TPCODL" shall be embossed on material.
4	The material shall be properly sealed and packed in standard packing as per purchase order terms & conditions.
5	The weight and quantity of material shall be mentioned wherever applicable
6	The material supplied shall be co-related with the packing list.
7	The name plate detail on equipment shall include Material code, Material description, specification detail of material [as applicable], Serial No. Year of manufacturing, PO/RO no. and date, "PROPERTY OF TPCODL, Bhubaneswar", Guarantee period and Associate's name.
8	In case of manual unloading, supplier / transporter shall deploy sufficient Labour for unloading the material at TPCODL central store. For heavy item(s), crane will be provided by TPCODL [unloading cost will be recovered from the associate].
9	The driver should have valid License and one helper in truck. All the documents of truck like registration papers, PUC etc should be available in Truck.
10	BA representative should accompany the material and get it unloaded / stacked in his presence wherever possible.

14.0 GUARANTEE

14.1 Guarantee of Performance

Associates shall stand guarantee that the equipment and material supplied/service or work rendered under the contract is free from design, manufacturing, material, construction, erection & installation and workmanship & quality defects and is capable of its due, rated and intended quality performance, as an integrated product delivered under the contract. for a specific period termed as Guarantee Period(as elaborated elsewhere in this clause) The

Associate should also guarantee that the equipment/material is new and unused except for the usage required for the tests and checks required as part of quality assurance.

14.2 Guarantee Period

The Guarantee Period will be equipment/service/work specific and shall be as specified in the Standard Specifications of TPCODL for the equipment/material/service/work and where standard specifications are not part of contract documents or guarantee period is not specified in the standard specifications,, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in standard specifications or SCC Guarantee Period will be 15 Months from the Date of Commissioning or 24 months from the date of delivery of final lot of supplies made, whichever is earlier.

14.3 Failure in Guarantee Period (GP)

If the equipment and material supplied/service or work rendered under the contract fails to perform its due, rated & intended quality performance, during the Guarantee period, the associate is liable to undertake repair/rectify/replace the equipment and material supplied/service or work rendered under the contract within time frame specified in the SCC or elsewhere in the contract documents at associate's cost to make the equipment and material supplied/service or work rendered under the contract of performing its due, rated and intended quality performance. If Associate fails to repair/rectify/replace the equipment or material supplied/service or work rendered under the contract, failed in Guarantee Period, TPCODL will be at liberty to get the same done at Associate's risks and costs and recover all such expenses plus the TPCODL's own charges (@ 20% of expenses incurred), from the Associate or from the "Security cum Performance Deposit" as the case may be.

If during the Warranty/ Guarantee period some parts of the supplies are replaced owing to the defects/ damages under the Warranty, the Warranty period for such replaced parts shall be until the expiry of twelve months from the date of such replacement or renewal or until the end of original Guarantee period, whichever is later.

Any repairs during the Guarantee Period shall be carried out by the Associate within 30 days of reporting the issue to Associate by TPCODL. However, if replacement of the Equipment is required, Associate shall notify the same to TPCODL within 7 days of reporting the issue by TPCODL. Thereafter, the total time for supply of new equipment/ material shall be equal to the original delivery period of that equipment/ material as specified in the Contract. In case the Associate is not able to rectify/ replace the faulty equipment/ material within the stipulated timelines as mentioned above, penalty shall be levied as per the Liquidated Damages clause mentioned in this document. The penalty amount shall be recovered from the payment due to the vendor or by encashment of the SPBG as the case may be.

14.4 Cost of repairs on failure in GP

The cost of repairs/rectification /replacement, apart from the actual cost of repairs/rectification/replacement is also inclusive of all associate costs of required transportation, site inspection /mobilization/dismantling and re-installation costs as applicable, to be borne by the Associate. The Associate has to ensure that the interruption in the usage of intended purpose of the equipment is minimized to the maximum extent In lieu of the time taken for repairs/rectification/replacement.

14.5 Guarantee period for Goods Outsourced

If the Associate outsources partly equipment/materials/services from third party as mutually agreed upon at the pre award stage of contract, TPCODL shall have the benefit of any additional guarantee period if provided by the third party for the part supplied/executed by them.

14.6 Latent Defect

Hidden defects in manufacturing or design of the product supplied and which could not be identified by the tests conducted but later manifested during operation of the equipment are termed as latent defects. Associates shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Company.

14.7 Support beyond the Guarantee Period

The Associate shall ensure availability of spares and necessary support for a period of at least 10 years post completion of guarantee period of equipment supplied against the contract.

15.0 LIQUIDATED DAMAGES

Liquidated damages @1% of the total executed contract value per week or part thereof, for the period of delay in integrated completion, subject to maximum 10% of the value of the contract shall become leviable without prejudice to other rights of the TPCODL. This amount shall be recoverable from any amount due or becoming due to the Business Associates under this or any other contract. In specific cases, TPCODL reserves the right to apply LD only on the unexecuted portion of the supply and works for standalone use, provided full quantity is executed within a maximum 30% additional time. Deduction of LD shall be on landed cost i.e contract value inclusive of taxes and in pursuant statutory compliance GST would be applicable at the stipulated rate and the same shall be borne by Business Associate. In case of LD deduction, a GST invoice shall be issued by TPCODL as a proof of deduction/ recovery.

15.1 LD Waiver Request

Any request of LD waiver shall be submitted within thirty (30) days of deducting LD. Request submitted beyond the timeline shall not be entertained.

15.2 Material Recovery

In case of any recoveries for materials or services (for material free issued by TPCODL and not reconciled by BA or for services claimed and paid in excess at the time of running bills), the total cost which shall be recovered from the BA, shall be the gross amount of material or services (i.e. including taxes) plus applicable taxes as prevailing at the time of such recoveries.

16.0 ASSIGNMENT OR SUBCONTRACTING

Associates shall not assign/subcontract/outsource the schedule of activities of contract TPCODL enters with the associate, in part or full, without TPCODL's prior written approval.

However outsourcing of materials/equipment/services by Associate to make the integrated product for which TPCODL's has placed the contract with the associate from suppliers, makes and agencies which have been mutually agreed upon during contract pre-award stage is permitted subject to following conditions.

In such cases where outsourcing is done by the Associate

- Shall ensure that outsourced suppliers comply with the technical and financial qualification requirements specified by TPCODL in the contract document
- Shall furnish all particulars about the proposed outsourcing agencies and the details of the goods/services/work outsourced to the Associate while seeking approval of TPCODL for inclusion for outsourcing. The Associate shall give approval or shall refuse approval in writing within thirty (30) days of receipt of such request. However the Associate shall not be entitled for any additional contract execution time whatsoever in lieu of the process for approval for outsourcing agencies, and shall be held responsible for any delay in the project execution time.
- Shall remain jointly and severally liable for any action, deficiency, and/or negligence on the part of his outsourcing agencies. The approval extended by the Associate to outsourcing agencies recommended by the Associate shall not discharge the later from his Contract obligations.

Shall submit to the Associate unpriced copies of purchase orders with technical specifications included in the orders, placed on outsourcing agencies as soon as the respective orders have been placed by the Associate.

17.0 UNLAWFUL ACTIVITIES

The Associate shall have to ensure that none of its employees are engaged in any unlawful activities (whether covered under the scope of the present GCC or not) subversive of the TPCODL's interest failing which appropriate action (legal or otherwise) may be taken against the Associate by the TPCODL, in accordance with the terms of the present GCC.

18.0 CONFIDENTIALITY

Associate and its employees or representatives thereof shall strictly maintain the confidentiality of various information they come across while executing the contract as detailed below.

18.1 Documents

All maps, plans, drawings, specifications, schemes and other documents or information related to the Contract/Project and the subject matter contained therein and all other information given to the Associate by the TPCODL in connection with the performance of the contract shall be held confidential by the Associate and shall remain the property of the TPCODL and shall not be used or disclosed to third parties by the Associate for any purpose other than for which they have been supplied or prepared. The Associate may disclose to third parties, upon execution of confidentiality agreements, such part of the drawings, specifications or information if such disclosure is necessary for the performance of the Work provided such third parties agree in writing to keep such information confidential to the same extent and degree as provided herein, for the benefit of the TPCODL.

18.2 Geographical Data

Maps, layouts and photographs of the unit/plant including its surrounding regions showing vital installation for national security of country or those of TPCODL shall not be published or disclosed to the third parties or taken out of the country without prior written approval of the TPCODL and upon execution of confidentiality agreements satisfactory to the TPCODL with such third parties prior to disclosure.

18.3 Associate's Processes

Title to secret processes if any developed by the Associate on an exclusive basis and employed in the design of the equipment shall remain with the Associate. TPCODL shall hold in confidence such processes and shall not disclose such processes to the third parties without prior approval of the Associate and execution by such third parties of secrecy agreements satisfactory to the Associate prior to disclosure. Upon completion of contract, such processes shall become the property of the TPCODL. Title to technical specifications, drawings, flow sheets, norms, calculations, diagrams, interpretations of test results, schematics, layouts and such other information, which the Associate has supplied to the TPCODL under the Contract shall be passed on to the TPCODL. The TPCODL shall have the right to use these for construction, erection, start-up, Trial Run, operation, maintenance, modifications and/or expansion of the works including for the manufacture of spare parts.

18.4 Exclusions

The provision of Clauses 16.1 to 16.3 shall not apply to information:

- Which at the time of disclosure are in the public domain which later on become part of public domain through no fault of the party concerned, or
- Which were in the possession of the party concerned prior to disclosure to him by the other party, or
- Which were received by the party concerned after the time of disclosure without restriction on disclosure or use, from a third party who did not acquire such information directly or indirectly from the other party or has no obligation of confidentiality for such information.

18.5 Violation

In case of violation of this clause, the Associate is liable to pay compensation and damages as may be determined by the competent authority of TPCODL.

19.0 INTELLECTUAL PROPERTY RIGHTS

If, in the course of performance of its functions and duties as envisaged by the scope of the present GCC, the Associate acquires or develops, any unique knowledge or information which would be covered, or, is likely to be covered within the definition of a trademark, copyright, patent, business secret, geographical indication or any other form of intellectual property right, it shall be obliged, under the terms of this present GCC, to share such knowledge or information with the TPCODL. All rights, with respect to, or arising from such intellectual property, as afore mentioned, shall solely vest in TPCODL.

Moreover, the Associate undertakes not to breach any intellectual property right vesting in a third party/parties, whether by breach of statutory provision, passing off, or otherwise. In the event of any such breach, the Associate shall be wholly liable to compensate, indemnify or make good any loss suffered by such third party/parties, or any compensation/damages

arising from any legal proceeding/s, or otherwise. No liability of TPCODL shall arise in this respect, and any costs, damages, expenses, compensation payable by TPCODL in this regard to a third party/parties, arising from a legal proceeding/s or otherwise, shall be recoverable from the Associate.

20.0 INDEMNITY

The Associate shall at all times indemnify, keep indemnified and hold harmless the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns against all actions, claims, demands, costs, charges and expenses arising from or incurred by reason of any infringement of patent, trade mark, registered design, copy rights and/or industrial property rights by manufacture, sale or use of the equipment supplied by the Associate whether or not the TPCODL is held liable for by any court judgement. In this connection, the TPCODL shall pass on all claims made against him to the Associate for settlement.

The Associate assumes responsibility for and shall indemnify and save harmless the TPCODL from all liability, claims, costs, expenses, taxes and assessments including penalties, punitive damages, attorney's fees and court costs which are or may be required to be paid by the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns arising from any breach of the Associate's obligations under the Contract or for which the Associate has assumed responsibilities under the Contract including those imposed under any local or national law or laws, or in respect to all salaries, wages or other compensation for all persons employed by the Associate or his Sub-Associates or suppliers in connection with the performance of any work covered by the Contract. The Associate shall execute, deliver and shall cause his Sub-Associate and suppliers to execute and deliver, such other further instruments and to comply with all the requirements of such laws and regulation as may be necessary there under to conform and effectuate the Contract and to protect the TPCODL.

The TPCODL shall not be held responsible for any accident or damages incurred or claims arising, due to the Associate's error there from prior to completion of work. The Associate shall be liable for such accidents and after completion of work for such accidents as the case may be due to negligence on his part to carry out Work in accordance with Indian laws and regulations and the specifications set forth herein.

21.0 LIABILITY & LIMITATIONS

21.1 Liability

Except for any specific liability which may be identified in the Contract and which may be payable hereunder, Associate shall not be liable for any special, incidental, indirect, or consequential Damages or any loss of business Contracts, revenues or other financial loss (or equivalents thereof no matter how claimed, computed or characterized) arising out of or in connection with the Performance of the Work or supply of Goods ***unless caused by Associate's negligence, willful misconduct or breach of contract.***

TPCODL shall have no liability or any special, incidental, indirect or consequential Damages for any loss of Business Contracts, revenues or other financial loss arising out of this Contract.

21.2 Limitation of Liability

The total liability of Associate against any contract shall be limited to the Total All Inclusive Contract Value.

22.0 FORCE MAJEURE

Force Majeure applies if the performance by either Party ("the Affected Party") of its obligations under Contract is materially and adversely affected.

“Force Majeure” shall mean any event or circumstance or combination of events or circumstances referred below and their consequences that wholly or partly prevents or unavoidably delays any Party in the performance of its obligations under this Agreement, but only and to the extent that such events and circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided even if the Affected Party had taken reasonable care:

- Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, embargo, blockade, revolution, riot, bombs, religious strife or civil commotion, etc.
- Politically motivated sabotage, or terrorism, etc.
- Action or Act of Government or Governmental agency for which remedy is beyond the control of the affected parties.
- Any act of God.

Note: Causes like power breakdown/ shortages/fire/strikes, accidents etc do not fall under Force Majeure.

Time being the essence of the Contract, if either party is prevented from the performance of its obligations in whole or in part due to an event of Force Majeure, then provided Notice of happening of any event by the Affected Party is given to the other party within seven (7) days from the date of occurrence of such event, which DIRECTLY has impact on works and submitted details and quantum of resulting effect, but at the same time had made all possible efforts to mitigate and overcome effects thereof, the Affected Party’s performance under this Contract shall be suspended until such event ceases and the Scheduled Completion shall be delayed accordingly.

If Force Majeure event(s) continue for a period of more than three months, the parties shall hold consultation to discuss the further course of action.

Neither party shall be considered to be in default or in breach of its obligation under the Contract to the extent that performance of such obligation by either party is prevented by any circumstances of Force Majeure which arise after effective date of Contract.

Neither party can claim any compensation from the other party on account of Force Majeure.

23.0 SUSPENSION Of CONTRACT

23.1 Suspension for Convenience

TPCODL may, at any time and at its sole option, suspend execution of all or any portions of the schedule of items of contract to be supplied/work to executed by Associate under the contract by providing to the Associate atleast two business days written notice for contracts having contract completion period less than sixty days and atleast seven business days’ notice for all other contracts.

Upon receipt of any such notice, the Associate shall respond as follows as applicable as per contract construction.

- Immediately discontinue further supply of material/goods specified in the suspension notice for supply contracts
- Immediately discontinue further service/work and supply of materials of those services/materials/work specified in the suspension notice for service /composite contract
- Promptly make every reasonable effort to obtain suspension, upon terms satisfactory to TPCODL, of all orders, outsourcing arrangements, and rental Contracts to the extent that they relate to performance of the portion of Work suspended by the notice.
- Protect and maintain the portion of the service/Work already completed, including the portion of the Work suspended hereunder, unless otherwise specifically stated in the notice.
- Continue delivering/carrying out the supply/service/work items as per contract conditions, which do not fall under purview of the suspension notice.

On receipt of resumption notice from TPCODL, the Associate shall resume execution of contract as specified in the resumption notice, within the time frame specified in the resumption notice,

23.2 Suspension for Breach of Contract conditions.

TPCODL shall suspend execution of whole/or part thereof the contract till such time Associate complies with the conditions stipulated under section clause 27 for breach/default of contract conditions.

23.3 Compensation in lieu of Suspension

If the suspension of the contract in whole or in part is for convenience of TPCODL and not due to any breach of contract conditions by the associate, TPCODL at its discretion shall consider compensating all reasonable additional costs incurred by Associate in lieu of suspension of whole or part of contract, on representation of the Associate providing justified estimates of such additional costs and such estimates are found acceptable and approved by competent authority of TPCODL.

If the suspension of contract in whole or part thereof is due to breach of contract conditions (refer clause 24.3) by the Associate, Associate shall not be entitled for any compensation for any cost incurred in lieu of suspension of whole or part of contract and also shall be liable for compensating all the losses arising to TPCODL in lieu of suspension of contract. Resumption notice shall be subject to the Associate taking corrective action for the breach of contract conditions within the time frame and as per the terms specified in the suspension notice.

24 TERMINATION OF CONTRACTS

24.1 Termination for Default/Breach of Contract

The contract / PO shall be subject to termination by TPCODL in case of breach of the contract by the Associate which shall include but not be limited to the following:

a. Withdrawal or intimation by the Associate of its intent to withdraw or surrender the execution / completion of the contracted work /PO or failure in ensuring adherence to any delivery schedules, in deviation of the contract/ PO.

b. Refusal or neglect on the part of the Associate to supply material/equipment of quantity or quality as specified by TPCODL and within the timeframe as specified in the contract document or refusal or neglect to execute the services/work in terms of the agreed standards of quantity or quality and/or within the timeframe specified in the contract/PO.

c. Failure in any respect to perform any portion of the Work contracted with promptness, diligence, or in accordance with the terms of the contract.

d. Failure to furnish guarantees as specified and /or failure to comply with the terms thereof.

e. Failure to furnish such relevant documents or information within the time specified which may be necessary for due execution / completion of the works and documentation.

f. Liquidation, bankruptcy either voluntary or involuntary OR entering into any composition or compromise with its creditors, or Insolvency.

g. In case any reasonable information has been received by TPCODL that Associate has adopted/ or attempted to adopt any unethical conduct, action in award of the contract /PO or at any time thereafter.

h. Failure to comply with applicable statutory provisions as contained in the contract or failure to comply with the applicable laws.

i. Failure to comply with safety regulations/clauses stipulated in the contract or as may be generally instructed by TPCODL.

If the default or breach as specified under clause 24 (except sub clause g thereof) be committed by the associate for the first time, TPCODL shall issue, along the with notice of default or breach, a warning notice instructing the associate to take remedial/corrective action within the time frame stipulated in the warning notice and not to repeat the same in future. The timeframe for corrective action by the associate shall be specific to the nature of breach of contract and the same shall not be objected to by the Associate. If the Associate fails to comply with the instructions in the warning notice or in taking corrective action to the satisfaction of TPCODL then TPCODL may terminate the entire or part of contract at its discretion by issuing termination notice without incurring any liability on this ground.

In case the contract is terminated for any breach of the nature specified in clause 24 g stated above, TPCODL shall have the right to terminate all the contracts TPCODL is having with the Associate by issuing termination notice which shall be without prejudice to the other rights of TPCODL available to it under law.

Without prejudice to its right to terminate for breach of contract, TPCODL may, without assigning any reason, terminate the Contract in whole or in part at any time at its discretion while the contract is in force by serving a written notice of two weeks to the Associate.

In the event of TPCODL having proceeded with termination of the contract the associate shall comply and proceed further in the following manner:

i) Associate shall discontinue the supply, on the expiry of the said period of two weeks.

ii) Associate shall ensure that no further steps are being taken towards discharge of the obligations, terms and conditions as contained in the contract/PO. This shall include initiation of actions not limited to discontinuation of other allied and associated arrangements which the associate might have entered into with third parties for due discharge of its obligations under the contract with TPCODL.

iii) The Associate shall perform thereafter such tasks as may be necessary to preserve and protect the terminated portion of the material/service/work in progress and the materials and equipment at TPCODL sites or in transit thereto. However the associate shall continue to fulfill its contractual obligations with regard to the part of contract not terminated.

iv) It shall be open for TPCODL to conduct a joint assessment with the associate of the material ,supplies, equipment ,works or in general as to the subject matter of the contract in regard to which the associate claims having completed its obligations before or during such termination.

v) It shall be open to TPCODL to seek invocation of the performance bank guarantee or any other guarantee or other security deposit by whatever name called submitted by the associate, which shall not be objected to or protested against by the associate.

In case of termination of the contract the parties agree to be governed inter alia by the following:

a) In case TPCODL exercises its right of termination as stated above the associate shall not dispute or object to the same.

b) The Associate shall be entitled to receive and claim only such payments OR sums of money from TPCODL as may be found payable to it in regard to works executed by it under the terms of the contract and no other claim of any nature whatsoever shall be made by the Associate.

c) All such provisions which the parties have agreed to survive and prevail even after termination of the contract shall remain effective despite the termination.

In the event of such termination, TPCODL may finish the Work by whatever method it may deem expedient, including the hiring of services and /or purchase of material equipment from such third parties as TPCODL may deem fit or may itself provide any labor or materials and perform any part of the Work. The associate undertakes to bear the incremental costs if any paid by TPCODL in such a case attributable to failure on the part of the associate. The Associate in such a case shall not be entitled to receive any further payments and any sums found payable to it may be adjusted by TPCODL against the amount recoverable from him on this ground. The same shall be without prejudice to other rights available to TPCODL under law against the associate.

Upon the termination of any of the contract due to occurrence of any circumstances provided in clauses stated above and constituting repeated breach or misconduct , TPCODL shall be entitled to bar the associates its agents , affiliates from undertaking any negotiation / tendering, bidding, participation activities concerning TPCODL for a period of two years from date of such termination. The same shall be without prejudice to other rights available to TPCODL.

24.2 Termination for convenience of Associate

Associate at its convenience may request for termination of contract, clearly assigning the reason for such request. TPCODL has full right to accept, reject or partially accept such request. This convenience will be available to associate only after one year from the contract effective date. For this purpose, associate will provide a notice period of 90 days to TPCODL, Associate will have to pay TPCODL a 'termination convenience fee' equivalent to 5% of unexecuted contract value.

24.3 Termination for Convenience of TPCODL

TPCODL at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Associate. TPCODL shall pay the Associate for all the supplies/ services rendered till the actual date of contract termination against submission of invoice by the Associate to that effect**.**

25.0 DISPUTE RESOLUTION & ARBITRATION

In case of any dispute or difference the parties shall endeavor to resolve the same through conciliatory and amicable measures within 15 Days failing which the matter may be referred by either party for resolution by the sole arbitrator to be appointed mutually by both the parties. The arbitral proceedings shall be conducted in accordance with Arbitration and Conciliation Act 1996 and the place of arbitration shall be Bhubaneswar. The language to be used at proceedings shall be English and the award of the arbitrator shall be final and binding on the parties. The parties shall bear their respective costs of arbitration. The associate shall continue to discharge its obligations towards due performance of the works as per the terms of the contract during the arbitration proceedings unless otherwise directed in writing by TPCODL or suspended by the arbitrator. Further, TPCODL shall continue making such payments as may be found due and payable to the associate for such works.

25.1 Governing law and jurisdiction

The parties shall be subject to the jurisdiction of the courts of law in Bhubaneswar and any matter arising here from shall be subject to applicable law in force in India.

26.0 ATTRIBUTES OF GCC

26.1 Cancellation

The Company reserves the right to cancel, add, delete at its sole discretion, all or any terms of this GCC or any contract, order or terms agreed between the parties in pursuance without assigning any reasons and without any compensation to the Associates.

26.2 Severability

If any portion of this GCC is held to be void, invalid, or otherwise unenforceable, in whole or part, the remaining portions of this GCC shall remain in effect.

26.3 Order of Priority

In case of any discrepancies between the stipulations in General Conditions of the Contract (GCC) and Special Conditions of Contract (SCC), the GCC shall stand superseded by the SCC to the extent stipulated hereinabove while balance portion of respective clauses of GCC shall continue to be applicable.

27.0 INSURANCE

The Associate shall arrange accident insurance policy for his foreign experts/specialists/personnel deputed to Site and Associate's/his sub-Associates' manufacturing works as well as for his Indian engineers and supervisory staff. The Associate shall also take out for his Indian workmen, where applicable, a separate policy as required under Workmen's Compensation Act.

Associates shall be responsible to suitably insure their entire work-force (to the extent of at least meeting requirements under Workmen Compensation Act) Tools, Plant, Third party liability at the project site, All Risk comprehensive insurance for the entire works (insurance for free issue items will be in TPCODL scope) for total contract (PO/RO) value or any other such risks during execution of works, till the works are handed over to the company, in consultation with TPCODL and shall submit copies of such insurances to the Engineer-in-Charge for review / acceptance before commencing the work. Engineer-in-charge must ensure compliance to insurance requirement by Associate before commencement of works. TPCODL shall stand fully indemnified in this respect.

28.0 ERRORS AND OMISSIONS

The Associate shall be responsible for all discrepancies, errors and omissions in the drawings, documents or other information submitted by him, irrespective of whether these have been approved, reviewed or otherwise accepted by the TPCODL or not. However any error in design/drawing arising out of any incorrect data/written information from TPCODL will not be considered as error and omissions on part of the Associate.

29.0 TRANSFER OF TITLES

The title of ownership and property to all equipment, installations, erections, constructions materials, drawings & documents shall pass to the TPCODL after Commissioning and complete handing over-taking over.

However, such passing of title of ownership and property to the TPCODL shall not in any way absolve, dilute or diminish the responsibility and obligations of the Associate under this Contract including loss or damages and all risks, which shall vest with the Associate.

The Associate shall take all corrective measures arising out of discrepancies, errors and omissions in drawings and other information within the time schedule and without extra cost to the TPCODL.

The Associate shall also be responsible for any delay and/or extra cost if any, in carrying out engineering, and site works by other agencies arising out of discrepancies, errors and omissions stated in as well as of any late revision/s of drawings and information submitted by the Associate.

30.0 SUGGESTIONS & FEEDBACK

We welcome all our Business Associates to write to us about their experience with TPCODL; be it our Company, our services or our people. Each and every concern, issue, query and suggestion from you will help us to become a better company to work with and shall help us develop a strong bonding of trust and a long term relationship with you.

You may send your feedback by filling up our Business Associate Feedback Form enclosed herewith as Annexure-I. You can also log on to our website www.tpcentralodisha.com to provide your feedback according to the guidelines mentioned below:

31.0 CONTACT POINTS

In case Business Associate needs information with respect to payments or has any grievances, same may be sent to the following mail ids:

- For all queries during the processing of invoice: purchase@cescorissa.com
- For all queries after the invoice is paid: purchase@cescorissa.com
- For any other grievance/ issues with respect to contract issued to Business Associate, please get in touch with BA Grievance Cell: purchase@cescorissa.com

32.0 LIST OF ANNEXURES

S. No.	Subject	Annexure
1.	Performa for Bid Security Bank Guarantee	A
2.	Performa for Advance Payment Bank Guarantee	B
3.	Performa for Performance Bank Guarantee (CP cum EP)	C
4.	Performa for No Demand Certificate by Associate	D
5.	Performa for Indemnification on Statutory Compliance	E
6.	Performa For Application For Issuance of Consolidated TDS Certificate	F
7.	HR Service Level Agreement	G
8.	Under taking for competence of workmen	H
9.	Business Associate Feedback Form	I
10.	Acceptance Form For Participation In Reverse Auction Event	J
11.	NEFT or RTGS payment request form	K
12	Contractor Safety Management System	L
13	Vendor Appraisal Form	M
14	Manufacturers Authorization Form	N

ANNEXURE-A

PROFORMA FOR BID SECURITY BANK GUARANTEE

The TP Central Odisha Distribution Ltd

Bhubaneswar

WHEREAS, (Name of the Bidder) _____ (hereinafter called "the BIDDER") has submitted his bid dated_____ for the (Name of Contract) _____ (hereinafter called "the BID").

KNOW ALL men by these presents we (Name of the Bank) _____ of (Name of the Country) _____ having our registered office at_____(hereinafter called "the BANK) are bound unto The TP Central Odisha Distribution Limited (TPCODL) in the sum of _____ for which payment well and truly to be made to the TPCODL the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20_____.

The CONDITIONS of this obligation are**:**

i) If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid

or

ii) If the Bidder having been notified of the acceptance of his Bid by the TPCODL during the period of bid validity fails or refuses to furnish the Contract Performance Bank Guarantee, in accordance with the Instructions to Bidders.

We undertake to pay the TPCODL upto the above amount upon receipt of its first written demand, provided that in its demand the TPCODL will note that amount claimed by it is due to it owing to the occurrence of one or both conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force upto and including the date (No of days as mentioned in tender enquiry) days after the closing date of submission of bids as stated in the Invitation to Bid or as extended by you at any time prior to this date, notice of which extension to the Bank being hereby waived, and any demand in respect thereof should reach the Bank not later than the above date.

DATE…… SIGNATURE OF THE BANK……..

WITNESS…… SEAL……..

(Signature, Name & Address)

(At least 2 witnesses)

ANNEXURE-B

PROFORMA FOR ADVANCE PAYMENT BANK GUARANTEE

(On Rs.100/- Stamp Paper)

Note:

(a) Format shall be followed in toto

(b) Claim period of six months must be kept up

(c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

---

The Tata Power Company Limited

Bhubaneswar

Advance Payment B.G.No……

Contract No……dated……

1. You have entered into a Contract No_____ with M/s._____ (hereinafter referred to as "the Vendor") for the supply and delivery of _____

   (hereinafter referred to as" the said Equipment") for the price and on the terms and conditions contained in the said contract.

2. In accordance with the terms of the said contract, you have agreed to make an advance payment of Rs._____ (Rupees_____ only) being _____% (_____percent) of the total value of the contract on "the Vendor" furnishing you with an irrevocable, unconditional and acceptable bank guarantee to be valid till the date of receipt of "the said equipment" covered by your above mentioned contract. For this purpose you have agreed to accept our guarantee.

3. In consideration thereof, we, _____ hereby irrevocably and unconditionally guarantee to pay to you on demand but in any case before the end of five working days from the date of the claim and without demur and without reference to "the Vendor" such amount or amounts not exceeding the sum of Rs._____ (Rupees _____ only) being _____% (_____percent) of the total value of the contract on receipt of your intimating that "the Vendor" has not fulfilled his contractual obligations. You shall be the sole judge for such non-fulfillment and "the Vendor" shall have no right to question such judgment.

4. You shall have the right to file / make your claim on us under the guarantee for a further period of one months from the date of expiry.

5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but

not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security available to you, and our Bank shall not be released from its obligations under this guarantee by your exercising any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises

7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.

8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (**to be confirmed by Bhubaneswar Branch by a letter to that effect)**

9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs._____
(Rupees_____ only) and the guarantee will remain in force upto and including _____(Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".

10. Unless a demand or claim under this guarantee is received by us in writing within one month from_____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at _____this _____ day of _____ 200_____

Witness

Bank's rubber stamp

1. _____ Banks full address

Designation of Signatory

2. _____ Bank official number

ANNEXURE- C

PROFORMA FOR PERFORMANCE BANK GUARANTEE (CP cum EP)

(On Rs.100/- Stamp Paper)

Note:

(a) Format shall be followed in toto

(b) Claim period of one month must be kept up

(c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

---

The Tata Power Company Limited

Bhubaneswar

CP cum EP BG No……..

Order/Contract No……dated……

1. You have entered into a Contract No _____ with M/s._____ (hereinafter referred to as "the Vendor") for the supply cum erection / civil work of _____ (hereinafter referred to as" the said Equipment") for the price and on the terms and conditions contained in the said contract.
2. In accordance with the terms of the said contract, "the Vendor" agreed to furnish you with an irrevocable, unconditional and acceptable bank guarantee for 10% of the value of contract and to be valid till the end of Guarantee period plus one month towards "Contract cum Equipment performance". For this purpose you have agreed to accept the guarantee.
3. In consideration thereof, we, _____ hereby irrevocably and unconditionally guarantee to pay to you on demand but in any case before the end of five working days from the date of the claim and without demur and without reference to "the Vendor" such amount or amounts not exceeding the sum of Rs._____ (Rupees _____ only) being _____% (_____ percent) of the total value of the contract on receipt of your intimating that "the Vendor" has not fulfilled his contractual obligations. You shall be the sole judge for such non-fulfillment and "the Vendor" shall have no right to question such judgment.
4. You shall have the right to file / make your claim on us under the guarantee for a **further period of one month** from the date of expiry.
5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security

available to you, and our Bank shall not be released from its obligations under this guarantee by your exercising any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises
7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.
8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (to be confirmed by Bhubaneswar Branch by a letter to that effect in case BG is from the branch outside Bhubaneswar)
9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs._____ (Rupees_____ only and the guarantee will remain in force upto and including _____(Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".
10. Unless a demand or claim under this guarantee is received by us in writing within one months from_____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at_____ this_____ day of _____ 200__

Witness

Bank's rubber stamp

1. _____ Banks full address

Designation of Signatory

2. _____ Bank official number

ANNEXURE-D

PROFORMA FOR "NO DEMAND CERTIFICATE" BY ASSOCIATE

(On Company's Letter head or with Company Seal)

(To be submitted by the Associate to TPCODL Accounts Department at the time of receipt of full and final payment)

(Certificate No. CCP/002)

Name of the Project

Order/ Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

We, M/s._____ (Associate) do hereby acknowledge and confirm that we have received the full and final payment due and payable to us from TPCODL, in respect of our aforesaid Order No _____ dated_____ including amendments, if any, issued by TPCODL to our entire satisfaction and we further confirm that we have no claim whatsoever pending with TPCODL under the said contract / W.O.

Notwithstanding any protest recorded by us in any correspondence, documents, measurement books and / or final bills etc., we waive all our rights to lodge any claim or protest in future under this contract.

We are issuing this "NO DEMAND CERTIFICATE" in favour of TPCODL, with full knowledge and with our free consent without any undue influence, misrepresentation, coercion etc.

Dated **Signature**

Place **Name**

Designation

(Company Seal)

ANNEXURE – E

PROFORMA FOR "INDEMNIFICATION ON STATUTORY COMPLIANCES"

(To be submitted by the successful Bidder within seven days of award of work)

(Certificate No. CCP/001)

Name of the Project

Letter of Award / Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

By this confirmation we, _____ (Associate) are formally bound to M/s. TPCODL towards any sum which may be imposed, levied or hereinafter recovered by the Provident Fund Organization under the provisions of the Employees of the Provident Fund and Miscellaneous Provisions Act 1952 in respect of employees employed by us.

We well and truly bind ourselves and our heirs executors administrators and representatives jointly severely and respectively for the above payment only to be paid to M/s. TPCODL.

AND WHEREAS we, _____ (Associate) is making compliance of the Employees Provident Fund and Miscellaneous Provisions Act 1952, have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Provident Fund Act.

Similarly we hereby confirm that we have complied with all statutory and local laws and nothing is outstanding with regard to Local Sales Tax, Labour Laws, Local Municipal dues, Electricity dues etc. We have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Local Sales Tax Laws, Local Laws, Labour Laws, Local Municipal Dues, Electricity dues etc.

NOW THE CONDITION, of the above written bond is as such that if the Associate during the period of this contract commits any default or fails to make payment of Contributions in respect of his employees to the Employees Provident Fund Organization, he shall indemnify the Principal Employer M/s. TPCODL from all and every loss and damage caused to them from any act, omissions or negligence of the said Associate in respect of compliances under the Employees Provident Fund and Miscellaneous Provisions Act, 1952.

IN WITNESS to the above written bond we have here to set our hands, with our free consent.

Dated **Signature**

Place **Name**

Designation (Company Seal)

ANNEXURE-F

PROFORMA FOR APPLICATION FOR ISSUANCE OF CONSOLIDATED TDS CERTIFICATE

To be printed on the letterhead

To,

The Tata Power Company Limited,

Bhubaneswar

Sub: Application for issuance of Consolidated TDS Certificate for the FY _____

Dear Sir,

I / we hereby request / authorize you to issue me / us a consolidate TDS Certificate for the financial year _____ against tax deducted at source by you from my / our payments / bills during the said year from time to time under Chapter XVII – B of the Income Tax Act, 1961.

For and on behalf of

Signature

Name

Address

Contact No. (Land Line)

(Mobile)

PAN #

Assessing authority

ATTACH THE COPY OF PAN CARD

ANNEXURE - G

SERVICE LEVEL AGREEMENT

(To be adhered to by Business Associates (BAs) in TPCODL on Human Resource Issues)

1.0 The following shall be adhered to by the Business Associates during his / its association with TPCODL:

Shall Abide by TPCODL Core Values:

a) **Integrity –** We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.

b) **Understanding –** We must be caring, show respect, compassion and humanity to our colleagues and customers and always work for the benefit of the communities we serve.

c) **Excellence –** We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of services we provide.

d) **Unity –** We must work cohesively with our colleagues across the group and with our customers and partners to build strong relationships based on tolerance, understanding and mutual co-operation.

e) **Responsibility –** We must continue to be responsible and sensitive to the communities and environments in which we work and always ensuring that what comes from the people; goes back to the people many times over.

f) **Agility-** We must work in a speedy and responsive manner and be proactive and innovative in our approach.

2.0 The Business Associate / his manager / supervisor who is responsible for managing the project site / performance contract etc. in TPCODL would also ensure adherence of these values by his employees / persons deployed by him in connection with his works undertaken in TPCODL.

3.0 TPCODL is a signatory to the United Nation Global Compact as an integral part of its Governance principles / business. The Business Associates are required to:

a) Support and respect the protection of human rights and make sure that they are not complicit in human right abuses.

b) Respect freedom of association and effective recognition of the right to collective bargaining.

c) Not to resort to any form of forced and compulsory labour.

d) Shall ensure abolition of child labour in his area of work.

e) There is no discrimination in respect of employment and occupation in respect of his employees.

f) Support precautionary approach to environmental challenges.

g) Promote greater environmental responsibility by himself and his employees in his areas of work.

h) Deploy and defuse environmental friendly technologies while carrying out the works.

i) Work against corruptions in all its form including extortion and bribery by himself and his employees.

4.0 The Business Associates are required to adhere to all applicable Labour Laws with special reference to the following:

a) No person below the age of 18 years and no child labour will be engaged directly or indirectly for executing the work connected with the business of TPCODL.

b) Minimum wages along with other statutory dues like PF, ESI, etc. as applicable to the workers shall be made within the prescribed period of 7th / 10th day of the following month.

c) Deduction / deposit / record keeping and all other requirements under Employees PF Act 1952, Employees State Insurance Act 1948 and other applicable acts (if any) shall be adhered to.

d) Only statutorily authorized deductions (if any) shall be made in accordance with the relevant statutes.

e) All the provisions of Contract Labour (R&A) Act 1970 shall be complied with in respect of the workers engaged for TPCODL work. The work will be commenced only after completing necessary formalities for obtaining Labour License (if applicable).

f) Necessary registers / records, filing of returns etc. shall be maintained for verification by Statutory / TPCODL authorities.

g) Payment of wages shall be made only in presence of and with certification of authorized representative of TPCODL or shall be made in the form of cheque / bank transfer to the employee.

h) During the period of contract, the Business Associate will arrange for deployment of his supervisor / manager for total supervision and control of the work and their manpower. All the activities related to their manpower e.g. attendance, leave, wage disbursement etc. will be done under the supervision & control of Business Associates, While adhering to the prescribed standard / norms of production / productivity & quality. During execution of the work, Business Associate shall engage only such qualified / skilled manpower as may be envisaged / required for ensuring level of production / service into the contract / work order.

i) Clearances as follows shall be obtained from IR & Welfare Group:

i. Clearance for commencement (before start of the work).
ii. No Objection Certificate (after completion / before final settlement).
iii. Copies of PF / ESI Challans shall be deposited with IR & Welfare Group every month

j) The Business Associate shall indemnify TPCODL from any liabilities under applicable Labour Statutes.

k) The Business Associate shall ensure safety and health of his employees and shall also maintain hygienic working environment / condition in his area of work.

l) The Business Associate and his employee shall abide by Laws of Land and shall not violate any applicable provisions.

m) The Business Associate appreciates with and acquiesces to the right of TPCODL as principal employer to fulfil any of his legal obligations, if he fails to do so under applicable labour laws and deduct the same from his running bills / final payments / enchasing security deposit / Bank Guarantee as the case may be. If there is any further shortfall TPCODL has the right to recover the same from the Business Associate.

n) The Business Associate ensures that person employed by him adhere to the moral and legal conduct and shall not violate any standard conduct envisaged in the premise of

TPCODL by all such as, Transparency, Safety, Discipline, Integrity etc. The Business Associate or his employees should refrain from corrupt practices, giving or taking bribe in connection with any TPCODL business.

5.0 The '<u>Statutory Compliance Enforcement System</u>' in TPCODL is detailed below for adherence by all concerned. Corporate IR & Welfare Group will be the process owner for implementation of the system with the help of concerned Engineer I/c or Officer I/c.

a) Statutory Compliance being a professed value in TPCODL Code of Conduct, the concerned Engineer / Officer in charges are requested to adhere to the provisions and advise respective Business Associates in their domain to comply in letter and spirit.

b) Immediately after issuance of letter of intent, the authorized representative of the Business Associate will report to Corporate IR & Welfare group for completion of statutory requirements.

c) Normally, the work will be started only after 'Clearance for Commencement of Work (CCW) is issued by IR & W group to the Business associate. However in exceptional exigencies in engineer I/c / Officer I/c may direct the Business Associate to start the work and inform IR & W group about the same. Statutory requirements in this case may be completed parallely.

d) First monthly bill will be released only after producing CCW to the finance department. Similarly closure of work and final settlement will be affected after issuance of no objection certificate from IR & W group.

6.0 <u>Requirements for 'Clearance for Commencement of Work' (CCW):</u>

a) Submission of filled up Form 'A' for database (Annexure-1).
b) Copy of PF Code allocation letter.
c) Copy of ESI Code allocation letter.
d) Submission of duly filled up Form IV CL(R&A) act (In case more than or equals to 20 workers during the period of contract).
e) Submission of duly filled up Form VI A (Notice of Commencement).
f) Copy of insurance cover note under WC Act 1923 (if applicable).
g) Copy of Contract Agreement.
h) Copy of indemnity bond (if applicable).
i) Affidavit with regard to payment of wages through cheque / bank transfer only.

7.0 <u>Requirements during execution of work:</u>

a) Copy of receipt of application for license / license (if applicable).
b) Copy of PF Challan (latest by 26th day of every Month).
c) Copy of ESI Challan (latest by 26th day of every Month).
d) Copy of Wage disbursement sheet / Bank statement.
e) Filing / Maintenance of all statutory registers / reports / returns for inspection by Statutory/ TPCODL authorities.
f) Certification of wage disbursement by authorized representative of TPCODL.
g) Copy of 'Labour Welfare Fund' deposit certificate / Challan.
h) Insuring safe working practices at the work place.

8.0 <u>Requirements for 'No Objection Certificate' (NOC) for closure of work:</u>

a) Submission of duly filled up Form VI A (Notice of Completion).

b) Copy of Half yearly / Annual return for ESI / PF / CL(R&A).

c) Consolidated copy of wage sheet of last month indicating full & final settlement of all dues like retrenchment benefit, bonus, leave encashment etc. Copy of individual declaration by employees in Form X regarding termination of employment.

d) Confirmation certificate regarding filling up of form for transfer / withdrawal of PF by the concerned workers.

In case any of the above are deviated / not complied with the Letter of Award/Order shall be liable to be withdrawn / cancelled.

Enclosure:

1) Form A
2) Form X
3) Form XI
4) Form VI A
5) Form XXIV

FORM (A)

[To be submitted by the Business Associate to the Principal Employer within a week from LoA issuance]

A. Details of the Agency

1. Name of Agency :
2. Nature of work :
3. Local Address with Ph.No. :

   (With Father's name) :
4. Permanent Address (Full) :
5. PF code no. & Place :
6. ESI Code no. & Place :
7. Name and address of :

   Sub-contractor (if any)

B. Details of Work

8. Name of work (as specified in LOI/LOA) :
9. LOI/LOA Nos. & Dates :
10. Period of contract (Specify Dates) :

    [Including Extension period, if any] :
11. Work Area [Department / Location] :
12. Name / Cell no. of Officer I/c :
13. Maximum No. of workers and staff to be engaged on any day during the year.
    - Supervisory Staff :
    - Workers :
14. Do you have any other contract in TPCODL : Yes/No

    If yes, furnish details:

15. Details of Workmen's compensation Policy, if applicable

Name of Insurance Company ……..
……Policy No …… Number of persons covered …… Period of coverage: From …….. To ……..

If no, I hereby undertake the liability arising out of Workmen's Compensation Act and Rules made there under.

C. Details of workers to be engaged

No. of Workers

S. No.	Unskilled*	Semi-skilled*	Skilled*	Clerical / Supervisory

*** Number to be indicated**

I/We shall fulfill all obligations arising from and under all relevant law in force from time to time. I/We undertake to keep the TPCODL indemnified against any loss or liability arising out of failure of my / our abiding the relevant laws.

The name of my / our representatives is …… to enter the TPCODL Premises on my behalf.

Date:

(Signature of the Business Associate

or his Authorized Representative)

This Business Associate is / will be engaged in TPCODL.

(Signature and seal of

Officer I/c of the Work)

Form X

Undertaking

I _____ hereby undertake that all the dues in respect of my employment with M/s _____ for the period of _____ to _____have been settled and final payments including retrenchment benefit have been made to me in full.

( )

_____

Date:

Form XI

Undertaking

With reference to the contract job awarded by M/s The Tata Power Company Ltd to M/s_____ vide work order No._____ dated_____

I _____on behalf of

M/s _____hereby undertake:

1. that the dues in respect of the workmen/ employee(s) engaged by us for the said contract, payable as per the provisions of relevant statute pertaining to
   i. wages/ salary
   ii. PF & ESI, Bhubaneswar Labour Fund
   iii. All other statutory obligation

   has been paid /settled in full and no amount/ compliance is due/ pending.

2. That in case any dispute / claim is raised by the concerned workers i.r.o. any dues / payments, M/s _____ will settle the same on it's own and such liability will be borne by M/s _____

3. That M/s _____ hereby indemnify M/s TPCODL from any future liability i.r.o. any statutory obligation in respect of said contract.

Date:

_____

( )

Authorized Signatory

For M/s _____

FORM- VI A

Notice for Commencement /Completion of contract work

I/We, Sh. / M/s _____ (Name and Address of the Contractor) hereby intimate that the contract work _____ (name of work) in establishment of the _____ (name and address of the Principal Employer) for which License No._____dated_____ha s been issued to me/us by the Licensing Officer _____(name of the Headquarters), has been commenced / completed with effect from _____date / on date.

Signature of Contractor

With Office Seal

The Inspector

_____

_____

FORM XXIV

[See Rule 82(1)]

Return to be sent by the Contractor to the licensing Officer (in duplicate)

Half -Yearly Ending_____

1. Name and address of the Contractor
2. Name and address of the Establishment
3. Name and address of the Principal Employer
4. Duration of Contract: From _____to _____
5. No. of days during the half year on which
   (a) the establishment of the principal employer had worked
   (b) the contractor's establishment had worked
6. Maximum No. of contract labour employed on any day during the half –year:

Men	Women	Children	Total

7. (i) Daily hours of work and spread over
   (ii) (a) whether weekly holiday observed and on what day
   (b) if so, whether it was paid for
   (iii) No. of man – hours of overtime worked
8. No. of man days worked by

Men	Women	Children	Total

9. Amount of wages paid

Men	Women	Children	Total

10. Amount of deductions from wages, if any

Men	Women	Children	Total

Whether the following have been provided –

(i) Canteen : _____

(ii) Rest rooms : _____

(iii) Drinking water : _____

(iv) Crèches : _____

(v) First Aid : _____

Signature of contractor

Place _____

Date _____

ANNEXURE – H

UNDERTAKING FOR COMPETENCE OF WORKMEN

Name of Associate :

Tender No. :

Item :

With reference to the tender mentioned above, I/We _____, hereby undertake that the workmen/ employee(s) engaged by M/s _____ for the job against said tender shall be competent in all respect, commensurate to the nature of job.

Date:

_____

( )

Authorized Signatory

For M/s

Seal

ANNEXURE-I

BUSINESS ASSOCIATE FEEDBACK FORM

With an objective to improve our internal processes and systems, and serve you better, we solicit your valuable feedback & suggestions. It is estimated that it will take about 10 minutes to complete this survey. We assure you that your feedback shall be kept confidential. Please send the duly filled feedback form in the "TPCODL addressed - attached envelop"

You are associated with us as
☐ OEMs ☐ Service Contractor ☐ Material Suppliers ☐ Material & Manpower Supplier

You are associated with us for
☐ Less than 1 year ☐ More than 1 year but less than 3 years ☐ More than 3 years

Your office is located at
☐ Bhubaneswar / NCR ☐ Within 200 kms from Bhubaneswar ☐ More than 200 kms from Bhubaneswar

Your nearly turnover with TPCODL
☐ Less than 25 Lacs ☐ 25 Lacs to 1 Crore ☐ More than 1 Cr.

Additional information

Your Name	
Your Designation	
Your Organization	
Contact Nos.	
Email	

We once again thank you for your participation in this survey. Please spare 10 minutes to give your feedback on following pages (Section A to E)

SECTION - A

(Please √ mark in the relevant box and give your remarks / suggestions / information for our improvement.).

S. No.	Parameters	1 Do Not Agree	2 Slightly in Agreement	3 In Fair Agreement	4 Mostly in Agreement	5 Fully Agree	Remarks/ Suggestion
1	You receive all relevant queries / tenders from us in timely manner.						
2	We provide you enough lead time to respond to our queries / tenders.						
3	We provide you adequate support (drawings, documents, clarifications, briefing etc.) to enable you meet our requirements.						
4	All following elements of our contract / purchase order are rational :						
4.1	Scope of Work						
4.2	Delivery / Execution Schedule						
4.3	Payment Terms						
4.4	Liquidated Damages						
4.5	Performance Guarantee						
5	Our purchase orders / contracts are simple, specific & easy to understand						
6	TPCODL demonstrate willingness to be flexible in administration of Contract / Purchase Order						
7	We provide timely responses / clarifications to your queries						
8	TPCODL representative you interact / coordinate with is adequately empowered to support you in meeting contractual obligations						
9	TPCODL provide you all necessary infrastructure support for timely and quality completion of work (including AMC)						
10	TPCODL Engineer-in-Charge timely certifies the jobs executed/ material supplied						

S. No.	Parameters	1 Do Not Agree	2 Slightly in Agreement	3 In Fair Agreement	4 Mostly in Agreement	5 Fully Agree	Remarks/ Suggestion
11	TPCODL Engineer-in-Charge efficiently supervises the job execution for timely completion of job						
12	BIRD (Bill Inward Receipt Desk) initiative has improved payment disbursement process						
13	Our approach for Inspection and Quality Assurance effective to expedite project completion?						
14	TPCODL never defaults on contractual terms						
15	In TPCODL Contracts closure is done within set time limit						
16	Our material receiving procedures are well defined and efficiently deployed to reduce mutual inconvenience						
17	Bank Guarantees are released in time bound manner						
18	Our processes related to payment / account settlement are effective.						
19	You get payments on time						
20	TPCODL Employees follow Ethical behaviour						

SECTION - B

(Please rate the following parameters on a scale of 1 to 5, where 1 - Minimum; 5 - Maximum)

SN	Parameters	1	2	3	4	5	Remarks/ Suggestion
1	How do you rate courtesy/ empathy/ attitude level and warmth of TPCODL employees you interact with from following team?						
1.1	Project Engineering						
1.2	District / Zones						
1.3	Projects/HOG (TS &P)						
1.4	Inspection & Quality Assurance						
1.5	Stores						
1.6	Metering & Billing						
1.7	Accounts / Finance						
1.8	Administration						
1.9	IT & Automation						
2	How would you rate TPCODL in comparison to your other clients in terms of **fairness of treatment and transparency** with its Business Associates?						
3	How would you rate TPCODL in comparison to your other clients in terms of **processes and systems to manage partnership** with its Business Associates						
4	How would you rate TPCODL in comparison to your other clients in terms of **building long term & mutually relationship** with its Business Associates						

SECTION–C

Please √ mark in the relevant box and give your remarks / suggestions / information for our improvement.

SNo	Parameters	Certainly NO	Probably NO	Probably YES	Certainly YES	Remarks/ Suggestion
1	Based on your experience with TPCODL, would you like to continue your relationship with TPCODL?					
2	If someone asks you about TPCODL, would you talk "positively" about TPCODL?					
3	Would you refer TPCODL name to others in your community, fraternity and society as a professional & dynamic organization?					

SECTION - D

If we ask you to rate us on a scale of 1 to 10, how will you rate TPCODL, that truly represents your overall satisfaction with us (please tick appropriate box) -

1	2	3	4	5	6	7	8	9	10
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

SECTION – E

Please √ mark in the relevant box and give your remarks / suggestions / information for our improvement.

Please spare your thoughts for TPCODL's improvement in particular areas of weaknesses, particularly relating to some great practices, attitudes that you have seen elsewhere in Indian and International Organizations, which you recommend TPCODL to adopt. Please give your valuable salient recommendations.

Please spare your thoughts for TPCODL's improvement in particular areas of major concerns for you. We also welcome your suggestions to adopt any best practices, altitudes that you have observed / experienced elsewhere in Indian/ International organization.

Recommendation	*Please tick (√) your top 5 expectations out of the following 10 points listed below -*	
(Please list down improvement you expect from TPCODL)	*Timely payment*	
1	*Flexibility in Contracts/PO*	
	Clarity in PO,s & Contracts	
2	*Timely response to quarries*	
	Timely certification of works executed	
3	*Clarity in Specs,drawings,other docs etc*	
	Adequate information provided on website for tender notification, parties qualified etc.	
4	*Timely receipt of material at site for execution*	
	Performance Guarantee/EMD released in time	
5	*Inspection & quality assurance support for timely job completion*	

We thank you for your time and courtesy!!

ANNEXURE-J

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder prior to participation in the auction event)

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be outrightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at TPCODL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by TPCODL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder

ANNEXURE-K

To,

DGM (Finance)
The Tata Power Company Limited
Bhubaneswar

Sub: **e-Payments through National Electronic Fund Transfer (NEFT) OR Real Time Gross Settlement System (RTGS)**

Dear Sir,

We request and authorize you to affect e-payment through NEFT/RTGS to our Bank Account as per the details given below:-

Vendor Code :

Title of Account in the Bank :

Account Type :

(Please mention here whether account is Savings/Current/Cash Credit)

Bank Account Number :

Name & Address of Bank :

Bank Contact Person's Names :

Bank Tele Numbers with STD Code :

Bank Branch MICR Code :

(Please enclose a Xerox a copy of a cheque. This cheque should not be a payable at par cheque)

Bank Branch IFSC Code :

(You can obtain this from branch where you have your account)

Email Address of accounts person (to :

send payment information)

Name of the Authorized Signatory :

Contact Person's Name :

Official Correspondence Address :

We confirm that we will bear the charges, if any, levied by our bank for the credit of NEFT/RTGS amounts in our account. Any change in above furnished information shall be informed to TPCODL well in time at our own. Further, we kept TPCODL indemnified for any loss incurred due to wrong furnishing of above information.

Thanking you,

For _____

(Authorized Signatory)

(Signature with Rubber Stamp)

Certification from Bank:

We confirm that we are enabled for receiving NEFT/RTGS credits and we further confirm that the account number (specify Bank a/c no.) of (Please mention here name of the account holder), the signature of the authorized signatory and the MICR and IFSC Code of our branch mentioned above are correct.

This also is certified that the above information is correct as per Bank record

(Manager's/ Officers Signature under Bank Stamp)

ANNEXURE-L

CONTRACTOR SAFETY MANAGEMENT SYSTEM

1. OBJECTIVE

The objective of the Contractor Safety Management System is to lay down clear guidelines for all Business Associates (including their associates, staff and agents) which would facilitate them to observe all statutory rules and regulations, comply with applicable standards of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010 & (safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations,2011, TPCODL Safety Manual and Guidelines and thus, ensure creation of safe working environment for all stakeholders of our network.

2. SCOPE

All contracts (minor and major) will be subject to the provisions of this document.

Minor Contracts: Contracts which satisfy all the criteria listed under the head "Minor Contracts".

Major Contracts: Contracts which satisfy any two or more criteria listed under the head "Major Contracts"

Criteria	Minor Contracts	Major Contracts
Value of Contract	< Rs. 1500000/- (less than Rs. Fifteen Lac)	>= Rs. 1500000/- (Equal or more than Rs. Fifteen Lac)
Period	Period less than 1 year	Any period
Working on energized electrical equipment	No	Yes
Working on height (above 1.8 Mtrs from ground)	No	Yes
Work involving construction activity	No	Yes
Working with hazardous goods or chemicals	No	Yes
Work involving danger to general public	No	Yes

Note: *Exceptions for major and minor contract are – in house software development, supply of material or equipment but no direct or indirect installation of the same material, administration contracts (courier, water supply, printing, security, transport, etc.), minor civil work like plastering at ground level or flooring, etc. The facility management (housekeeping) contract will always be treated as a minor contract.*

3. INFORMATION REQUIRED AT TIME OF VENDOR REGISTRATION OR BEFORE COMMENCEMENT OF CONTRACT

3.1 Business Associate is required to fill the Safety Management System Questionnaire as per *annexure 1* and submit along with the vendor registration process / bid / tender document. The filled questionnaire will be scrutinized by Engineer In-charge / indenting group and recommend suitability of the BA with respect to safety requirements. The fulfilment of statutory requirements for vendor registration pertaining to labour laws etc. shall be done by BA Cell on being referred to it.

3.2 Business Associate is required to take suitable risk control measures mentioned against the identified Hazards and Risk document provided for all contracts as per *annexure 2*. The primary objective of this is to evaluate the understanding of the BA towards risk mitigation and employment of safe work procedures. BA is required to conduct the Hazard identification and Risk Assessment study as per the procedure and deploy more or other measures if deemed necessary.

3.3 Business Associate shall comply with **Statutory Requirements related to Safety and Occupational Health** and submit the "Safety Undertaking" as per *annexure 4*.

4. GENERAL SAFETY CONDITIONS REQUIRED TO BE FULFILLED BY BUSINESS ASSOCIATES

The requirements of the contractor safety management system applicable to the minor or major contracts related to various groups are as following –

4.1 Maintenance of Distribution Network – *Annexure 3.1*
4.2 Distribution Projects – *Annexure 3.2*
4.3 EHV Projects – *Annexure 3.3*
4.4 Maintenance of Sub transmission network – *Annexure 3.4*
4.5 Civil / Generation Projects – *Annexure 3.5*
4.6 Meter Management Group (MMG), Revenue Recovery Group (RRG), Energy Auditing Group, AMI, MRG, etc. – *Annex3.6*
4.7 Maintenance and Operation of Street Light. **–** *Annexure 3.7*

1. *Please note that hydra cranes used by any dept should be ACE Model No. FX 150 ACE SX 150, Escorts Model No. TRX 1550 or contemporary. Use of old generation hydra cranes like ACE 14XW or ACE 12 XW, etc are prohibited.*

(*Details as per Annexure attached)*

Note: *For minor contracts, the BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver all duties and responsibilities of Safety Supervisor as detailed in this document.*

The Business Associate (BA) having major contract will appointing Safety supervisor, engineer / manager for the TPCODL work. The BA shall make all necessary arrangements for getting their workforce safety trained and competency checked from the DOSEC of TPCODL before deployment in the field. BA Cell shall recommend the suitability after competency checked by Engineer In-charge and SHE&DM group (or his representative) of TPCODL. After getting the clearance from DOSEC, BA cell and receiving temporary I-card issued by TPCODL, Business Associate shall commence the working.

Safety Representative of Business Associates will formally become the nodal point for safety concerns for TPCODL. ***BA shall not frequently transfer or terminate the services of any of the safety representatives appointed for TPCODL work site. BA needs to ensure***

that Safety representative is available at all points of time; failing which the work being carried out in the interim (period when Safety representative is not available) shall be treated as working under improper supervision and due penal provisions shall be initiated against the BA. BA will be required to provide all applicable infrastructure and power to ensure smooth working of the safety representative to maintain a sound safety management system. **In all contracts safety representative will not be assigned any other activity at site apart from the works related to safety management. The duties are detailed in clause 5.5 of this document.** TPCODL will be auditing the facilities provided to the BA`s safety team time to time.

The Safety Representative of the BA shall be required to meet and follow the instructions of the Engineer In-charge and SHE&DM Group of TPCODL. He shall be responsible for providing the MIS and/or any other relevant information, as and when desired, within the stipulated time frame as per the requirements of TPCODL. Any non-conformance to safety will lead to the negative marking or issue of safety violation challan/ tokens which shall affect the monthly evaluation and performance of BA.

All contracts where BA has to depute vehicle for their staff and equipment to move from one location to other, the BA shall ensure that vehicle complies all required statutory clearances and requirement as per The Motor Vehicle Act, 1988 as well as TPCODL Road Safety Policy and are in good & safe state of working.

5. QUALIFICATION AND EXPERIENCE OF THE SAFETY AND SITE PERSONNEL

Qualification and experience required for the safety and site personnel are as following:

5.1 Safety Supervisor: It is mandatory that educational qualification of safety supervisor be ITI (of relevant trade) / Diploma (Any branch of engineering) and he has a working experience on electrical system / relevant field of work at least 5 yrs for ITI and 3 years for Diploma holder. Having formal experience of the safety systems will be an added advantage

5.2 Safety Engineer: It is mandatory that educational qualification of safety engineer be at least Diploma (relevant branch) and he has working experience on electrical system of at least 3 yrs. Having the formal experience of the safety systems will be an added advantage.

5.3 Safety Manager: The educational qualification of safety manager should be graduate engineer with working experience on electrical system / network of at least 3 yrs. OR Diploma in Industrial Safety with working experience of 05 years including at least 02 years on electrical network.

However, clause 5.1, 5.2 and 5.3 are not applicable for minor contracts. In such cases, BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver required duties of Safety Representative (as per clause 5.5) in addition to other duties without diluting the importance of safety.

5.4 Site Skilled Personnel: For all responsibility related to site activities and operations, the BA shall employ only qualified and skilled persons and shall comply the provisions of section 19 & 29 of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010. Persons holding valid approvals only by any Government approved agency or a competency assessment panel or a team set up by TPCODL

shall be allowed to perform the High Risk / High Hazard activities (refer page 1). The skill / qualification required for the electrician and electrical supervisor are given in *annexure 5*. The contracts related to maintenance of Distribution Network, Distribution Projects, EHV Projects, maintenance of Sub-Transmission Network, MMG & EAG, maintenance and operation of street lights, shall preferably have at least 20 per cent of ITI qualified electricians in the first year of the contract. This figure shall preferably be incremented by 15 per cent every subsequent year.

Note: For the competency assessment may please refer the work instructions. An employee shall have to necessarily undergo the competency assessment check once in every eighteen months.

5.5 **Requirements from the Safety Representative(s) of the Business Associate:**

5.5.1 Safety training of 2 hrs/employee/month and one day of safety induction training to all new employees joining the BA will be conducted by the BA as per Safety training modules of TPCODL.

5.5.2 Safety Talk / tool box talk before start of shift to BA employees.

5.5.3 Ensuring the availability & proper usage of the standard safety equipment (PPE)

5.5.4 Periodic inspection of PPE to ensure their serviceability and maintaining the 10% buffer stock of standard PPEs.

5.5.5 Ensuring the adherence to standard operating procedures of TPCODL as mentioned in TPCODL Safety standard and O & M and concerned function's manual.

5.5.6 Safety inspections / audits as per the process of TPCODL

5.5.7 Working in close coordination SHE&DM Group of TPCODL.

5.5.8 Reporting of unsafe acts, unsafe conditions, near miss, incident or accident to Engineer In-Charge and SHE&DM Group of TPCODL immediately after its occurrence.

5.5.9 Regular HIRA at site and comply the control measures as stated in the detailed HIRA as per the *annexure 2*. Also deployment of JSA based checklist shall be ensured.

5.5.10 Ensuring compliance with safety and other laws as may be applicable and providing for safety assurance.

5.6 **Training and Syllabus:** The BA shall not deploy any person at work place / site or send newly recruited personnel directly to DOSEC for competency assessment without Safety Induction Training.

5.6.1 All new BA employees have to necessarily undergo one and half days Safety training and Competency assessment at training centre of BA cell. This training will be conducted once in a week. After the completion of Safety training & Competency assessment I-card will be issued to all competent BA employees

5.6.2 BA is expected to initially train and judge the capability of the workman at his own end before further recommending the workmen for Competency assessment. If any BA workman sent for competency assessment. In case any BA workman fails in the Competency test at DOSEC, it will be deemed that BA has not imparted sufficient training at his end and actual cost of training ₹ 7500/ BA employee/ failed attempt will be recovered.

5.6.3 The workers who have imparted Safety Training and issued I-Cards of TPCODL, are not deployed at TPCODL worksites/ voluntarily left the job by workers/ used somewhere else other than TPCODL by the BA, in that case Management reserves the rights to intervene and recover the actual cost of training i.e. ₹ 7500/BA employee. (*Exempted for attrition rate of BA workers less than or equal to 10% of total workforce deployed at TPCODL)*

5.7 It is desired that Safety representative of the BA to impart the general safety training to each employee of duration 2 hrs per month. The training will be organized at BA level and the record to be sent to engineer in-charge and SHE&DM group of TPCODL every month. Please refer schedule and syllabus in *annexure 6*.

List of Personal Protective Equipment (PPE) and Maintenance schedule: BA shall commence the project or any work only when the required PPE are made available to the team of employees involved in the work. Each PPE of BA shall be checked / inspected by the safety representative / supervisor at zone before the work start or as prescribed in the list. Safety representative shall regularly check the healthiness of each PPE allocated to lineman. Suitable record shall be maintained at zone. Defective PPE shall be immediately replaced or within 24 hours by the BA. In no case linemen or any other official of BA may be allowed to work with defective PPE. It is preferred that BA ensures minimum stock of each PPE at zone for immediate replacement with defective one. The PPE shall be IS / BS / CE marked and exactly as per the standard or specification mentioned in the *annexure 7*. Working without PPE / non-standard PPE shall be treated as safety violation and penalty as stated in section 6.0 of this document. If TATA POWER- DDL finds that BA has not provided the adequate / appropriate PPE to their staff, TPCODL reserves the rights to stop the work and call the BA to provide appropriate PPEs at the risk. If the BA fails to provide the required PPEs at the risk then the same shall be provided by TPCODL at the actual cost of the PPE. The amount shall be charged to BA and same shall be first recovered from the current bill of BA or any future payment to be made to BA. In the event of any balance amount still left for recovery, the same shall be adjusted against retention amount or by invoking bank guarantee submitted by BA.

5.8 Safety Audit / Inspection & HIRA: The BA shall get the required safety inspection / audit conducted by his technical team comprising of safety representative as per the *annexure 8*. The safety representative will be required to conduct the HIRA (Hazard Identification and Risk Assessment) *as per annexure 2* of the process and work undertaken at least two times in a year or every time if a new process / activity / machine is introduced or whenever an accident take place. The risk identified to be addressed suitably with –

- Engineering Control
- Management Control, and
- Personal Protective Equipment.

The safety representative of BA shall inform and educate for the identified risk and hazard control methods to employees, supervisor and engineer as well as the engineer in-charge and SHE&DM group of TPCODL.

5.9 Safety Performance and Safety MIS: The BA shall maintain good practice of safety all through the contract duration. Safety shall always be of paramount importance during the contract period. Safety performance will be monitored on yearly basis throughout the period and no relaxation will be given for bad performance. BA with good track record and excellent performance will be rewarded suitably as per clause 6.0 of this document. The BA has to provide monthly "Performance Report – Safety" to engineer in-charge and SHE&DM group TPCODL this shall be part of monthly bill along with training details. Performa of the report is enclosed as *annexure 9*.

5.10 Pre – Employment Medical Check-up and Fitness of employees engaged for the critical works: The BA shall submit the health fitness certificate for all those workers involved in climbing the pole or working at height for following diseases:

5.10.2 Epilepsy

5.10.3 Colour blindness
5.10.4 Deafness
5.10.5 Vertigo & height phobia

Every year BA will give an undertaking stating that all the employees are fit to work and have not developed aforesaid diseases. The Record of such medical check-ups shall be submitted to BA Cell before issue of temporary identity card. The records shall be maintained at BA Cell. All such medical check-ups shall be repeated once in a year for all workers involved in climbing the pole or working on electrical network.

6. REWARD AND PUNITIVE MEASURES

6.1 To support the enforcement of good SHE & DM practices by the Business Associate and to eliminate repeated or continuing safety violations, use of appropriate reward and punitive measures shall be made. Each unsafe act or violation of the safety guidelines as described in the Safety Manual of the TPCODL will be audit criteria of this system. Broadly the measures identified are following:

6.1.1 Working without PPE/ Safety Gadgets
6.1.2 Working without proper tools and tackles, barricading, Poor condition of Crane / Hydra / Vehicle, using without certification / Licence, Incompetent driver/ Helper
6.1.3 Working without creation of effective safety zone
6.1.4 Improper Supervision at worksite, Lineman/ Supervisor working without competency
6.1.5 Working without adherence to PTW process or authorization/ not adherence to SOPs / W.I. of TPCODL.
6.1.6 Improper Working at height equal to or above 1.8 mtrs without taking proper fall protection measures/ Poor condition of Ladder

6.2 Measures of Reward and Punitive Measures

The Engineer In-Charge, NSO, SC, ASOs, CSI / SIs and SHE &DM group will conduct the surprise audits of the work / project and if any non-conformance is found the same will be booked and entered in the format "Safety Violation Record" *annexure 10*. The flow of the information is given below:

Safety Violation Escalation & Monitoring process	
Action	**Responsibility**
Safety Violation form has been filled and counter foil sent to SHE&DM team for information. The main form is to be given to BA supervisor / Engineer in-charge. *(Automatically generated if Site audit done through Mobile App.)*	Engineer In-charge/ NSO / SC / SHE&DM Group /CSI/ ASO/ Any authorised TPCODL official.
↓	
Entry of the violation in the master record and sending the information to concerned Manager, HoG, HoD, Head and Chief (O &S). *(Automatically generated if Site audit done through Mobile App.)*.	SHE&DM Group
↓	
Forwarding the information Centralized Account Payable (CAPS) for amount deduction from the current bill of the BA,	Engineer In-charge

if any.	
↓	
HoG (Safety – II) & HoG (Safety & Quality – Commercial) and CAPS to generate the MIS of the violations and the amount deducted.	SHE&DM Group
↓	
The pool of the amount generated after the deduction to be utilized in safety welfare of BA employees.	SHE&DM Group with approval of CFO/Chief (O & S) /CEO&MD

The safety violations have been rated from 1 to 5 (figure 6.3) as per the gravity of the violation. If the same violation is repeated it may escalate into a higher penalty. If a particular Business Associate employee violates safety norms three times, he shall not be allowed to work in TPCODL for a period of one year from the date of the 3rd violation.

6.3 Safety Violation Escalation Matrix

6.3.1

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				
S.No.	Safety Violation	1st	2nd	3rd	4th	Subsequent Violations
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	A	B	C	D	Will attract the same penality as applicable in the 4th violation.
2	Improper Working at Height	A	B	C	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	A	B	C	D	
5	Violation of SOP/ WI	B	C	D	E	
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		

Legend	Action to be taken	Responsibility	Penality Amount (in Rs.)	
A	Warning letter	Engineer Incharge	Nil	The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
B	Levy of Penalty	Engineer Incharge	2,000	
C	Memo to BA & Levy of Penalty	Head of Group	4,000	
D	Memo to BA & Levy of Penalty	Head of Department	10,000	
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department	1,00,000	

Figure 6.3 (1a)-Penality Matrix for Safety violation (Applicable for Minor Contracts)

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				
S.No.	Safety Violation	1st	2nd	3rd	4th	Subsequent Violations
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	B	C	D	D	Will attract the same penality as applicable in the 4th violation.
2	Improper Working at Height	B	C	D	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	B	C	D	E	
5	Violation of SOP/ WI	C	D	E		
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		

Legend	Action to be taken	Responsibility	Penality Amount (in Rs.)	
A	Levy of Penalty	Engineer Incharge	5,000	The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
B	Memo to BA & Levy of Penalty	Engineer Incharge	10,000	
C	Memo to BA & Levy of Penalty	Head of Group	25,000	
D	Memo to BA & Levy of Penalty	Head of Department	50,000	
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department	1,00,000	

Figure 6.3 (1b)-Penality Matrix for Safety violation (Applicable for Major Contracts)

Once the BA reaches the "BLACK" (color – "5") category, i.e. highest level of safety violation, "Termination" notice to BA will be issued from the office of the Head of Department (equivalent to Addl GM/ GM/ Sr. GM level) and further, *if required,* continuation / extension of contract will only be initiated by Functional Head of the department (equivalent to Sr. GM / VP level) and approved by CEO & MD. Till the extension, the contract will remain suspended.

TPCODL encourages the reportage of the safety violation during the contract work by BA. Any TPCODL employee can register a safety violation against the BA in the "Safety Violation Form" *annexure 10*. Initially the observer has to fill the form and handover the counterfoil (lower portion) of the document to the supervisor of the BA, inform the site engineer of TPCODL and send the top portion of the Safety Violation Form to SHE&DM group for the further necessary action against the BA. ***The cumulative nos. of Safety Violations pertaining to any particular BA shall be calculated on yearly basis.***

Safety violations resulting in incident / accident will be treated as per gravity of the injury / fatality and its impact as well as type i.e. minor or Major. Consequences of incident / accident are shown in the matrix (figure 6.3(2) for major and 6.3(3) for minor) below. In case of any accident, findings and recommendations of Accident Enquiry Committee will be final and binding and will supersede the arbitration clause of GCC.

Consequence Of an Incident / Accident (In case of MAJOR contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	F (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less then 48 Hrs)	F	G	G	H	
3	Major injury (Bone injury or burn or Hospitalization more then 48 Hrs)	G	G	H	I	
4	Single fatality	J	K			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	K				

Legend	Action to be taken	Responsibility	Penalty (in Rs.)	
F	Memo to BA and levy of penalty	Engineer Incharge	5,000/-	*The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.*
G	Memo to BA and levy of penalty	Head of Group	20,000/-	
H	Memo to BA and levy of penalty	Head of Group	50,000/-	
I	Memo to BA and levy of penalty	Head of Department	2,00,000/-	
J	Memo to BA and levy of penalty	Head of Department	5,00,000/-.	
K	Memo to BA, levy of penalty, termination of contract and black listing of BA	Functional Head	10,00,000/-	

Figure 6.3 (2) - Penalty Matrix for Incident / Accident in Major Contracts

(*For example: In major contracts, if there is first incidence of major injury say bone injury (Cat. 3) where worker was hospitalized for more than 48 hrs then a penalty of amount Rs.20000/- will be deducted from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 50,000/- on subsequent incidents as per the above matrix)*

Consequence Of an Incident / Accident (In case of MINOR contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	L (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less then 48 Hrs)	L	M	M	N	
3	Major injury (Bone injury or burn or Hospitalization more then 48 Hrs)	M	M	N	O	
4	Single fatality	P	Q			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	Q				

Legend	Action to be taken	Responsibility	Penalty (in Rs.)	
L	Memo to BA and levy of penalty	Engineer Incharge	5,000/-	*The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.*
M	Memo to BA and levy of penalty	Engineer Incharge	10,000/-	
N	Memo to BA and levy of penalty	Head of Group	25,000/-	
O	Memo to BA and levy of penalty	Head of Department	1,00,000/-	
P	Memo to BA and levy of penalty	Head of Department	3,00,000/-.	
Q	Memo to BA, levy of penalty, termination of contract and black listing of the BA	Functional Head	5,00,000/-	

Figure 6.3 (3) - Penalty Matrix for Incident / Accident in Minor Contracts

(*For example: In minor contracts, if a worker meets with a non-fatal accident say bone injury (Cat. 3) where he was hospitalized for more than 48 hrs then a penalty of amount Rs. 10,000/-, will be charged from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 25,000/- on subsequent incidents as per the above matrix.)*

In case of single or multiple fatalities described under legends J&K of 6.3(2) and P&Q of 6.3(3), the concerned BA may be debarred from extension of contract or participate in new contract. In such event the approval of Chief (O & S) will be necessary for extension or award of new contract to concerned BA.

6.3.2 COMPENSATION FOR BA PERSONNEL

In the event of any untoward incident/ accident, the Business Associate shall ensure prompt medical assistance such as treatment, sickness benefit, etc. is provided to the victim(s) as per the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable. Also, the BA will be required to take adequate measures for compensating the victim(s) or his/her/their kin as follows:

I. <u>For Death or Permanent / Total Disablement</u>

The BA shall take an insurance coverage of at least Rs. 10 lakhs for each engaged employee, to cover any incidence of Death or Permanent / Total Disablement (Permanent/Total Disability shall be considered as defined under Employees' Compensation Act, 1923). In the event of any such unfortunate incident, the BA would ensure that adequate compensation is paid immediately to the family of the victim(s) from his own resources. This compensation shall be covered under the insurance policy subscribed by the BA mentioned earlier and the arrangement should be such that it would get reimbursed to the BA by the insurance agency subsequently.

II. For Permanent Partial Disablement and Temporary Total Disablement

The compensation in this case will be as per provisions of the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable.

Accordingly, the BA shall obtain a suitable Insurance Policy on award of Contract and submit documentary evidence of the policy to the BA Cell before commencement of work. The BA shall ensure that the Insurance policy is active at all times and all employees are covered in all respects till the conclusion of contract period or till working with TPCODL. The BA shall submit a copy of the policy after periodic renewals to the BA Cell.

However, on occurrence of such unfortunate incident, if it is found that the victim(s) is/are not covered under any insurance policy, the BA shall be liable to pay the entire sum of Rs. 10 lakhs from his own resources.

Further, in case of an accident resulting in Death or Permanent / Total Disablement while on duty, the appointed BA Nodal Officer will ensure that the BA complies with all statutory provisions and benefits i.e. PF, Compensation, Gratuity etc., and that all these are made available to the employees' nominee(s) as per the stipulated timelines.

6.3.3 TPCODL rewards the BA with good track record of safety management. It is proposed that BA complying with Contractors Safety Management, Safety Manual and Safety process will be rewarded suitably as per the procedure, rule and regulations of the TPCODL. In any case major accident is reported during an assessment period BA will not be eligible for this reward scheme. Assessment of contracts will be once in year. Generally the assessment cycle is calendar year and guidelines will be declared time to time.

Abbreviations Used in the Document

TPCODL	The Tata Power Company Ltd
BA	Business Associate
HIRA	Hazard Identification & Risk Assessment
JSA	Job Safety Analysis
EHV	Extra High Voltage
SHE&DM	Safety, Occupation Health, Environment & Disaster Management
MMG	Meter Management Group
EAG	Energy Audit Group
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures
CSI/SI	Circle Safety In-charge / Safety In-charge
ASO	Area Safety Officer
NSO	Nodal Safety Officer
SC	Safety Coordinator
HoG / HoD	Head of Group / Head of Department
AGM / GM / VP	Assistant General Manager / General Manager / Vice President

CFO / Chief (O & S)/ CEO & MD	Chief Finance Officer / Chief (Operating & Safety) / Chief Executive Officer & Managing Director
COS	Corporate Operation Services
CAP	Centralized Account Payable System
PTW	Permit To Work
GCC	General Conditions of Contract.

- END -

Annexure 1 (Refer Para 3.1)

Business Associate Safety Management System Questionnaire

	Certification				
	The information provided in this questionnaire is a summary of the company's occupational health and safety management system.				
	Company Name:				
Turnover and experience:			Name of top officer:		
Date:			Position		
	Contract Details				
Contract Name			Contract Number:		

Business Associates Safety Management System Questionnaire	Marks	Yes	No	Score achieved
Safety Policy and Management				
- **Is there a written company Safety policy?** - If yes provide a copy of the policy, if No please refer Note 1.	1			
- **Does the company have an Safety Management system** - If yes provide details, if No please refer Note 1.	1			
- **Is there a company Safety Management System manual or plan?** - If yes provide a copy of the content page(s), if No please refer Note 1.	2			
- **Are Safety and occupational health responsibilities clearly identified for all levels of Management and staff?** - If yes provide details, if No please refer Note 1.	2			
Safe Work Practices and Procedures				
- **Has the company prepared safe operating procedures or specific safety instructions relevant to its operations and relevant work as per contract?** - If yes provide a summary listing of procedures or instructions, if No please refer Note 2.	1			

Certification				
- Comments				
- **Is there a register of injury or accident?** - If yes provide a copy (format)	1			
- **Is there a documented incident or accident investigation procedure?** - If yes provide a copy of a standard incident report form, if No please refer Note 2. - Comments	1			
Safety Training				
- **Describe how occupational health and safety training is conducted in your company** If No please refer Note 1.	2			
- **Is a record maintained of all training and induction programs undertaken for employees in your company?** - If yes provide examples of safety training records, if No please refer Note 2.	1			
- **Are regular safety inspections / audits are undertaken at worksites?** -If yes provide details (formats), if No please refer Note 3.	1			
- **Is there a procedure by which employees can report hazards at workplaces?** - If yes provide details if No please refer Note 1.	1			
Safety Monitoring				
- **Is there an officer / supervisor responsible for monitoring workplace / worksite safety?**	1			

	Certification			
- If yes provide details				
Safety Performance Monitoring				
- **Are employees regularly provided with information on company health and safety performance?** - If yes provide details	1			
- **Has the company ever been convicted of an occupational health and safety offence?** - If yes provide details	NO Marks *(Negative mark ONE for each case)*			
- Has there been any major accident of employee at TPCODL site in past	NO Marks *(Negative mark ONE for each case*			
- Has there been any fatal accident of employee at TPCODL site in past. - (Note: Bid evaluation committee has to take cognizance of the incident and shall evaluate the bid only after formal approval of competent authority i.e. CTO. - In case of yes please refer Note 4.	NO Mark (Negative mark FIVE for each case)			
Minimum of 75% marks is required for qualification.		Total Marks achieved		
Company Reference				
1. Name of company *2. Name of company*				

Note

1: If company does not have formal procedure on Safety Management System than vendor may submit proposed Safety road map along with safety action plan and brief safety policy on his letter head signed by head of the organization.

2: The vendor may submit the same in the Safety Action Plan.

3: The vendor may utilize the same format of TPCODL or on request SHE&DM group will assist the vendor in developing the audit system. For other points also vendor may take the assistance of SHE&DM group for development of Safety management system.

4: The vendor may submit the Safety Improvement Plan and Safety Action Plan for his employees based on following points.

i. *Action plan for enhancing safety awareness*
ii. *Action plan for safety training of employee*
iii. *Action plan for increasing safety audit in field*
iv. *Action plan for provision and utilization of safety PPE.*
v. *Action plan for fatality reduction.*
vi. *Action plan for enhanced supervision at site*
vii. *Action plan for making employee more responsible and accountable for safety.*
viii. *Action plan for availability and utilization of all required tool and equipment.*
ix. *Safety Improvement done in last two years, specially highlighting those which have been taken after the fatal accident along with results.*
x. *Safety initiatives planed or started recently.*
xi. *Any other point.*

Based on above points and documentary evidences vendor will be required to submit a detailed report in support of his bid. The bid evaluation committee and competent authority will scrutinize the facts and the evidence submitted. If found satisfactory competent authority i.e. CTO may accord his approval for bid opening otherwise his tender shall be disqualified.

Annexure 2 (Refer Para 3.2 and 5.8)

Risk Assessment Form

Business Associate:
Scope of the work:
BA's Representative:
Telephone:
Signature: Date:

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Working at Height	Fall from height	2	1. Mandatory usage of JSA checklist prior to start of work 2. Use appropriate ladder 3. Use full body safety harness having double lanyard. 4. Use Electrical Safety Shoes if working on electrical network otherwise use safety shoes. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Refer Work instruction related to Working at Height for other details 8. Use of metal scaffold to be ensured in height work (cup lock type) 9. Deploy competent workforce who are medically fit

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Working on electrical equipment / network	Electric flash / electrocution	3	1. Mandatory usage of JSA checklist prior to start of work 2. Use Electrical Safety Shoes while working on electrical network. 3. Use Electrical Safety gloves of appropriate voltage rating. 4. Use face shield / visor attached with helmet. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Mandatory usage of Insulated tools & tackles on electrical system 8. Mandatory compliance for Lock Out & Tag out system. Refer Work instruction related to Working on electrical equipment / network for other details
Excavation / Civil work	Collapse of soil, Fall in excavated pit leading to Injury	2	1. Use safety shoes. 2. Use Safety helmet. 3. Use PPE as per the annexure 7 of this CSM document 4. Hard Barricading of the worksite. 5. Refer Work instruction related to excavation / civil work for other details
Material lifting & Mechanical Erection work	Fall of material/object, Topple of crane,	2	1. Mandatory compliance of crane checklist 2. Visual condition check of lifting tools and tackles such as wire rope sling,belt sling, chain, pulley block, D-shackles, etc. shall be ensured. 3. The operator's physical fitness and alertness should be judged by sup. / EIC. 4. Use PPE as per the annexure 7 of this CSM document 5. Refer Work instruction related to Material lifting & Mechanical Erection work
Road Safety	Road Accidents	3	1. Mandatory compliance of TPCODL Road Safety policy W07(COR-P-12)

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures

Note: This information for the general indication purpose. The detailed risk assessment shall be conducted before start of the work by the authorized representative of the BA. The report of same shall be submitted to engineer in-charge along with annexure 4 of the CSM document.

Guidelines for filling the Risk Assessment Form

- *Specific Task/Activity* - The documentation of each major task associated with the contract.
- *Potential Hazards* - The identification of hazards associated with each activity or task to be carried out.
- *Class of Risk* - Each hazard should be evaluated as a level of risk, described as Risk Class 1, 2 or 3 defined above.
- *Control Measure* - The identification and documentation of actions required to eliminate or reduce the hazards that could lead to accident or injury.

Hazard / Risks shall be classified according to the following schedule:

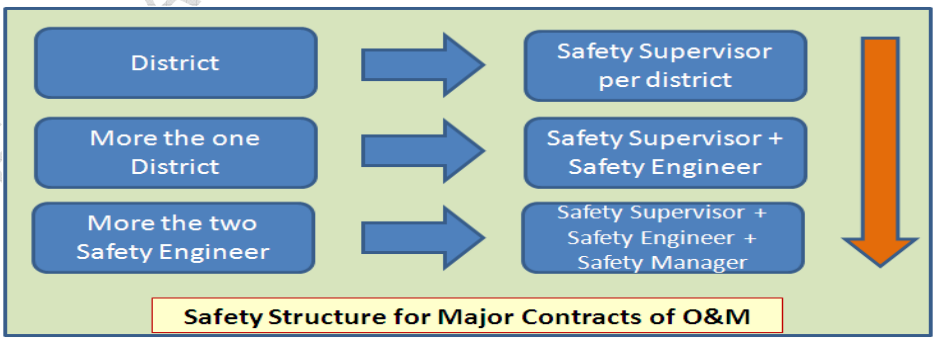
- Class 1: Potential to cause injury treatable with first aid
- Class 2: Potential to cause death or permanent injury
- Class 3: Potential to cause more than one or more lost time injuries.

Annexure 3.1 *(Refer Para 4.0)*

General Safety Conditions for the Maintenance of Distribution Network Contracts:

A BA awarded a contract (O&M) work of maintenance of distribution network will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in *annexure 7.*
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in a district. In case the BA has been awarded work in more than one district, then the following safety structure will be adopted.

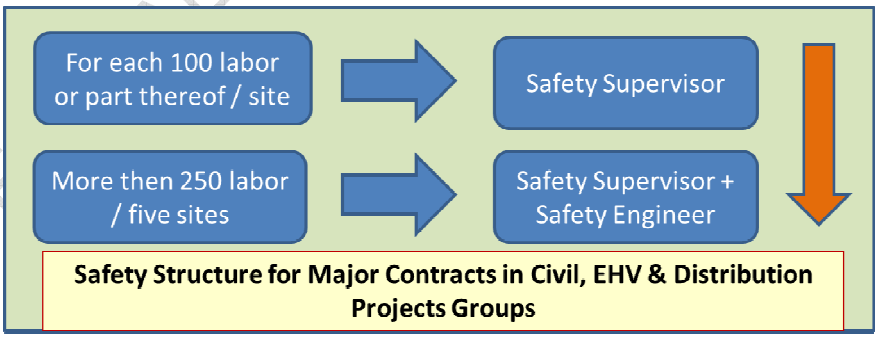


Annexure 3.2 ***(Refer Para 4.0)***

General Safety Conditions for the Distribution Projects Major Contracts:

A BA awarded a major contract work of TS&P in area of a circle will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1.
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.

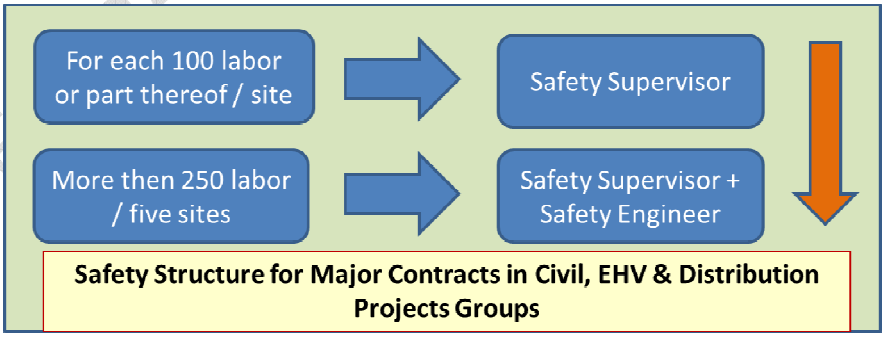


Annexure 3.3 ***(Refer Para 4.0)***

General Safety Conditions for the major EHV Projects Contracts:

A BA awarded a major contract work of EHV projects will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.



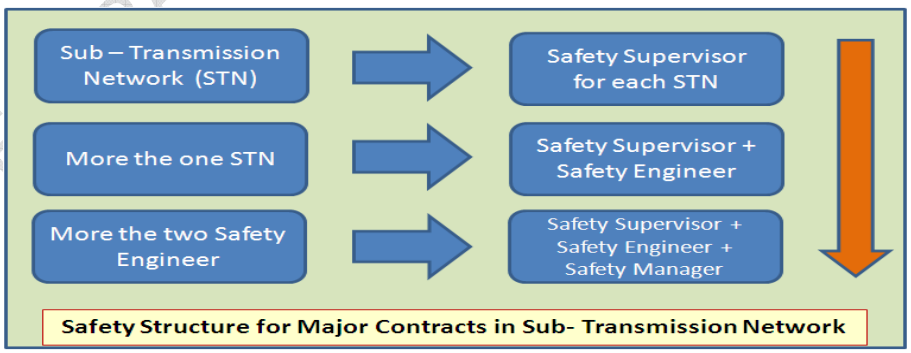
Safety Structure for Major Contracts in Civil, EHV & Distribution Projects Groups

Annexure 3.4 ***(Refer Para 4.0)***

General Safety Conditions for the Maintenance of Sub – Transmission Network Contracts:

A BA awarded a major contract work of maintenance of sub – transmission network in area of a power system will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Coordinator for managing a complete safety management system in the area. In case the BA has been awarded work in more than one area power system, then the following safety structure will be adopted.



Annexure 3.5 ***(Refer Para 4.0)***

General Safety Conditions for the major contract work in Civil / Generation Projects:

A BA awarded a major contract work of / in civil or Generation project will be required to fulfil the following safety conditions:

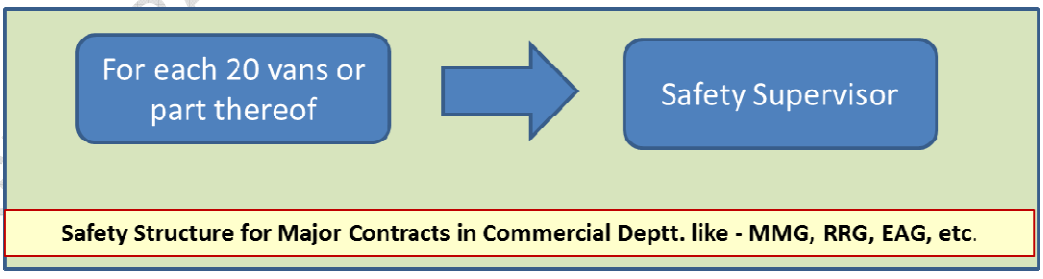
- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor (for workforce upto 100 at site) / a safety engineer (for workforce upto 250 at site) / safety manager (for more than two safety engineers) for managing a complete safety management system at the project site. In case the BA has been awarded more than one major contracts, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.

Annexure 3.6 ***(Refer Para 4.0)***

General Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc.:

A BA awarded a major contract work in meter management group & energy auditing group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work as per the following safety structure.
- The BA for the RRG work shall depute one Safety supervisor.



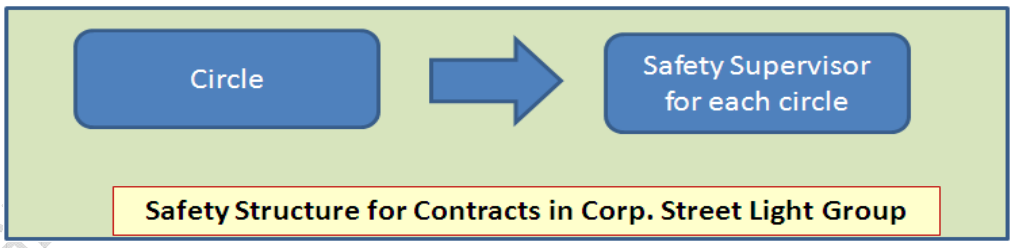
Safety Structure for Major Contracts in Commercial Deptt. like - MMG, RRG, EAG, etc.

Annexure 3.7 ***(Refer Para 4.0)***

General Safety Conditions for the major contract work in O&M of street light group:

A BA awarded a major contract work in operation and maintenance of street light group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SHE&DM group.
- BA shall provide and ensure the proper usage of the safety equipment PPE as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SHE&DM team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9)* to engineer in-charge and SHE&DM group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- Each BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work awarded as per the below structure.



Annexure 4 *(Refer Para 3.3)*

Safety Undertaking by way of Affidavit

I_____ s/o_____R/o_____ (AUTHORIZED REPRESENTATIVE/PARTNER/DIRECTOR/PROPRIETOR) of M/S _____(name of company/firm)__ having its office at (Complete address of Company), authorized vide power of attorney dated ------/Board resolution dated----/letter of authority dated----, hereinafter referred to as **Contractor [or Business Associate (BA)]** which expression shall, unless it be repugnant to or inconsistent with the meaning or context thereof, be deemed to include its heirs, executors, administrators, and assigns do hereby affirm and undertake as under :

1. The present undertaking shall remain in force from the date of execution of contract awarded by TPCODL and shall be valid till the date of termination of the said contract by either parties. The undertaking is binding on me (contractor) as well as my sub-contractor and its employees, representatives etc.
2. That I(the contractor) will be responsible and liable to comply and abide by all the safety rules, instructions and regulations as may be specified and laid down by The Tata Power Company Limited (TPCODL) so as enable TPCODL to achieve its goal of Zero On site incidences.
3. That the Contractor shall be fully responsible for ensuring occupational health and safety of its employees, representatives, agents as well as of its subcontractor's employees, at all times during the discharge of their respective obligations under the contract including any methods adopted for performance of their tasks / work.
4. That Contractor shall ensure ,at its own expense to arrange for and procure, implement all requisite accident prevention tools, first aid boxes, personal protective equipment, fire extinguisher, safety training, Material Safety Data Sheet, pre-employment medical test, etc. for operations & activities including as & when so specified by TPCODL specifically. , failing which TPCODL shall be entitled, but not obliged, to provide the same and recover the actual cost thereof from the Contractor's payments.
5. That the Contractor shall engage adequate and competent Safety – Supervisor / Engineer / Manager / Skilled persons at site as per the Para 5 (Qualification and experience of safety personnel) and Annexure 3 of Contract Safety Management.
6. That the Contractor shall engage the competent Site – Supervisor with each group of workers for safe and correct workmanship, proper co-ordination of material and site work as per contract.

7. That the Contractor shall immediately replace supervisor in case it is found to be not up to the level of skill and experience required as in skill and experience required in *annexure 5* of this document, but any such replacement shall be only with the prior concurrence of TPCODL .
8. That the Contractor and its subcontractors shall abide by all the safety guidelines as per Safety Manual, Contract Safety Management and other guidelines issued from time to time by TPCODL during the contract period.
9. That in case the Contractor and/or any of its Subcontractor fail to ensure the compliance as required in terms of this undertaking the Contractor shall keep and hold TPCODL / its directors / officers / employees indemnified against any / all losses / damage / expense / liability / fines / compensation / claims / action / prosecutions or the like which might be suffered by TPCODL or to which TPCODL might get exposed to as a result of any breach /wilful negligence /deliberate default on the part of the Contractor /Subcontractor in complying with the same. Contractor shall also furnish any press release, clarification etc. if sought by TPCODL for any near miss or safety violations, accidents, which are attributable to fault of Contractor.

DEPONENT

VERIFICATION

Verified at Bhubaneswar on this _Day of _____20__ that the contents of the above affidavit are true and correct and nothing material has been concealed therefrom

DEPONENT

Annexure 5 *(Refer Para 5.4)*

SKILL / QUALIFICATION REQUIRED FOR ELECTRICIAN AND ELECTRICAL SUPERVISOR

Skill / Qualifications Required for Electrician *(Certificate of Competency Class-II)*:

1. Formal education in ITI – Wireman/ Electrician trade.

   OR

2. Working experience of minimum three years of practical wiring.

   OR

3. Have completed three years apprenticeship course through Apprenticeship Advisor, Govt. of NCT of Delhi / other state Govt. in the trade of Lineman / Wireman / Electrician.
4. A candidate must have attained the age of Eighteen years.

Skill / Qualifications Required for Electrical Supervisor (*Certificate of Competency Class-I)*:

1. Have at least five years' experience of practical wiring after passing the certificate of competency class-II i.e. electrician.

   OR

2. Recognized Degree or Diploma or equivalent qualification in Electrical Engineering from any Technical institute / College or University recognized by the Board.

   AND

   Must have completed the training/job in rectifying the common defects in electrical line and power installation for a period of one and three years after passing Degree or Diploma respectively

   OR

3. Possessing the valid certificate of certificate of competency class – 1 (Electrical Supervisor)

Annexure 6 (*Refer Para 5.6)*

Training Module for BAs Worker & Supervisor

Training for BA Supervisor **Duration – 02 Hrs / Month**

Methodology: **Lecture and Practical Demonstration of Safety Zone Creation**

Session: 1

Topic: **Electrical Safety Aspects**

Sub Topics:

1. Learning specifics of HT & LT Network of zone
2. Major type of HT / LT / service lines / street light maintenance works
3. Understanding the need of Safety
4. Understanding the safe process of maintenance :
    - Planning of the maintenance job
    - Availability of men, material & machine, PPEs, Safety gear and approved PTW
    - Briefing of the job by the supervisor of the TPCODL
    - Identification of Risks associated with the maintenance work and planning for controlling measures by TPCODL supervisor
    - Creation of safety zone by TPCODL supervisor and satisfying that the network is dead – Use of Neon Tester, Shorting Chain and Safety Tagging
    - Start of the work – Right person for the right job
    - Alert supervision
    - Completion of the job – Check points
    - Energization of network
    - Actions to be taken in case of some accident

Session: 2

Topic: **Use of Electrical Testing Equipment**

Methodology: **Lecture and Practical Demonstration**

Sub Topics:

1. Meggar, Hi Pot, Clamp On Meter, Neon Tester, Discharge Rod, Line tester etc.

Session: 3

Topic: **Awareness of Electrical Safety Aspects**

A. Understanding the need of this Training and Safety
B. Learning specifics of HT & LT Network
C. Major type of work to be carried out in zones
D. Switching Operations (Do's & Don'ts) including Street Light Switching
E. Working on Height *(practical demo also)*
F. Understanding the Safe Process of Maintenance / Working:
    - Planning of the job
    - Availability of men, material & machine, PPEs, Safety gear and approved PTW
    - Briefing of the job by the supervisor
    - Permit to Work
    - Safety Tagging and Lock Out Tag out

- Identification of Risks associated with the work to be carried out and planning for controlling measures by proper supervision
- Concept of "***Safety Zone***"
- Identification and use of Neon Tester, Shorting Chain, Clamp On Meter, Hi Pot, Meggar etc.
- Completion of the job – Check points
- Accident Theory & Incident Reporting
- Actions to be taken in case of some accident

Session: 4

Topic: Identification, Demonstration and Usages of Tools, PPEs and other Safety Gears and demonstration of working on HT pole

Session: 5

Topic: Practical demonstration of Safety Zone creation

FREQUENCY

Regular Safety Training Program

- It will be conducted for all field & supervisor staff of BA in such a manner that all BA Personnel attend at least two hours safety training during every month.

One Day Induction Safety Training Programs:

- This training will be for the new BA's personnel, who have been cleared by the Cross Functional Panel to undergo Safety training and who are likely to be deployed at various work sites of TPCODL by the BA, as a part of AMC / Work Contract.

Duration / Periodicity:

- Duration and periodicity has been defined above. However, this is subject to change at the discretion of TPCODL.

Annexure 7 *(Refer Para 5.7)*

LIST OF PERSONAL PROTECTIVE EQUIPMENT AND TESTING FREQUENCY

Sl. No.	Name of PPE	IS / EN Standard	Testing Frequency	Remarks	Ref Brand & Model
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298 (Part-2)	Monthly and visual check every day for any crack or damage in the leather or sole.		BATA (Model No.- Endura L/C) Liberty (Model No. – 7198-01 HT Barton Black – Warrior)
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	Monthly and visual check every day for any crack in shell.		Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
03	Full body harness (Safety belt)	EN 361	Monthly and visual check every day of the bends and the harness.		Karam (PN Safetech) Joseph Leslie Accent Industries
04	Electrical Safety Gloves	EN: 60903 CE marked	Weekly and visual check for any crack and blow test before every work.	Manufactured not beyond 12 months.	Make Sparian / Sumitech / CATU supplied with inner cotton glove with over glove of split leather.
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	Monthly and visual check every day for any crack in shell.	Clear acrylic visor attached with safety helmet.	Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
06	Fire Proof jacket for chest protection		Monthly and visual check every day.		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	Weekly and visual check before every work.	Made of brass, Total length – 5.5 meters and made of 12 SWG.	

Note:

1. *Any other Personal Protection Equipment required beyond above list will be according to BIS or EN Standards.*
2. *All Personal Protection Equipment will be checked by the engineer in-charge or SHE&DM group of TPCODL.*
3. *Safety Representative of the BA has to maintain the record of the availability, condition and checking of the PPEs.*
4. *All tools required as per the contract must be according to respective IS / EN standards.*
5. *TPCODL may revise or add the above list of PPE and their specifications as and when feel necessary. The information about new specifications /models will be circulated by the Engineer In-charge (EIC), which shall adhere by the business associated in the shortest possible time. The EIC shall issue a memo / instruction to BA with timeline for implementation. Any delay will be treated as non- compliance / safety violations. Refer picture of each PPE given in next page.*

Pictures of PPE for reference purpose.

Sl. No.	Name of PPE	IS / EN Standard	Picture
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298(Part-2) and with test report of electrical resistance.	
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	
03	Full body harness (Safety belt) The straps at shoulder and thigh shall have full pad for comfort. The back shall be so designed that harness straps do not tangle with each other.	EN 361:2002 EN 358 : 2000 IS: 3521:1991/2002	

04	Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual.	EN: 60903 CE marked	
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	
06	Fire Proof jacket for chest protection		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	  
08	Reflective jacket to each workmen	As per TPCODL standard	

Note : Picture shown are for indicative purpose only. Actual product may differ.

Annexure 8 *(Refer Para 5.8)* LIST OF AUDITS TO BE CONDUCTED

Audits	Responsibility	Freq.	Ref. Doc.
Permit to Work & Field Audit	BA Safety Representative	Weekly	F04 (COR P - 12)
Tool Bag & PPE's Audit		Weekly	F06 (COR P - 12)
First Aid Box Maintenance Record		Fortnightly	F08 (COR P - 12)
Fire Extinguisher Record ***(Applicable for the BA involved in major construction works and have storage of flammable material at worksite)***		Monthly	F09 (COR P - 12)
Safety Talk Register		Weekly	F18 (COR P - 12)
Site Safety Audit		Daily	F29A (COR P - 12)

Note:

1. *(BA Safety Representative has to use the formats as per Safety process COR – P – 12 of TPCODL)*

Annexure 9 (*Refer Para 5.9)*

PERFORMANCE REPORT – SAFETY

***FOR THE MONTH OF*……**

Name of BA : ……..

Name of the Project and Purchase order No: ……

Date of commencement of work: ……..

Man Hour Worked in this month (No. of employees X 8 Hrs + Overtime): ……

Cumulative Man Hour worked: ……

Total Number of Minor Injury (this month): …… Minor Injury (Total)…….

Major Injury (this month): …….. Major Injury (Total): ……

Detail of the Incident / Sub Standard Acts and Condition

Activity	This Month	Cumulative (Total)	Day Lost (this month)	Days Lost (Cumulative)
No. of the Incident				
No. of lost time injuries				
No. of dangerous occurrences				
No. of near miss reported				
Substandard Act/Conditions observed			Attach details of observation of this month	
Safety Violation Notice received (from TPCODL) (both in numbers and in Rs.)	No.	No.	No. of violation letter received and compliance report for the TPCODL.	
	Rs.	Rs.		

Note: Cumulative means total from date of commencement of work according to the contract.

Detail of the Accident / Near Miss Incidents:

Date and Time	Type of the incident	Name of Employee	Brief Description	Corrective and Preventive actions recommended

Details of the Safety Violations:

Date and Location	Brief Description	Name of employee involved	Action Taken

Detail of the Safety Talk / Tool Box Talk / Safety Training

Date and Location	Topic (s)	Total Number of employees (Worker / Supervisor)	Number of participants (Worker / Supervisor)

Detail of the Safety Meeting

Date and Location	Number of participants	Topics discussed	Major Observations / Innovation

Detail of the Safety Inspection /Audit: (as per TPCODL site audit checklist F29A(COR-P-12)

Date	Area / Location	Major Observations	Recommendations	Action Taken

Any other Safety, Occupational Health, Environment & Disaster Management Promotional Activity (During this month):

Date	Location	Activity	Level of Participation	Number of participation

Signature of the BA Safety Representative

Name, E. No. and Date

Signature of ZM / HoG

Name, E. No. Date.

Note: The original form to be deposited with Engineer in-charge and a copy to SHE&DM group on or before 5th of every month along with bill. List of training of the current month and status of PPE to be also mentioned individual wise.

BA may include additional lines if required. The TPCODL may revise the format as and when deemed required.

ANNEXURE-M

VENDOR APPRAISAL FORM

TO BE SUBMITTED BY VENDOR (To be filled as applicable)			
VENDOR:			
1.0	**DETAILS OF THE FIRM**		
	1.1	NAME (IN CAPITAL LETTERS)	:
	1.2	TYPE OF CONCERN (PROPRIETORY) Partnership, Pvt. Ltd., Public Ltd. etc.	:
	1.3	YEAR OF ESTABLISHMENT	:
	1.4	LOCATION OF OFFICE POSTAL ADRESS TELEGRAPHIC ADDRESSES, TELEX NO. FAX NO.	:
	1.5	LOCATION OF MANUFACTURING UNITS	:
		i) UNITS 1	:
		ii) OTHER UNITS	:
2.0	**PRODUCTS MANUFACTURED**		:
3.0	**TURNOVER DURING THE LAST 3 YEARS (TO BE VERIFIED WITH THE LATEST PROFIT & LOSS STATEMENT).**		:
4.0	**VALUE OF FIXED ASSETS**		:
5.0	**NAME & ADDRESS OF THE BANKERS**		:
6.0	**BANK GUARANTEE LIMIT**		:
7.0	**CREDIT LIMIT**		:
8.0	**TECHNICAL**		
	8.1	NO.OF DESIGN ENGINEERS (INDICATE NO.OF YEARS EXPERIENCE IN RELATED FIELDS)	:
	8.2	NO.OF DRAUGHTSMEN	:
	8.3	COLLABORATION DETAILS (IF ANY)	:
		8.3.1 DATE OF COLLABORATION	:
		8.3.2 NAME OF COLLABORATOR	:

		8.3.3 RBI APPROVAL DETAILS	:
		8.3.4 EXPERIENCE LIST OF COLLABORATOR	:
		8.3.5 DURATION OF AGREEMENT	:
	8.4	AVAILABILITY OF STANDARDS / DESIGN PROCEDURES / COLLABORA-TOR'S / DOCUMENTS (CHECK WHETHER THESE ARE LATEST/CURRENT	:
	8.5	TECHNICAL SUPPORT, BACK-UP GUARANTEE, SUPERVISION, QUALITY CONTROL BY COLLABORATOR (WHEREVER ESSENTIAL). (THIS CLAUSE IS RELEVANT WHEN VENDOR'S EXPERIENCE IS INADEQUATE)	:
	8.6	QUALITY OF DRAWINGS	:
9.0	**MANUFACTURE**		
	9.1	SHOP SPACE, LAYOUT LIGHTING, VENTILATION, ETC.	:
	9.2	POWER (KVA)	:
		MAINS INSTALLED	:
		UTILISED	:
		STANDBY POWER SOURCE	:
	9.3	MANUFACTURING FACILITIES (ATTACH LIST OF EQUIPMENT AS APPLICABLE)	:
		9.3.1 MATERIAL HANDLING	:
		9.3.2 MACHINING	:
		9.3.3 FABRICATION	:
		9.3.4 HEAT TREATMENT	:
		9.3.5 BALANCING FACILITY	:
		9.3.6 SURFACE TREATMENT PRIOR TO PAINTING/ COATING, POLISHING, PICKLING, PASSIVATION, PAINTING, ETC.	:
	9.4	SUPERVISORY STAFF	:
	9.5	ADEQUACY OF SKILLED LABOURS (MACHINISTS, WELDERS, ETC.)	:
	9.6	NO. OF SHIFTS	:
	9.7	TYPE OF MATERIAL HANDLED (SUCH AS CS, SS, ETC.)	

	9.8	WORKMANSHIP	:
	9.9	MATERIAL IN STOCK AND VALUE	:
	9.10	TRANSPORT FACILITIES	:
	9.11	CARE IN HANDLING	:
10.0	**INSPECTION / QC / QA / TESTING**		
	10.1	NUMBER OF PERSONNEL (INDICATE NO.OF YEARS OF EXPERIENCE)	:
	10.2	INDEPENDENCE FROM PRODUCTION	:
	10.3	AVAILABILITY OF PROCEDURAL WRITE UP/QUALITY PLAN	:
	10.4	INCOMING MATERIAL CONTROL AND DOCUMENTATION	:
	10.5	RELIABILITY/REPUTATION OF SUPPLY SOURCES	:
	10.6	STAGE INSPECTION AND DOCUMENTATION	:
	10.7	SUB-ASSEMBLY & DOCUMENTATION	:
	10.8	FINAL INSPECTION AND DOCUMENTATION	:
	10.9	PREPARATION OF FINAL DOCUMENTATION PACKAGE	:
	10.10	TYPE TEST FACILITIES	:
	10.11	ACCEPTANCE TEST FACILITIES	:
	10.12	CALIBRATION OF INSTRUMENTS AND GAUGES (WITH TRACEABILITY TO NATIONAL STANDARDS) (ATTACH LIST)	:
	10.13	STATUTORY APPROVALS LIKE BIS, IBR, ETC.(AS APPLICABLE)	:
	10.14	SUB-VENDOR APPROVAL SYSTEM AND QUALITY CONTROL	:
	10.15	DETAILS OF TESTS CARRIED OUT AT INDEPENDENT RECOGNISED LABORATORIES	:
		i) FURNISH LIST OF TESTS CARRIED OUT AND THE NAME OF THE LABORATORY WHERE THE TESTS WERE CONDUCTED	:
		ii) CHECK AVAILABILITY OF CERTIFICATES AND REVIEW THESE WHEREVER POSSIBLE	:
11.0	**EXPERIENCE (INCLUDING CONSTRUCTION / ERECTION / COMMISSIONING) TO BE FURNISHED IN THE FORMAT INDICATED IN APPENDIX)**		:
12.0	**SALES, SERVICE AND SITE ORANISATIONAL DETAILS**		:

13.0	**CERTIFICATE FROM CUSTOMERS (ATTACH COPIES OF DOCUMENTS)**	:
14.0	**POWER SITUATION**	:
15.0	**LABOUR SITUATION**	:
16.0 *	**APPLICABILITY OF SC/ST RELAXATION (Y/N)** **IF YES, SUPPORTING DOCUMENTS TO BE ATTACHED**	
17.0	**ORGANIZATIONAL DETAILS** 1. PF NO 2. ESI NO 3. INSURANCE FOR WORK MAN COMPENSATION ACT NO 4. ELECTRICAL CONTRACT LIC NO 5. ITCC / PAN NO 6. SALES TAX NO 7. WC TAX REG. NO	:
18.0	**DOCUMENTS TO BE ENCLOSED:** 1. FACTORY LICENSE 2. ANNUAL REPORT FOR LAST THREE YEARS 3. TYPE TEST REPORT FOR THE ITEM 4. PAST EXPERIENCE REPORTS 5. ISO CERTIFICATE –QMS, EMS, OHAS, SA 6. REGISTRATION OF SALES TAX 7. COPY OF TIN NO. 8. COPY OF SERVICE TAX NO. 9. REGISTRATION OF CENTRAL EXCISE 10. COPY OF INCOME TAX CLEARANCE. 11. COPY OF PF REGISTRATION 12. COPY OF ESI REGISTRATION 13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO 14. COPY OF ELECTRICAL CONTRACT LIC NO 15. COPY OF PAN NO 16. COPY OF WC TAX REGISTRATION 17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0 18. GST Registration No	

*** Classification of BA s under SC/ST shall be governed under following guidelines:**

- **Proprietorship/ Single Ownership Firm:** Proprietor of the firm should be from SC/ST community. Governing document shall be Proprietorship Deed.
- **Partnership Firm:** Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed.
- **Private Limited Company:** Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

NOTE: Certification from SC/ST Commission shall be required for deciding upon SC/ST status of a person.

ANNEXURE-N

MANUFACTURER AUTHORIZATION FORM

(To be submitted on OEM's Letter Head)

Date: …….

Tender Enquiry No.: ……..

To,

Head (Contracts & Stores)

The TP Central Odisha Distribution Limited,
Bhubaneswar

Sir,

WHEREAS M/s. *[name of OEM]*, who are official manufacturers of …… having factories at *[address of OEM]* do hereby authorize M/s *[name of bidder]* to submit a Bid in relation to the Invitation for Bids indicated above, the purpose of which is to provide the following Goods, manufactured by us

……..

and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Special Conditions of Contract or as mentioned elsewhere in the Tender Document, with respect to the Goods offered by the above firm in reply to this Invitation for Bids.

We hereby confirm that in case, the channel partner fails to provide the necessary services as per the Tender Document referred above, M/s *[name of OEM]* shall provide standard warranty on the materials supplied against the contract. The warranty period and inclusion / exclusion of parts in the warranty shall remain same as defined in the contract issued to their channel partner against this tender enquiry.

Yours Sincerely,

For ……..

Authorized Signatory