

## **OPEN TENDER NOTIFICATION**

### **FOR**

## **Rate Contract for Supply of 33KV & 11KV Polymer Insulator with Hardware Fittings**

**Tender Enquiry No.: TPCODL/P&S/1000000093/2021-22**

**Due Date for Bid Submission: 04<sup>th</sup> August-2021 [15:00 Hrs.]**

**TP Central Odisha Distribution Limited  
(A TATA Power and Odisha Government Joint Venture)  
Procurement & Stores Department,  
2<sup>nd</sup> Floor, IDCO Towers, Janpath, Bhubaneswar – 751022**

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

**Procedure to Participate in E-Tender**

**Tender Enquiry No- TPCODL/P&S/1000000093/2021-22**

| Tender Enquiry No                         | Work Description   | EMD (Rs.) | Tender Participation Fee (Rs.) | Last Date and Time for payment of Tender Participation Fee |
|---|--|-----------|--------------------------------|--|
| TPCODL/<br>P&S/1000<br>000093/20<br>21-22 | Rate Contract for Supply of 33KV & 11KV Polymer Insulator with Hardware Fittings | 50,000/-  | 5,000/-                        | 24/07/2021, 15.00 Hrs                                      |

**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 through 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.

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

**Procedure to Participate in Tender.**

Following steps to be done before “Last date and time for Payment of Tender Participation Fee” as mentioned above

1. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letter head indicating
  - a. Tender Enquiry number
  - b. Name of authorized person ,Address, Postal code (pin code)
  - c. Contact number
  - d. e-mail id
  - e. Details of submission of Tender Participation Fee (bank name/amount/NEFT-RTGS UTR No.
  - f. GST Registration No
2. Non-Refundable Tender Participation Fee, as indicated in table above, to be submitted in the form of Direct deposit in the following bank account and submit the receipt along with a covering letter clearly indicating the Tender Reference/ Enquiry Number –

Beneficiary Name – TP Central Odisha Distribution Ltd.

Bank Name – STATE BANK OF INDIA

Branch Name – IDCO Towers, Bhubaneshwar

Address – PO- Sahidnagar, Janapath, Bhubaneswar.

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Branch Code – 7891

Account No – 10835304915

IFSC Code – SBIN0007891

**Step 4:** After receipt of the above information through e-mail, Vendor will get an **invitation email** 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 Prerequisites**" 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>**

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## 1.0 Event Information

### 1.1. Scope of work

**Open Tenders** are invited from interested Bidders to participate in following tender.

| S. No. | Description  | EMD Amount (Rs.) | Tender Fee* (Rs.) |
|--------|--|------------------|-------------------|
| 1.     | Rate Contract for Supply of 33KV & 11KV Polymer Insulator with Hardware Fittings | 50,000/-         | 5,000/-           |

*\*inclusive of GST*

### 1.2. Availability of Tender Documents

Non-transferable tender documents may be purchased by interested eligible bidders from address given below, on submission of written application to the under mentioned and upon payment of non-refundable Tender Fee.

**Chief (Procurement & Stores)**

TP Central Odisha Distribution Limited  
 2<sup>nd</sup> Floor, IDCO Towers, Janpath, Bhubaneswar – 751022

Tender documents may be downloaded by interested eligible bidders from TPCODL website [www.tpcentralodisha.com](http://www.tpcentralodisha.com) with effect from 15<sup>th</sup> July 2021. In the event of detailed tender documents are downloaded from TPCODL website, the Tender Fee shall be compulsorily submitted either online through NEFT/ RTGS or demand draft/ Banker's Cheque drawn in favor of "TP Central Odisha Distribution Limited", payable at Bhubaneswar only. Any such bid submitted without this Fee shall be rejected.

Bidders are requested to visit TPCODL website [www.tpcentralodisha.com](http://www.tpcentralodisha.com) regularly for any modification/ clarification to the bid documents.

### 1.3. Calendar of Events

|     |  |                       |
|-----|--|-----------------------|
| (a) | Date of sale/ availability of tender documents from TPCODL Website               | 15.07.2021 1000 Hours |
| (b) | Last date and time of Payment of Tender Fee                                      | 24.07.2021 1700 Hours |
| (c) | Last Date of receipt of pre-bid queries, if any                                  | 28.07.2021 1000 Hours |
| (d) | Last Date of Posting Consolidated replies to all the pre-bid queries as received | 02.08.2021 1800 Hours |
| (e) | Last date and time of receipt of Bids  | 04.08.2021 1700 Hours |
| (f) | Date & Time of opening technical bids and EMD (Envelope-1 & 2)                   | 04.08.2021 1700 Hours |

**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's office, the last date of submission of bids and date of opening of bids will be the day following working day at appointed times.

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**1.4 Mandatory documents required along with the Bid**

- 1.4.1 EMD of requisite value and validity
- 1.4.2 Tender Fee in case the tender is downloaded from website
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned as below and in Clause 1.7
- a) The average annual turnover of the bidder shall be a minimum of Rs. 1.5 Cr and bidder has to submit audited balance sheet for last three financial years (FY 18-19, FY 19-20, FY 20-21)
  - b) The bidder has to submit manufacturing license for offered product from concern state/the G.O.I
  - c) If authorized dealer the bidder need to submit (i) valid authorization certificate from the manufacturer of the offered product, (ii) an undertaking to facilitate testing of offered material in an independent NABL accredited Lab
  - d) To meet the qualifying supply experience bidder, need to submit copies of PO executed in last 5 years with at least one PO carrying value of Rs. 20.00 Lakhs, along with performance certificate from at least 2 concerned clients (Preferably from a Discom / Reputed Public / Pvt. Company).
  - e) The bidder may submit (i) Photographs indicating testing facility, enclosing list of Testing Facilities available in the Factory Premises of the Manufacturer and (ii) undertaking to carrying out to facilitate type testing/acceptance testing of ordered product in an independent NABL accredited LAB.
  - f) Copy of the Type Test report of the offered materials for the test conducted in CPRI/ an independent NABL accredited lab within last 5 years.
  - g) All the annexures should be attached/upload with duly signed and stamped.
- 1.4.4 Drawing, Type Test details along with a sample of each item as specified at Annexure I (as applicable)
- 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 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.8 Copy of PAN, GST, PF and ESI Registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')

***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:

- i. EMD of requisite value and validity
- ii. Tender fee of requisite value
- iii. Price Bid as per the Price Schedule mentioned in Annexure I (BOQ)
- iv. Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document
- v. Filled in Schedule of Deviations as per Annexure III
- vi. Filled in Schedule of Commercial Specifications as per Annexure IV
- vii. 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.

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**1.7 Qualification Criteria:**

- a) Offered material should have been type tested in CPRI/ an independent NABL accredited lab within last 5 years
- b) The average annual turnover of the bidder shall be a minimum of Rs. 1.5 Crs for last three financial years. (FY 18-19, FY 19-20, FY 20-21) Copy of audited Balance Sheet and P&L Account to be submitted in this regard.
- c) Bidder should have a valid Manufacturing license issued by concerned state/India Govt. for carrying out these works, the copies of such License to be provided
- d) Bidder should have previous supply experience of same / similar items of value commensurate with the package value. Also the bidder to be a manufacturer of the item or a dealer authorized by the manufacturer.
- e) The supplier should have in house testing facility or can facilitate tests through a NABL accredited lab.
- f) Bidder must have all statutory compliance like valid PAN, ESI registration, EPF registration and GSTN registration.

**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.
- Bidder may offer price bid either for package-1 or for package-2 or for both the packages.
- The bids will be evaluated commercially on over BOQ basis (all-inclusive lowest cost) for the complete tender as calculated in Schedule of Items [Annexure I package wise].
- The bids will be evaluated on Safety Parameters as mentioned in Annexure-VIII. Bidders have to submit all the documents related to safety bid.
- Bidder has to mandatorily quote against each item of Schedule of Items [Annexure I package wise]. Failing to do so, TPCODL may reject the bids.

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**NOTE:** In case a new bidder is not registered with TPCODL, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures. However, TPCODL reserves the right to carry out factory 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.

**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 4 (four) 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 Bank Guarantee / Bank Draft / Bankers Pay Order (issued from a Scheduled Bank) online NEFT/ RTGS transfer favoring 'TP Central Odisha Distribution Limited' payable at Bhubaneswar. The EMD has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted by TPCODL 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 NEFT/ RTGS in case the tender document is downloaded from our website.

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**

**Note-** EMD is preferred in form of Bank Guarantee and to be delivered at the following address. However, in view of present situation if Bidder is finding it difficult to make and submit BG for EMD amount, they can do online transfer of EMD amount in the above mentioned Account and submit proof of the same as part of Bid Submission.

Please note that in such case, Tender Fee and EMD should be strictly 2 separate transactions.

Please note as return of EMD from Bank Account is non-standard practice the same may take more time than return of EMD BG.



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**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**  
**2<sup>nd</sup> Floor, IDCO Towers, Janapath, Bhubaneswar- 751022**

**SECOND PART: “TECHNICAL BID” shall contain the following documents:**

- a) Documentary evidence in support of qualifying criteria
- b) Technical literature/GTP/Type test report etc. (if applicable)
- c) Qualified manpower (if available)
- d) Testing facilities (if applicable)
- e) No Deviation Certificate as per the Annexure III – Schedule of Deviations
- f) Acceptance to Commercial Terms and Conditions viz. Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
- g) Quality Assurance Plan/Inspection Test Plan for supply items (if 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 (Safety Bid):** Bidder shall mention the details as required in the safety bid form (As mentioned in annexure- IX). Bidder also has to submit the relevant documents for the same as required by TPCODL

**FOURTH PART: “PRICE BID”** shall contain only the price details and strictly in format as mentioned in Annexure I along 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.**

The EMD in the form of Bank Draft / BG / Bankers Pay Order shall be submitted in original hard copy and then placed in sealed envelope which shall be clearly marked as below:

EMD

**“OPEN TENDER NOTIFICATION FOR RATE CONTRACT FOR SUPPLY OF 33KV & 11KV POLYMER INSULATOR WITH HARDWARE FITTINGS.**

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the TPCODL, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

**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.

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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 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**

All the bidders are requested to send their pre-bid queries (if any) against this tender through e-mail within the stipulated timelines. The consolidated reply to all the queries received shall be posted on TPCODL website by the stipulated timelines as detailed in calendar of events.

**Communication Details:**Handling Team Lead for this Tender:

Name: Gaurav Singh  
Contact No.: 9205190016  
E-Mail ID: [Gaurav.singh@tpcentralodisha.com](mailto:Gaurav.singh@tpcentralodisha.com)

**Escalation Matrix:**

Name: Asish Karmakar Designation:  
HOG-Procurement Contact No.: 8768455566  
E-Mail ID: asish.karmakar@tpcentralodisha.com

Name: Mr. Deba Prasad Das (Sr. GM Purchase)  
Contact No.: 9438297571  
E-Mail ID: [debaprasad.das@tpcentralodisha.com](mailto:debaprasad.das@tpcentralodisha.com)

### 3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply/ work with a break up of prices 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.

#### **Applicable GST to be specified clearly.**

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/ SLA 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.

RC Validity: - The validity of this rate contract shall be one year from the date of issuance.

### 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 TPCODL against the risk of bidder's conduct which would warrant forfeiture.

The EMD shall be denominated 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:***

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

**Or**

b) The successful Bidder does not

- a) accept the Purchase Order, or
- b) furnish the required Performance Security Bank Guarantee

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**3.9 Type Tests (if applicable)**

The type tests 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 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 rejection of the Bidder's Bid.

**4.2. Technical Bid Opening**

Bids will be opened at TPCODL Office, Bhubaneswar. All tender bids shall be opened internally by TPCODL. Presence of any bidder will not be allowed during bid opening process. Technical bid must not contain any cost information whatsoever.

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.

Next, the technical bid of the bidders who have furnished the requisite EMD will be opened, one by one.

**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 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.

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**4.5. Price Bid Opening**

Price bids will be opened internally without the presence of any bidder representative. 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.

**4.6. 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 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 3.2 above. The decision to place 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 the rights to award contract to one or more bidders so as to meet the delivery requirement or nullify award decision without assigning any reason thereof.

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

**6 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 Specifications (Annexure II)
6. Acceptance Form for Participation in Reverse Auction (Annexure VI)
7. General Conditions of Contract (Annexure VIII)

**7 Post Award Contract Administration****7.1. Special Conditions of Contract**

- Rate contract shall be valid for a period of 1 years from the placement of Contract. Release Order (RO) shall be placed as per the requirement of TPCODL. Rate shall remain FIRM till the validity of Rate Contract.
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of order. PBG applicable shall be 5% of RC or 10% of RO value. PBG submitted, shall be released after completion of applicable guarantee period plus one month.
- Expiry date of the PBG for 5% amount against RC shall be worked out based on expiry date of RC plus warranty period and claim period will be further one month from the expiry date of PBG. In case of RO validity of PBG will be the warranty period and claim period will be further one month from the expiry date of PBG .

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- 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.
- 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 actuals 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.
- Bidder may offer price bid either for package-1 or for package-2 or for both the packages.
- 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.
- All other terms and conditions of TPCODL General Conditions of Contract shall be applicable.

**7.2 Drawing Submission and Approval**

The relevant drawings and GTPs need to be submitted within two weeks of receipt of firm purchase order by the successful bidder to TPCODL for approval. In case, re-submission of drawings is required on request of TPCODL, same needs to be submitted back to TPCODL within 5 days of such request.

**7.3 Delivery Timelines**

Release Orders shall be placed against the awarded Rate Contract by TPCODL as and when the requirements arise & Delivery within 60 Days from RO.

**7.4 Warranty Period**

12 months from the date of commissioning or 24 months from the date of last supplies made under the contract.

**7.5 Payment Terms**

On delivery of the materials in good condition and certification of acceptance by certified official, Associate shall submit the Bills/ Invoices in original in the name of TP Central Odisha Distribution Limited to Invoice Desk. The payment shall be released within 45 days from the date of submission of certified bills/ invoices.

**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 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.

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- 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 Tata Code of Conduct (TCOC) attached at Annexure X for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID:

[purchase@tpcentralodisha.com](mailto:purchase@tpcentralodisha.com) / [pkjain@tatapower.com](mailto:pkjain@tatapower.com)

**8 Specification and standards**

As per Annexure II

**9 General Condition of Contract**

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

**10 Safety**

All jobs are this tender have to be executed strictly in compliance to the Safety terms and Conditions of TP Central Odisha Distribution Limited. 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.

**ANNEXURE I (Two Package)**

**Schedule of Items**

**Package-1: 33KV Polymer Insulator with Hardware:**

| Sl No.       | Item Description                    | HSN Code | Unit | Quantity (Q) | Unit Price (in Rs.) A | GST (in Rs.) B | Unit Price (All Inclusive) (in Rs.) A+B | Total Amount (in Rs.) Q x (A+B) |
|--------------|-------------------------------------|----------|------|--------------|-----------------------|----------------|---|---------------------------------|
| 1.           | INSU. DISC POLYMER 33KV B&S 90 KN   |          | EA   | 4,224        |                       |                |   |                                 |
| 2.           | Hardware Fittings (B&S) 90KN 4 BOLT |          | EA   | 4,224        |                       |                |   |                                 |
| 3.           | PIN INSU. POLYMER 33KV 10KN         |          | EA   | 14,142       |                       |                |   |                                 |
| <b>Total</b> |                                     |          |      |              |                       |                |   |                                 |

**Package -2: 11KV Polymer Insulator with Hardware:**

| Sl No.       | Item Description                     | HSN Code | Unit | Quantity (Q) | Unit Price (in Rs.) A | GST (in Rs.) B | Unit Price (All Inclusive) (in Rs.) A+B | Total Amount (in Rs.) Q x (A+B) |
|--------------|--------------------------------------|----------|------|--------------|-----------------------|----------------|---|---------------------------------|
| 1.           | INSU. DISC POLYMER 11KV B&S 70KN     |          | EA   | 6,765        |                       |                |   |                                 |
| 2.           | Hardware Fittings (B&S) 70KN 3 BOLT  |          | EA   | 6,765        |                       |                |   |                                 |
| 3.           | PIN INSUL. POLYMER 11KV 20MM FRP DIA |          | EA   | 15,315       |                       |                |   |                                 |
| <b>Total</b> |                                      |          |      |              |                       |                |   |                                 |



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NOTE:

- Bidder may offer price bid either for package-1 or for package-2 or for both the packages.
- The overall period of the rate contract shall be for a period of 1 years and prices shall be firm till the validity of contract. Release order shall be issued as per requirement of TPCODL.
- The bids will be evaluated commercially on the overall lowest cost in line item basis.
- The unit price with GST in column no. 7, is landed price for TPCODL at their store Bhubaneswar / Cuttack. Refer CLAUSE 3.3 Bid Price.
- The bidders are advised to quote prices strictly in the above format. Failing to do so, bids are liable for rejection.
- Bidder needs to quote mandatorily for each line item of the BOQ.
- 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

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**ANNEXURE II**  
**Technical Specification**

**Attached as Annexure-A (Technical Specification)**

**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<br>(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)<br>(From the date of opening of 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 Small Scale and Ancillary Industrial Undertaking Act 1992   | Yes / No<br>(If Yes, indicate, SSI Reg'n No.) |

**Seal of the Bidder:**

**Signature:**

**Name:**

**ANNEXURE V**

**Checklist of all the documents to be submitted with the Bid**

Bidder has to mandatorily fill in the checklist mentioned below:

| <b>S. No.</b> | <b>Documents attached</b>   | <b>Yes / No / Not Applicable</b> |
|---------------|---|----------------------------------|
| 1             | EMD of required value   |                                  |
| 2             | Tender Fee as mentioned in this tender  |                                  |
| 3             | Signed copy of this tender 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  |                                  |

***Seal of the Bidder:***

***Signature:***

***Name:***

## 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 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



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**ANNEXURE VII**

**Scope of Work & Service level agreement**

**NA**

**ANNEXURE- VIII**

**GENERAL CONDITIONS OF CONTRACT FOR SUPPLY ORDERS**

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## 1.0 ORGANIZATIONAL VALUES

The TPCODL Group has always been a value driven organization. These values continue to direct the Group's growth and businesses. The six core Tata Values underpinning the way we do business are:

**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 Associates and Stakeholders are requested to register any grievance on ethics violation on our website [www.tpcentralodisha.com](http://www.tpcentralodisha.com)

## 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 (PO) 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 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 supply as per schedule of quantities shall be deemed as the Contract Execution Completion Date.

### **3.6 Contract Price /Value**

The total all inclusive price/value mentioned in the PO/RC 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 and accepted and certified by the authorized representative of the company unless otherwise specified in schedule of quantities or in contract documents.

### **3.7 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.

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- 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)

### **3.8 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.

### **3.9 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 F. 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, license 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

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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.

## **5.0 PRICES/RATES/TAXES**

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.

## **5.1 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.

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## 6.0 TERMS OF PAYMENT

On delivery of the materials in good condition and certification of acceptance by TPCODL official, Associate shall submit the Bills/Invoices in original in the name of "The TP Central Odisha Distribution Limited" to invoice desk, complete with all required documents as under:

- Test Reports (4 sets).
- MDCC issued by TPCODL.
- Packing List.
- Drawing and Catalogue.
- Guarantee/Warrantee Card.
- Delivery Challan.
- O&M Manual.
- Copy of Order.
- Minutes of Meeting.

Bills/ invoices shall mention Supplier's GST Number. TPCODL will make 100% payment within 30 days of submission of the Bill/Invoice complete in all respects and along with all the requisite documents mentioned above, subject to condition that Associate has furnished the requisite Security-cum-Performance Guarantee as stipulated in the contract.

### 6.1 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.

### 6.2 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-C.

## 7.0 MODE OF PAYMENT

Payment shall be made through crossed Cheque or RTGS whichever of the two modes chosen by the Associate, in favour of Associate's Bank Account on TPCODL records, on whose name Contract has been issued. Those Associates

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opting for the RTGS mode shall submit the details of Bank Account and other details as per annexure G. 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.

## 8.0 SECURITY CUM PERFORMANCE DEPOSIT

Associates shall submit within 15 days from the effective date of issue of PO/RC, Security Performance Bank 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 TDPPL indemnified always till completion of contracts.



## 9.2 SA 8000

As TPCODL is SA 8000 compliant, it expects its Associates to follow guidelines of SA 8000:2014 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   |

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|   |                            |  |                              |
|---|----------------------------|--|------------------------------|
| 2 | Earnest Money Deposit      | 50 % relaxation of estimated EMD value                                   | All limited and Open Tenders |
| 3 | Performance Bank Guarantee | 50% relaxation in PBG for order value above 50 lacs else 25% relaxation  | All limited and Open tenders |
| 4 | Turnover                   | 25% relaxation in company turnover under qualifying requirement criteria | All Open Tenders             |

**\*\*Classification of BAs 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).

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.*

## **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

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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 INSPECTION/PARTICIPATION**

### **11.1 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.

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- 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 by 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.

## 11.2 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

## 11.3 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.

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## **11.4 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.

## **11.5 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.

## **12.0 MDCC & DELIVERY OF MATERIALS**

### **12.1 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 utilized 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 subcontractors:

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- 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.

## 12.2 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.

## 12.3 Consignee

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

## 12.4 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 |

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|   |  |  |
|---|--|--|
| 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                          |

### 12.5 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.<br>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.  |

### 13.0 GUARANTEE

#### 13.1 Guarantee of Performance

Associates shall stand guarantee that the equipment and material supplied 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

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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.

### **13.2 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 60 Months from the Date of Commissioning or 72 months from the date of delivery of final lot of supplies made, whichever is earlier.

### **13.3 Failure in Guarantee Period (GP)**

If the equipment and material supplied 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 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 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.



### **13.4 Cost of repairs on failure in GP**

The cost of repairs/rectification/replacement, required transportation, site inspection /mobilization/dismantling and re-installation costs as applicable, to be borne by 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.

### **13.5 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.

### **13.6 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.

### **13.7 Support beyond the Guarantee Period**

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

## **14.0 LIQUIDATED DAMAGES**

- a) For supplies which are of standalone use, multiple in quantities and having a single final delivery schedule, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

For delay of each week and part thereof from the delivery schedule specified in the contract, 1% of contract value corresponding to undelivered quantity, provided full quantity is supplied within 130% of the original contract time. If full contractual quantity is not delivered within 130% of contract time for delivery, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value.

- b) For Supplies having phased delivery schedule as per contract terms, standalone use and multiple in quantities, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

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For the purpose of calculating and applying LD, each delivery lot shall be considered separately. For delay of each week and part thereof, from the delivery schedule specified for the lot, 1% of the contract value corresponding to the undelivered quantity of the lot subject to a maximum of 10% of the total contract value of the subject lot. However, if full contractual quantity is not delivered within 130% of contract time for delivery, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value. 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.

#### **14.1 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.

### **15.0 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.

### **16.0 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.

#### **16.1 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.

#### **16.2 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

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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.

### **16.3 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.

### **16.4 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.

### **16.5 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.

## **17.0 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.

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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.

## **18.0 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.

## **19.0 LIABILITY & LIMITATIONS**

### **19.1 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

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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.***

If the Associate is a joint venture or consortium, all concerned parties shall be jointly and severally bound to the TPCODL for the fulfillment of the provisions of the Contract. The consortium or the joint venture shall designate one party as their leader, who will be the coordinator between the parties and TPCODL. The constituents & leader of the consortium or joint venture shall not be changed without the prior consent of TPCODL.

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.

## 19.2 Limitation of Liability

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

## 20.0 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

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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.

## **21.0 SUSPENSION OF CONTRACT**

### **21.1 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 be executed by Associate under the contract by providing to the Associate at least two business days written notice for contracts having contract completion period less than sixty days and at least 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.

### **21.2 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 22.1 for breach/default of contract conditions.

### **21.3 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

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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 22.1) 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.

## **22 TERMINATION OF CONTRACT**

### **22.1 Termination for Default/Breach of Contract**

The contract / PO /RC 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.

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- 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 22 (except sub clause g thereof) be committed by the associate for the first time, TPCODL shall issue, along 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 22 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:

- a) Associate shall discontinue the supply, on the expiry of the said period of two weeks.
- b) 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.
- c) 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.
- d) 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.
- e) 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.



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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.

## **22.2 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. However, associate shall continue its supply as per contract till final approval is given to associates for such termination.

## **22.3 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.

## **23.0 DISPUTE RESOLUTION & ARBITRATION**

In case of any dispute or difference the parties shall endeavour 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

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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.

### **23.1 Governing Laws 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.

## **24.0 ATTRIBUTES OF GCC**

### **24.1 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.

### **24.2 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.

### **24.3 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.

## **25.0 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.

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## 26.0 TRANSFER OF TITLES

The title of ownership and property to all equipment, materials, drawings & documents shall pass to the TPCODL on acceptance of material by store/site after Inspection.

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.

## 27.0 INSURANCE

The Contractor shall take out the Insurance Policies which shall cover all risks including the following, as applicable:-

- a) The value of the policy shall cover the total value of all the items till they are handed over to TPCODL.
- b) TPCODL shall be the principal holder of the policy. The Associate shall be the loss payee under the policy. Associate / Sub-contractor of the Associate shall not be holders or beneficiaries in the policy nor shall they be named in the policy. TPCODL reserves the exclusive right to assign the policy.
- c) While the payment of premium may be phased in agreement with the insurance company, at no time shall goods and services required to be provided by the associate shall remain uninsured in accordance with (a) above.
- d) A copy of the Insurance policy shall be made available to TPCODL prior to first dispatch lot of any Equipment and policy shall be kept alive and valid at all times up to the stage of final acceptance.
- e) TPCODL reserves the right to take out whatever policy that is deemed necessary by him if the associate fails to keep the said policy alive and valid at all times and/or causes lapses in payment of premium thereby jeopardizing the said policy. The cost of such policy(s) shall be recovered / deducted from the amount payable to the associate.
- f) The policy shall ensure that the TPCODL's decision regarding replacement of goods damaged, lost or rendered unusable shall be final.

In all cases, the associate shall lodge the claims with the underwriters and also settle the claims and shall also notify TPCODL of any filed claims. However, the associate shall proceed with the repairs and/or replacement of the equipment/components without waiting for the settlement of the claims. In case of seizure of materials by concerned authorities, the associate shall arrange prompt release against bond, security or cash as required. TPCODL, upon request by the associate, will extend all reasonable assistance to the associate in such a case.

All the insurance claims shall be processed and settled by the associate and the missing/damaged items shall be replaced/repared by them without any extra cost to TPCODL and without affecting the completion time.

## 28.0 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](http://www.tpcentralodisha.com) to provide your feedback.

- Suggestions for us
- Feedback form
- Knowledge Sharing/ Experience with TPCODL
- Any issues with TPCODL.

Submission of feedback form is mandatory before the release of final payment to the BA.

## 29.0 CONTACT POINTS

In case Business Associate needs information with respect to payments or has any grievances, same may be lodged by log on to our website [www.tpcentralodisha.com](http://www.tpcentralodisha.com)

## 30.0 LIST OF ANNEXURES

| S. No. | Subject   | Annexure |
|--------|---|----------|
| 1.     | Performa for Bid Security Bank Guarantee                              | A        |
| 2.     | Performa for Performance Bank Guarantee (CP cum EP)                   | B        |
| 3.     | Performa for No Demand Certificate by Associate                       | C        |
| 4.     | Performa For Application For Issuance of Consolidated TDS Certificate | D        |
| 5.     | Business Associate Feedback Form                                      | E        |
| 6.     | Acceptance Form For Participation In Reverse Auction Event            | F        |
| 7.     | Form for RTGS Payment   | G        |
| 8.     | Vendor Appraisal Form   | H        |
| 9.     | Manufacturer Authorization Form                                       | I        |



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**ANNEXURE-A**

**PROFORMA FOR BID SECURITY BANK GUARANTEE**

**The TP Central Odisha Distribution Limited**  
**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.

|                |       |                              |       |
|----------------|-------|------------------------------|-------|
| <b>DATE</b>    | ..... | <b>SIGNATURE OF THE BANK</b> | ..... |
| <b>WITNESS</b> | ..... | <b>SEAL</b>                  | ..... |

(Signature, Name & Address) ( At least 2 witnesses)

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**ANNEXURE- B**

**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 TP Central Odisha Distribution 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.

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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 \_\_\_\_\_ 20\_\_

Bank’s rubber stamp

1. Banks full address  
Designation of Signatory
2. Bank official number



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**ANNEXURE-C**

**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.

**Place**

**Name**

(Company Seal)





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2nd Floor, IDCO Tower, Janpath Bhubaneswar, Odisha 751022

## **ANNEXURE-D**

### **PROFORMA FOR APPLICATION FOR ISSUANCE OF CONSOLIDATED TDS CERTIFICATE**

To be printed on the letterhead

To,

**The TP Central Odisha Distribution 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**



NIT No.: TPCODL/P&S/146/2020-21

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**ANNEXURE-E**

**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  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**

|                          |  |
|--------------------------|--|
| <b>Your Name</b>         |  |
| <b>Your Designation</b>  |  |
| <b>Your Organization</b> |  |
| <b>Contact Nos.</b>      |  |
| <b>Email</b>             |  |

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*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            | 2                     | 3                 | 4                   | 5           | Remarks/<br>Suggestion |
|--------|--|--------------|-----------------------|-------------------|---------------------|-------------|------------------------|
|        |  | Do Not Agree | Slightly in Agreement | In Fair Agreement | Mostly in Agreement | Fully Agree |                        |
| 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)              |              |                       |                   |                     |             |                        |

**TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
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| S. No. | Parameters   | 1            | 2                     | 3                 | 4                   | 5           | Remarks/<br>Suggestion |
|--------|--|--------------|-----------------------|-------------------|---------------------|-------------|------------------------|
|        |  | Do Not Agree | Slightly in Agreement | In Fair Agreement | Mostly in Agreement | Fully Agree |                        |
| 10     | TPCODL Engineer-in-Charge timely certifies the jobs executed/ material supplied                            |              |                       |                   |                     |             |                        |
| 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  |              |                       |                   |                     |             |                        |

**TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
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**SECTION – B**

SECTION – B (Please rate the following parameters on a scale of 1 to 5, where 1 - Minimum; 5 - Maximum)

| S. No. | Parameters   | 1 | 2 | 3 | 4 | 5 | Remarks/<br>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 <b>fairness of treatment and transparency</b> with its Business Associates?        |   |   |   |   |   |                        |
| 3      | How would you rate TPCODL in comparison to your other clients in terms of <b>processes and systems to manage partnership</b> with its Business Associates    |   |   |   |   |   |                        |
| 4      | How would you rate TPCODL in comparison to your other clients in terms of <b>building long term &amp; mutually relationship</b> with its Business Associates |   |   |   |   |   |                        |

**TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
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**SECTION – C**

Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement.

| S. No. | Parameters  | Certainly No | Probably No | Certainly Yes | Probably 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 v 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, attitudes that you

| Recommendation  | <i>Please tick (v) your top 5 expectations out of the following 10 points listed below -</i>    |  |
|---|---|--|
| (Please list down improvement you expect from TPCODL) | <i>Timely payment</i>   |  |
| 1   | <i>Flexibility in Contracts/PO</i>  |  |
|   | <i>Clarity in PO,s &amp; Contracts</i>  |  |
| 2   | <i>Timely response to quarries</i>  |  |
|   | <i>Timely certification of works executed</i>   |  |
| 3   | <i>Clarity in Specs, drawings, other docs etc.</i>  |  |
|   | <i>Adequate information provided on website for tender notification, parties qualified etc.</i> |  |
| 4   | <i>Timely receipt of material at site for execution</i>   |  |
|   | <i>Performance Guarantee/EMD released in time</i>   |  |
| 5   | <i>Inspection &amp; quality assurance support for timely job completion</i>                     |  |

We thank you for your time and courtesy!!



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## **ANNEXURE-F**

### **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 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**



NIT No.: TPCODL/P&S/154/20-21

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**ANNEXURE-G**

To,

DGM (Finance) (Resource)

**The TP Central Odisha Distribution 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)



NIT No.: TPCODL/P&S/154/20-21

**TP CENTRAL ODISHA DISTRIBUTION LIMITED**  
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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 \_\_\_\_\_

**(Authorised 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 authorised 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)**

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**ANNEXURE-H**

**VENDOR APPRAISAL FORM**

| <b>TO BE SUBMITTED BY VENDOR (To be filled as applicable)</b> |   |  |   |
|---|---|--|---|
| <b>VENDOR:</b>  |   |  |   |
| <b>1.0</b>  | <b>DETAILS OF THE FIRM</b>  |  |   |
|   | 1.1   | NAME (IN CAPITAL LETTERS)  | : |
|   | 1.2   | TYPE OF CONCERN (PROPRIETARY) Partnership, Pvt. Ltd., Public Ltd. etc.                 | : |
|   | 1.3   | YEAR OF ESTABLISHMENT  | : |
|   | 1.4   | LOCATION OF OFFICE<br>POSTAL ADDRESS<br>TELEGRAPHIC ADDRESSES,<br>TELEX NO.<br>FAX NO. | : |
|   | 1.5   | LOCATION OF MANUFACTURING UNITS  | : |
|   |   | i) UNITS 1   | : |
|   |   | ii) OTHER UNITS  | : |
| <b>2.0</b>  | <b>PRODUCTS MANUFACTURED</b>  |  |   |
| <b>3.0</b>  | <b>TURNOVER DURING THE LAST 3 YEARS (TO BE VERIFIED WITH THE LATEST PROFIT &amp; LOSS STATEMENT).</b> |  |   |
| <b>4.0</b>  | <b>VALUE OF FIXED ASSETS</b>  |  |   |
| <b>5.0</b>  | <b>NAME &amp; ADDRESS OF THE BANKERS</b>  |  |   |
| <b>6.0</b>  | <b>BANK GUARANTEE LIMIT</b>   |  |   |
| <b>7.0</b>  | <b>CREDIT LIMIT</b>   |  |   |
| <b>8.0</b>  | <b>TECHNICAL</b>  |  |   |
|   | 8.1   | NO. OF DESIGN ENGINEERS (INDICATE NO. OF YEARS EXPERIENCE IN RELATED FIELDS)           | : |
|   | 8.2   | NO. OF DRAUGHTS MEN  | : |
|   | 8.3   | COLLABORATION DETAILS (IF ANY)   | : |
|   |   | 8.3.1 DATE OF COLLABORATION  | : |

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|            |                    |   |   |
|------------|--------------------|---|---|
|            |                    | 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 / COLLABORATOR'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   | : |
| <b>9.0</b> | <b>MANUFACTURE</b> |   |   |
|            | 9.1                | SHOP SPACE, LAYOUT LIGHTING, VENTILATION, ETC.  | : |
|            | 9.2                | POWER (KVA)   | : |
|            |                    | MAINS INSTALLED   | : |
|            |                    | UTILIZED  | : |
|            |                    | 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   | : |

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|             |  |  |   |
|-------------|--|--|---|
|             | 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   | : |
| <b>10.0</b> | <b>INSPECTION / QC / QA / TESTING</b>  |  |   |
|             | 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 RECOGNIZED 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                          | : |
| <b>11.0</b> | <b>EXPERIENCE (INCLUDING CONSTRUCTION / ERECTION / COMMISSIONING) TO BE FURNISHED IN THE FORMAT INDICATED IN APPENDIX)</b> |  | : |

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|        |  |   |
|--------|--|---|
| 12.0   | SALES, SERVICE AND SITE ORGANIZATIONAL 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)<br>IF YES, SUPPORTING DOCUMENTS TO BE ATTACHED   |   |
| 17.0   | <b>ORGANIZATIONAL DETAILS</b><br>1. PF NO<br>2. ESI NO<br>3. INSURANCE FOR WORK MAN COMPENSATION ACT NO<br>4. ELECTRICAL CONTRACT LIC NO<br>5. ITCC / PAN NO<br>6. SALES TAX NO<br>7. WC TAX REG. NO   | : |
| 18.0   | <b>DOCUMENTS TO BE ENCLOSED:</b><br>1. FACTORY LICENSE<br>2. ANNUAL REPORT FOR LAST THREE YEARS<br>3. TYPE TEST REPORT FOR THE ITEM<br>4. PAST EXPERIENCE REPORTS<br>5. ISO CERTIFICATE –QMS, EMS, OHAS, SA<br>6. REGISTRATION OF SALES TAX<br>7. COPY OF TIN NO.<br>8. COPY OF SERVICE TAX NO.<br>9. REGISTRATION OF CENTRAL EXCISE<br>10. COPY OF INCOME TAX CLEARANCE.<br>11. COPY OF PF REGISTRATION<br>12. COPY OF ESI REGISTRATION<br>13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO<br>14. COPY OF ELECTRICAL CONTRACT LIC NO<br>15. COPY OF PAN NO<br>16. COPY OF WC TAX REGISTRATION<br>17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0<br>18. GSTN CERTIFICATE |   |

**\* 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.



NIT No.: TPCODL/P&S/154/20-21

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- **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-i**

**MANUFACTURER AUTHORIZATION FORM**

*(To be submitted on OEM's Letter Head)*

Date: .....

Tender Enquiry No.: .....

To,

Chief (Procurement & 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



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**ANNEXURE IX**  
**SAFETY POLICY AND SAFETY TERMS AND CONDITIONS**

**Definitions**

**Order Manager:** Order Manager is the TPCODL representative, who has the ownership of the given job under the signed contract.

**Service Provider/Contractor/Vendor:** An individual or an organization that provides services to TPCODL under a signed contract.

**Site Safety Management Plan:** It is the safety plan agreed between Contractor / Service provider and TPCODL. It will contain the entire job specific safety requirement and will be signed by the service provider.

**High Risk Job:** Any job which has significant health and safety risk associated to it. The list of high risk jobs has been identified at TPCODL level.

**Emergency:** A serious, unexpected, business discontinuity and often dangerous situation resulting into loss of revenue / property and requiring immediate action.

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## 1. Safety Policy



### 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: 11<sup>th</sup> March, 2019  
**TATA POWER**  
Lighting up Lives!



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**2. Safety Organization & Responsibilities****2.1 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 TPCODL 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 sub-contractors and workforce and for ensuring that all equipment, materials, tools and procedures remain in safety compliance at job site, including:

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

**2.2 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.

**2.3 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 equipment. 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, and trainings and in immediate reporting of all injuries, any unsafe practices, conditions or incidents to their supervisors.

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#### 2.4 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.

### 3. 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.

#### 3.1 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](http://www.tatapower.com))

#### 3.2 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](http://www.tatapower.com))

#### 3.3 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](http://www.tatapower.com))

#### 3.4 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](http://www.tatapower.com))

#### 3.5 Heavy Equipment Movement Safety Procedure

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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](http://www.tatapower.com))

### 3.6 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.

### 3.7 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](http://www.tatapower.com))

### 3.8 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](http://www.tatapower.com))

### 3.9 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](http://www.tatapower.com))

### 3.10 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

### 3.11 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](http://www.tatapower.com))

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### 3.12 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](http://www.tatapower.com))

### 3.13 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](http://www.tatapower.com))

### 3.14 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](http://www.tatapower.com))

### 3.15 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](http://www.tatapower.com))

### 3.16 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](http://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](http://www.tatapower.com)) for your reference.

## 4. 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.

### 4.1 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:

- Job rules, personal safety and conduct
- Hazards reporting
- Reporting of injuries
- Emergency procedures

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- Safety Activities and Program including disciplinary measure and incentives.
- Critical safety procedure relevant to the job

**4.2 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.

**5. 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 category of employees:

- Drivers (Check for Vision & Hearing)
- Equipment Operators (Check for Vision & Hearing)
- Workforce working at Height (Check for Vision, Hearing, Vertigo & Height Phobia)
- Workforce Handling the hazardous substances (Coal, ash and chemicals)
- Workforce in high decibel area (> 90 Decibel, Check for Hearing)
- Workforce, working in specific areas requiring specific medical attention should conduct the medical test as laid down in the respective Site Safety Management Plan.

**6. Safety Performance Evaluation and Penalties**

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                    |

- Safety performance Score will be monitored by the Order Manager every month.
- 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 with the final bill.

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- 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.
- 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.
- The committee will finalize an amount between 5 -50 lakhs based on factors such as advise by statutory authorities, contract value and impact of accident etc.
- Safety performance bonus 1% (limiting to 50 lakhs) of the invoice value will be considered at the end of the job if the contractual safety performance score is 100%.
- 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.
- Order Manager, divisional chief and SBU head have the authority to terminate the contract in case of three consecutive serious violations.

**7. Safety Performance Evaluation - CSM-F-3**

| S. No. | Lead Indicators   | Unit Of measurement            | Target | Weightage |
|--------|---|--------------------------------|--------|-----------|
| 1      | % of Employee certified in TPSDI/Authorized agency  | %                              | 50     | 10        |
| 2      | CFSA score (Annexure 6.1)   | 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        |
|        | <b>Lag Indicators</b>   |                                |        |           |
| 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:



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| 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 Earthing 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/-    |

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| 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 HVM/Mobile Crane operator does not having a valid HVM 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/      |

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| 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/-     |

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| 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.  | <ul style="list-style-type: none"> <li>• First Time</li> </ul>   | 3        | Warning              |
| 101.  | <ul style="list-style-type: none"> <li>• Second Time</li> </ul>  | 4        | 1000/-               |
| 102.  | <ul style="list-style-type: none"> <li>• Third Time</li> </ul>   | 5        | 5000/-               |
| 103.  | Serious Violation Of House Keeping (after 1 <sup>st</sup> or 2 <sup>nd</sup> warning to be decided by Project Manager depending on the severity) |          | Rs.10000/- and above |
| 104.  | Repeat Violation of same nature  | 5        | 5X Violation         |



NIT No.: TPCODL/P&S/154/20-21

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**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 e-mail ID: [pkjain@tatapower.com](mailto:pkjain@tatapower.com).

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## ANNEXURE XI

### ENVIRONMENT & SUSTAINABILITY POLICY



### **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: 15<sup>th</sup> June, 2018

**TATA POWER**  
Lighting up Lives!



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



## 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: 15<sup>th</sup> June, 2018

**TATA POWER**  
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|   |   |   |                                   |
|---|---|---|-----------------------------------|
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|   | <b>TECHNICAL SPECIFICATION Annexure II</b>            |   |                                   |
| <b>Document Title</b>   | <b>SPECIFICATION FOR 33 KV PIN POLYMER INSULATOR</b>  |   |                                   |
| <b>Document No.</b>   | ENG-EHV-26  | <b>Eff. Date: 19.04.2021</b>              |                                   |
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|           |  |                         |  |
|-----------|--|-------------------------|--|
| Initiator |  | HOG (Plant Engineering) |  |
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1. **SCOPE:**

This specification covers the technical requirements of design, manufacture, test at manufacturer's works, packing & forwarding, supply and unloading at store/ site of 33 KV Pin polymer insulator 10 KN used in 33 KV Overhead Transmission lines.

2. **APPLICABLE STANDARDS:**

Insulator shall comply with the requirements stated in the latest editions of the following standards-

- IEC: 61109: Definition, test methods and acceptance criteria for composite insulators for A.C. overhead lines above 1000V.
- IEC: 61952: Insulators for overhead lines – Composite line post insulators for alternative current.
- IS: 2071/ IEC: 60060-1: Methods of High Voltage Testing.
- IS: 2486/ IEC: 60120: Specification for Insulator fittings for Overhead Power Lines with a nominal voltage greater than 1000V General Requirements and Tests, Dimensional Requirements Locking Devices.
- IEC: 60575: Thermal Mechanical Performance test and mechanical performance test on string insulator units.
- IS: 13134/ IEC: 60815: Guide for the selection of insulators in respect of polluted condition.
- STRI guide 1.92/1: Hydrophobicity Classification Guide.
- IEC: 60437: Methods of RI Test of HV insulators.
- IS: 4759: Hot dip zinc coatings on structural steel & other allied products.
- IS: 2629: Recommended Practice for Hot, Dip Galvanization for iron and steel.
- IS: 6745: Determination of Weight of Zinc Coating on Zinc coated iron and steel articles.
- IS: 2633: Testing of Uniformity of Coating of zinc coated articles.
- ASTM D 578-05: Standard specification for glass fiber strands.

3. **CLIMATIC CONDITIONS:**

- |                                    |            |
|------------------------------------|------------|
| a) Max. Ambient Temperature        | : 50 deg.C |
| b) Max. Daily average ambient temp | : 40 deg.C |
| c) Min Ambient Temp                | : 0 deg.C  |
| d) Maximum Humidity                | : 90%      |
| e) Minimum Humidity                | : 10%      |
| f) Average Annual Rainfall         | : 1458 mm  |

The atmosphere across coastal divisions of TPCODL is very Saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

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#### 4. GENERAL TECHNICAL REQUIREMENTS:

| Sl. No. | Description   | Unit      | Requirements                         |
|---------|---|-----------|--------------------------------------|
| 1.      | Type of Insulator   |           | Polymeric Pin Insulator              |
| 2.      | Standard according to which the Insulators manufactured and tested.   |           | IEC 61952 & IEC 61109                |
| 3.      | Material of Housing and Weather Sheds                                 |           | High voltage grade Silicone rubber   |
| (a)     | Material of Core (FRP Rod)  |           | ECR BORON FREE                       |
| (b)     | Material of end fittings  |           | SGI Cast/Forged steel                |
| (c)     | Sealing compound for end fittings                                     |           | Silicone Sealant                     |
| 4.      | Colour of housing   |           | Grey                                 |
| 5.      | Electrical characteristics  |           |                                      |
| (a)     | Nominal system voltage  | KV        | 33                                   |
| (b)     | Highest system voltage  | KV        | 36                                   |
| (c)     | Dry Power frequency withstand voltage                                 | KV        | 95                                   |
| (d)     | Wet Power frequency withstand voltage                                 | KV        | 75                                   |
| (e)     | Dry Power Frequency Flashover Voltage                                 | KV        | 130                                  |
| (f)     | Wet Power Frequency Flashover Voltage                                 | KV        | 90                                   |
| (g)     | Dry Lightning Impulse withstand Voltage                               | KV        | Positive: 170 KV<br>Negative: 180 KV |
| (h)     | Dry Lightning Impulse Flashover Voltage                               | KV        | Positive: 210 KV<br>Negative: 230 KV |
| (i)     | RIV at 1 MHz when energised at 10 KV/ 30 KV (rms) under dry condition | microvolt | < 70                                 |
|         | Dry arc distance  | mm        | 300                                  |
|         | Visible Discharge Test Voltage  | KV(rms)   | 27                                   |
| 6.      | <b>Other Physical &amp; Dimensional Requirements</b>                  |           |                                      |
| (a)     | Creepage distance (Min.)  | mm        | 900                                  |
| (b)     | Minimum Failing Load  | KN        | 10                                   |
| (c)     | Dia of FRP Rod  | mm        | 24                                   |
| (d)     | Length of FRP Rod   | mm        | 300                                  |
| (e)     | Dia of weather sheds  | mm        | 110                                  |
| (f)     | Thickness of housing  | mm        | 3                                    |
| (g)     | No. of weather sheds (min)  | Nos.      | 8                                    |
| (h)     | Method of fixing sheds to housing                                     |           | Injection Molding                    |
| (i)     | Type of sheds   |           | Aerodynamic                          |
| (j)     | Dia of bottom end fitting   | mm        | 24                                   |
| (k)     | Thread length of bottom end fitting                                   | mm        | 130                                  |
| (l)     | Type of packing   |           | Wooden / Corrugated box              |
| (m)     | No. of insulators in each pack  | Nos.      | 20                                   |

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## 5. GENERAL CONSTRUCTION

Polymeric Insulators shall be designed to meet the high quality, safety and reliability and are capable of withstanding a wide range of environmental conditions.

Polymeric Insulators shall consist of THREE parts, at least two of which are insulating parts :- (a) Core- the internal insulating part (b)Housing- the external insulating part (c) Metal end fittings.

### 5.1 CORE

It shall be a glass-fiber reinforced epoxy resin rod of high strength (FRP rod). Glass fibers and resin shall be optimized in the FRP rod. Glass fibers shall be Boron free electrically corrosion resistant (ECR) glass fiber and shall exhibit both high electrical integrity and high resistance to acid corrosion. The matrix of the FRP rod shall be Hydrolysis resistant. The FRP rod shall be manufactured through Pultrusion process. The FRP rod shall be void free. All rods must pass electric leakage current test of 170V/mm. The leakage current shall not exceed 0.05mA.

### 5.2 POLYMER HOUSING:

The FRP rod shall be covered by a seamless sheath of high voltage grade Silicone rubber housing of thickness 3mm minimum. It shall be one-piece housing using only Injection Molding process to cover the core. Primer should be used to bond the housing with FRP rod. The housing shall be designed to provide the necessary creepage distance and protection against environmental influences. Housing shall conform to the requirements of IEC 60815 with latest amendments.

The high voltage grade Silicone rubber polymer material should be as per requirement specified in clause 8.2.2

### 5.3 WEATHERSHEDS

The composite polymer weather sheds made of high voltage grade Silicone rubber polymer shall be molded as part of the sheath and shall be free from imperfections. It should protect the FRP rod against environmental influences, external pollution and humidity. The strength of the weather shed to sheath interface shall be greater than the tearing strength of the polymer. The interface, if any, between sheds and sheath (housing) shall be free from voids. Housing and weather shed material shall have tensile strength of 3 MPa with 400% elongation minimum and tear strength of 16N/mm.

The high voltage grade Silicone rubber polymer material should be as per requirement specified in clause 8.2.2

### 5.4 METAL END FITTINGS:

End fitting transmit the mechanical load to the core. They shall be made of spheroidal graphite cast iron, malleable cast iron or forged steel or aluminum alloy. Metal end fitting shall be suitable for pin type hardware support of respective specified mechanical load and shall be hot dip galvanized in accordance with IS 2629. They shall be connected to the rod by means of a controlled compression technique. The OD of

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end fittings should be machined to make the surface uniform round to ensure effective sealing when housing is molded over it. The material used in fittings shall be corrosion resistant. As the main duty of the end fittings is the transfer of mechanical loads to the core the fittings should be properly attached to the core by a coaxial or hexagonal compression process & should not damage the individual fibers or crack the core. The dimensions of end fittings of insulators shall be in accordance with the standard dimensions stated in IEC: 60120/ IS: 2486 - Part-II /1989. Outer portion of Pin should be Zinc sleeved with minimum 99.95% purity of Electrolytic high grade zinc. Bottom end metal fitting (Shank) of Pin insulator should be forged steel as per IS 2002/92. Bottom end fitting should be single unit without any joints. Nuts as per IS 1363 (P-III) and spring washer shall be as per IS 3063 with Latest amendments if any, Nuts and spring washer shall be hot dip galvanized.

The design of the insulator shall be such that stresses due to expansion and contraction in any part of the insulators shall not lead to deterioration. The Pin insulator shall not engage directly with hard metal.

#### 6. MARKING:

- Each insulator shall be legibly and indelibly marked as-
- Name & Trade mark of the manufacturer
  - Month and year of manufacture
  - Minimum failing load in KN
  - "TPCODL" Name should be mentioned on each insulator.

#### 7. TESTS:

##### Type Tests

- Dry lightning impulse withstand voltage test.
- Dry/Wet power frequency test.
- Mechanical load-time test.
- Radio interference test.
- Recovery of Hydrophobicity test.
- Brittle fracture resistance test.
- Cantilever Load withstand test for Pin Insulators.

Tests on the high voltage grade Silicone rubber material used in manufacture of the insulator housing and weather sheds:

The bidder shall furnish following type test reports conducted on High voltage Silicone rubber material used for Polymer housing confirming following properties along with their bid.

| Sl. No | Property  | Requirement                   | Standard       |
|--------|---|-------------------------------|----------------|
| 1      | Tensile Strength (MPa)                            | 4 MPa min                     | ASTM D 412-06a |
| 2      | Elongation (%)                                    | 300%                          | ASTM D 412-06a |
| 3      | Tear Strength                                     | 15 N/mm min                   | ASTMD 624      |
| 4      | Inclined plane Tracking & Erosion resistance test | (4.5KV 360 min)               | ASTM D2303     |
| 5      | Volume Resistivity (Ohm -cm)                      | $1 \times 10^{13}$ Ohm-cm min | ASTM D257      |
| 6      | Dielectric constant                               | 4                             | ASTM D150      |
| 7      | Dielectric Strength (kv/mm)                       | 26 kV /mm min                 | ASTM D149      |

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|    |                    |               |               |
|----|--------------------|---------------|---------------|
| 8  | Density            | 1.5 min       | ASTM D792     |
| 9  | Hardness (shore A) | 62 nominal    | ASTM D 2240   |
| 10 | Arc Resistance     | > 220 Seconds | ASTM D 495-99 |
| 11 | Silicone Content   | > 40%         | BS: 2782-Pt10 |
| 12 | Flammability       | V0            | UL 94         |

#### Acceptance Tests

- 1) Physical & Dimensional Verification of materials.
- 2) Mechanical Load Test
- 3) Galvanizing test.
- 4) Dry Power Frequency Withstand Voltage Test

#### Routine Test-

- 1) Physical & Dimensional Verification of materials.
- 2) Mechanical Load Test
- 3) Identification of Marking

#### 8. TYPE TEST CERTIFICATES:

The Bidder shall furnish the type test certificates of the 33 KV Pin Polymer Insulators 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. Type tests 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, same shall be carried out without any cost implication to TPCODL.

#### 9. PRE-DISPATCH INSPECTION:

Equipment shall be subject to inspection by a duly authorized representative of the TPCL 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 is liable to rejection. Supplier shall grant free access to the places of manufacture to TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or it'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.

Following documents shall be sent along with material

- Test Reports
- MDCC issued by TPCODL
- Invoice in duplicate
- Packing list
- Drawings & catalogue
- Guarantee/ Warrantee card
- Delivery Challan
- Other Documents(as applicable)

#### 10. INSPECTION AFTER RECEIPT AT STORE:

TPCODL Inspectors will inspect the material received at TPCODL Store and shall have right to reject if found different from the reports of the pre-dispatch inspection.

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**11. GUARANTEE:**

Supplier 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. In the event any defect is found by the Company up to a period of 12 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. Supplier 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. PACKING AND TRANSPORT:**

Supplier shall ensure that all equipment 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 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. 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. 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
- b) General description of the equipment and all components including brochures.
- c) Experience List
- d) Type test certificates.

**Drawings / documents to be submitted after the award of the contract are as under:**

| S No. | Description                 | For Approval | For Review Information | Final Submission |
|-------|-----------------------------|--------------|------------------------|------------------|
| 1     | Technical Parameters        | √            |                        | √                |
| 2     | General Arrangement Drawing | √            |                        | √                |

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|   | TECHNICAL SPECIFICATION                              |   |                                   |
| <b>Document Title</b>                                   | <b>SPECIFICATION FOR 33 KV PIN POLYMER INSULATOR</b> |   |                                   |
| <b>Document No.</b>                                     | ENG-EHV-26   | <b>Eff. Date: 19.04.2021</b>              |                                   |
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|   |                                       |   |   |   |
|---|---------------------------------------|---|---|---|
| 3 | Mounting and fixing arrangement       |   | √ | √ |
| 4 | Instruction for use                   |   | √ | √ |
| 5 | QA & QC Plan & Type test certificates | √ | √ | √ |

#### 17. GUARANTEED TECHNICAL PARTICULARS:

Bidder shall submit guaranteed technical particulars in the attached format.

| Sl. | Descripti   | Unit       | Requirements                         |
|-----|---|------------|--------------------------------------|
| 1   | Type of Insulator   |            | Polymeric Pin Insulator              |
| 2   | Standard according to which the Insulators manufactured and tested. |            | IEC 61952 & IEC 61109                |
| 3   | Material of Housing and Weather Sheds                               |            | High voltage grade Silicone rubber   |
| (a) | Material of Core (FRP Rod)  |            | ECR BORON FREE                       |
| (b) | Material of end fittings  |            | SGI Cast/Forged steel                |
| (c) | Sealing compound for end fittings                                   |            | Silicone Sealant                     |
| 4   | Colour of housing   |            | Grey                                 |
| 5   | Electrical characteristics  |            |                                      |
| (a) | Nominal system voltage  | KV         | 33                                   |
| (b) | Highest system voltage  | KV         | 36                                   |
| (c) | Dry Power frequency withstand voltage                               | KV         | 95                                   |
| (d) | Wet Power frequency withstand voltage                               | KV         | 75                                   |
| (e) | Dry Power Frequency Flashover Voltage                               | KV         | 130                                  |
| (f) | Wet Power Frequency Flashover Voltage                               | KV         | 90                                   |
| (g) | Dry Lightning Impulse withstand Voltage                             | KV         | Positive: 170 KV<br>Negative: 180 KV |
| (h) | Dry Lightning Impulse Flashover Voltage                             | KV         | Positive: 210 KV<br>Negative: 230 KV |
| (i) | RIV at 1 MHz when energised at 10 KV/ 30 KV (rms) under             | microv olt | < 70                                 |
|     | Dry arc distance  | mm         | 300                                  |
|     | Visible Discharge Test  | KV(rms)    | 27                                   |
| 6.  | <b>Other Physical &amp; Dimensional</b>                             |            |                                      |
| ( ) | Creepage distance (Min.)  | mm         | 900                                  |
| ( ) | Minimum Failing Load  | KN         | 10                                   |
| (c) | Dia of FRP Rod  | mm         | 24                                   |
| ( ) | Length of FRP Rod   | mm         | 300                                  |
| ( ) | Dia of weather sheds  | mm         | 110                                  |
| (f) | Thickness of housing  | mm         | 3                                    |

To be furnished by bidder

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|     |                                     |      |                         |
|-----|-------------------------------------|------|-------------------------|
| (g) | No. of weather sheds (min)          | Nos. | 8                       |
| (h) | Method of fixing sheds to           |      | Injection Molding       |
| (i) | Type of sheds                       |      | Aerodynamic             |
| (j) | Dia of bottom end fitting           | mm   | 24                      |
| (k) | Thread length of bottom end fitting | mm   | 130                     |
| (l) | Type of packing                     |      | Wooden / Corrugated box |
| ( ) | No. of insulators in each pack      | Nos. | 20                      |

**18. SCHEDULES OF DEVIATIONS:**

The Bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the bidder shall be deemed to confirm the purchaser's specifications. (Format is attached)

**(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:

| SI. No. | Clause No. | Details of deviation with justifications |
|---------|------------|--|
|         |            |  |

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

Seal of the Company.

Designation:

Signature:

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1. **SCOPE:**

This specification covers the technical requirements of design, manufacture, performance, testing at manufacturer's works, packing & forwarding, supply and unloading at store/ site, performance of 33 KV Ball and Socket Disc Polymer Insulator complete with all the accessories for trouble free and efficient performance.

2. **APPLICABLE STANDARDS:**

- a) IEC: 61109: Definition, test methods and acceptance criteria for composite insulators for A.C. overhead lines above 1000V.
- b) IS: 2071/ IEC: 60060-1: Methods of High Voltage Testing
- c) IS: 2486/ IEC: 60120/IEC: 60372: Specification for insulator fittings for overhead power lines with a nominal voltage greater than 1000V General Requirements and Tests Dimensional Requirements locking devices
- d) IEC: 60575: Thermal Mechanical Performance test and mechanical performance test on string insulator units.
- e) IS: 13134/ IEC: 60815: Guide for the selection of insulators in respect of polluted condition.
- f) IEC: 60433: Characteristics of string insulator units of the long rod type
- g) IS: 14329-1995: Malleable Iron Castings
- h) IS: 60437: Methods of RI Test of HV insulators
- i) STRI guide 1.92/1: Hydrophobicity Classification Guide.
- j) CISPR:18-2 part: Radio interference characteristics of overhead power lines and high-voltage equipment
- k) IS: 8263/ IEC: 260437: Methods of RI Test of HV Insulators
- l) ANSI C29 13-2000: Standard for insulators – Composite- Distribution Dead-end type
- m) IS: 4759/ISO: 1459/ ISO: 1461: Hot dip zinc coatings on structural steel & other allied products.
- n) IS: 2629/ISO: 1461(E): Recommended Practice for Hot, Dip Galvanization for iron and steel.
- o) IS: 6745/ISO: 1460: Determination of Weight of Zinc Coating on Zinc coated iron and steel articles.
- p) IS: 3203/ISO: 2178: Methods of testing of local thickness of electroplated coatings.
- q) IS: 2633: Testing of Uniformity of Coating of zinc coated articles.
- r) ASTM D 578-05: Standard specification for glass fiber strands.
- s) ASTM E 1131-03: Standard test method for compositional analysis by Thermo-gravimetric
- t) IS: 4699: Specification for refined secondary zinc

3. **CLIMATIC CONDITIONS:**

- a) Max. Ambient Temperature : 50 deg.C
- b) Max. Daily average ambient temp : 40 deg.C
- c) Min Ambient Temp : 0 deg.C
- d) Maximum Humidity : 90%

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e) Minimum Humidity : 10%

f) Average Annual Rainfall : 1458 mm

The atmosphere across coastal divisions of TPCODL is very Saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

#### 4. GENERAL TECHNICAL REQUIREMENTS:

| Sl. No.  | Description  | Unit | Requirements  |
|----------|--|------|---|
| 1        | Type of Insulator  |      | Polymeric 33 kV Ball and Socket Disc Insulator (90 KN)      Polymeric 33 kV Ball and Socket Disc Insulator (120 KN) |
| 2        | Standard according to which the insulators manufactured and tested |      | IEC 61109   |
| 3        | Material of housing and weather sheds                              |      | High Voltage Grade Silicone Rubber  |
| (a)      | Material of Core (FRP rod)   |      | ECR BORON FREE  |
| (b)      | Material of end fittings   |      | SGI Cast/Forged Steel   |
| (c)      | Sealing compound for end fittings                                  |      | Silicone Sealant  |
| 4        | Color of housing   |      | Grey  |
| <b>5</b> | <b>Electrical characteristics</b>                                  |      |   |
| (a)      | Nominal System Voltage   | kV   | 33  |
| (b)      | Highest System Voltage   | kV   | 36  |
| (d)      | Rated Frequency  | Hz   | 50  |
| (e)      | Dry power frequency withstand voltage                              | kV   | 95  |
| (f)      | Wet power frequency withstand voltage                              | kV   | 75  |
| (g)      | Dry lightning impulse withstand voltage                            | kV   | Positive -170KV<br>Negative – 180KV   |
| (h)      | Visible Discharge Test Voltage                                     | kV   | 27  |

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|            |   |            |                                    |            |
|------------|---|------------|------------------------------------|------------|
| (i)        | Inclined plane tracking and erosion resistance of housing | kV         | 4.5kV for 360 minutes              |            |
| (j)        | FRP rod leakage current at 175 V/mm                       | mA         | <0.05mA                            |            |
| K)         | Dry Lighting impulse Flashover voltage                    | KV         | Positive -210KV<br>Negative -230KV |            |
| L)         | RIV at 1MHZ when energized at 10KV                        | Micro volt | <70Micro volt                      |            |
| <b>6.</b>  | <b>Other Physical &amp; Dimensional requirements</b>      |            |                                    |            |
| (a)        | Dia of FRP Rod  | mm         | 16                                 |            |
| (b)        | Dia of Weather Sheds                                      | mm         | 110                                |            |
| (c)        | No. of Weather Sheds                                      | Nos.       | 8                                  |            |
| (d)        | Method of fixing sheds to housing                         |            | Injection Molding                  |            |
| (e)        | Type of sheds   |            | Aerodynamic                        |            |
| (f)        | Minimum Creepage distance(25mm per KV)                    | mm         | 900                                |            |
| <b>(g)</b> | <b>Minimum Failing load</b>                               | <b>KN</b>  | <b>90</b>                          | <b>120</b> |

## 5. GENERAL CONSTRUCTION

Polymeric Insulators shall be designed to meet the high quality, safety and reliability and are capable of withstanding a wide range of environmental conditions. Polymeric Insulators shall consist of THREE parts, at least two of which are insulating parts:- (a) Core- the internal insulating part (b)Housing- the external insulating part (c)Metal end fittings.

### 5.1 CORE

Core shall be a glass-fiber reinforced epoxy resin rod of high strength (FRP rod). Glass fibers and resin shall be optimized in the FRP rod. Glass fibers shall be Boron free electrically corrosion resistant (ECR) glass fiber (minimum 80%) and shall exhibit both high electrical integrity and high resistance to acid corrosion. FRP Rod Diameters Should be minimum 16mm for 70KN ball and socket insulator. The matrix of the FRP rod shall be Hydrolysis resistant. The FRP rod shall be manufactured through Pultrusion process. The FRP rod shall be void free

### 5.2 POLYMER HOUSING:

The FRP rod shall be covered by a seamless sheath of high voltage grade Silicone rubber housing. It shall be one- piece housing using only Injection Molding process to cover the core. Primer should be used to bond the housing with FRP rod. The housing shall be designed to

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provide the necessary creepage distance and protection against environmental influences. Housing shall conform to the requirements of IEC 61109/93-93 with latest amendments. It shall be extruded or directly moulded on core and shall have chemical bonding with the FRP rod. The strength of the bond shall be greater than the tearing strength of the polymer. Sheath material in the bulk as well as in the sealing / bonding area shall be free from voids. All surfaces shall be clean, smooth, without cuts, abrasions or projections. No part shall be subjected to excessive localized pressure. The insulator and metal parts shall be so designed and manufactured that it shall avoid local corona formation and not generate any radio interference beyond specified limit under the operating conditions.

### 5.3 WEATHERSHEDS

The composite polymer weather sheds made of high voltage grade Silicone rubber polymer shall be molded as part of the sheath and shall be free from imperfections. It should protect the FRP rod against environmental influences, external pollution and humidity. The strength of the weather shed to sheath interface shall be greater than the tearing strength of the polymer. The Weather sheds should have silicon content of minimum 30% by weight. The interface, if any, between sheds and sheath (housing) shall be free from voids. Housing and weather shed material shall have tensile strength of 3 MPa with 400% elongation minimum and tear strength of 16N/mm.

### 5.4 HARDWARE FITTINGS:

- a) Ball pin and socket couplings: Ball pin and socket shall be of forged steel and dimensions are as specified in IS 2486 (Part-2): 1989. Insulator metal caps shall be made of malleable cast iron conforming to IS 14329: 1995.
- b) Locking device of the coupling: The security clips to be used as a locking device for ball and socket coupling shall be 'R' shaped hump type or 'W' type as per IS 2486. The locking device shall be resilient, corrosion resistant, and of suitable mechanical strength. Material to be used for 'W' locking clip is phosphor bronze and for 'R' type locking clip is stainless steel. The hardness and temper of material are important for their satisfactory operation. The locking devices shall retain their ability after being operated from the locking to the coupling position at least twenty times at normal temperature. They should be effective at the lowest temperature likely to be encountered in service. Socket for use with W-clips have the lower edge of the rectangular slot at the level of bottom of the socket. The slot is so shaped that it will accept the W-clip and retain it in two distinct positions when operated for coupling and locking. The shape of the W-clip is such that complete withdrawal when moving from the locking to the coupling position prevented.
- c) All ferrous parts shall be hot dip galvanized in accordance with the latest edition of IS 2629-1985. The Zinc to be used for galvanizing shall conform to grade Zn 99.99 as per IS 209-1992. The Zinc coating shall be uniform, smoothly adherent, reasonably bright, continuous and free from impurities such as flux, ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the design dimensional requirements

### 6. **MARKING:**

Each insulator shall be legibly and indelibly marked as-

- (a) Name & Trade mark of the manufacturer
- (b) Month and year of manufacture
- (c) Minimum failing load in KN

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(d) "TPCODL" Name should be mentioned on each insulator.

## 7. TESTS:

### 7.1 TYPE TESTS OF COMPLETE POLYMER INSULATORS

- (a) Dry lightning impulse withstand voltage test.
- (b) Wet power frequency test.
- (c) Mechanical failing load test.
- (d) Radio interference test.
- (e) Mechanical performance test  
U.V Resistance as per ASTM G 53: 1000 Hrs - UV Light for 8 Hours and condensation for 4 hours in a continuous cycle. Elongation to be limited to 20% (% Elongation to break before and after the test).
- (f) Salt Fog test: On insulators for 1000 hours as per IEC.
- (g) Galvanization test.
- (h) Visual examination.
- (i) Verification of dimensions.
- (j) Bending test.
- (k) Verification of the locking system or the tightness of the interface between end fitting and insulator housing.
- (l) Assembled core load time test.
- (m) Determination of the average failing load of the core of the assembled insulator.

### 7.2 TYPE TESTS ON SILICONE RUBBER

- (a) Tensile Strength & Elongation
- (b) Tear Strength
- (c) Inclined Plane Tracking & Erosion
- (d) Volume resistivity
- (e) Dielectric Strength
- (f) Dielectric Constant
- (g) Density
- (h) Hardness
- (i) Arc Resistance
- (j) Silicone content
- (k) Flammability
- (l) Resistance to weathering & UV.
- (m) Limiting oxygen index test.
- (n) Specific gravity.

### 7.3 TYPE TESTS ON FRP RODS

- (a) Verification of dimensions.
- (b) Specific Gravity
- (c) Glass Content
- (d) Water Diffusion Test
- (e) Hardness
- (f) Dye Penetration Test.
- (g) Flexural strength.
- (h) Water absorption.
- (i) Brittle fracture resistance test.
- (j) Visible discharge test.

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- (k) Dry lightning impulse withstand voltage test.
- (l) Wet power frequency withstand voltage test.
- (m) Power Arc test.
- (n) Accelerated weathering test.
- (o) Tracking & erosion test.

#### 7.4 TYPE TESTS ON END FITTINGS

- (a) Thickness of Zinc Coating
- (b) Uniformity of Zinc Coating
- (c) Micro-structural of metal fitting.

#### 7.5 DESIGN TEST

For composite insulators it is essential to carry out design test as per clause 4.1 of IEC 61109 / 92-93 with latest amendments. The design tests are intended to verify the suitability of the design, materials and method of manufacture (technology). When a composite insulator is submitted to the design tests, the result shall be considered valid for the whole class of insulators, which are represented by the one tested and having the following characteristics:

- (a) The materials for the core, and sheds and same manufacturing method;
- (b) The material of the fittings, the same design, the same method of attachment;
- (c) Polymer insulator should have greater layer thickness of the shed material over the core (including a sheath where used);
- (d) Polymer insulator should have smaller ratio of the highest system voltage to insulation length;
- (e) Polymer insulator should have smaller ratio of all mechanical loads to the smallest core diameter between fittings
- (f) Polymer insulator should have greater diameter of the core.

The tested composite insulators shall be identified by a drawing giving all the dimensions with the manufacturing tolerances.

Manufacturer should submit test reports for Design Tests as per IEC – 61109 (clause – 5) along with the bid. Additionally, following tests shall be carried out or reports for the tests shall be submitted after award of contract: UV test: the test shall be carried out in line with clause 7.2 of ANSI C29.13.

In addition, chemical composition test for silicon content would also be added in the testing list.

#### Acceptance Tests

- 1) Physical & Dimensional Verification of materials.
- 2) Mechanical Load Test
- 3) Galvanizing Tests.
- 4) Bending load test.
- 5) Mechanical performance test.
- 6) Mechanical Failing Load test.
- 7) Dry power frequency withstand voltage test
- 8) Wet power frequency withstand voltage test.

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|  | <b>TECHNICAL SPECIFICATION</b>                        |   |                                   |
| <b>Document Title</b>  | <b>SPECIFICATION FOR 33 KV POLYMER DISC INSULATOR</b> |   |                                   |
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**Routine Test-**

- 1) Physical & Dimensional Verification of materials.
- 2) Mechanical Load Test
- 3) Identification of Marking

**8. TYPE TEST CERTIFICATES:**

The Bidder shall furnish the type test certificates of the 33 KV Ball and Socket Disc Polymer Insulators for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/ NABL Accredited Laboratory as per the relevant standards. Type tests 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, same shall be carried out without any cost implication to TPCODL.

**9. PRE-DISPATCH INSPECTION:**

The material shall be subject to inspection by a duly authorized representative of the TPCODL. 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 TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL 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 TPCODL. Following documents shall be sent along with material

- a) Test reports
- b) MDCC issued by TPCODL
- c) TPCODL 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 STORE:**

TPCODL Inspectors will inspect the material received at TPCODL Store and shall have right to reject if found different from the reports of the pre-dispatch inspection.

**11. GUARANTEE:**

Supplier 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. In the event any defect is found by the Company up to a period of 12 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. Supplier 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

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|  | TECHNICAL SPECIFICATION                               |   |                                   |
| <b>Document Title</b>  | <b>SPECIFICATION FOR 33 KV POLYMER DISC INSULATOR</b> |   |                                   |
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Company.

**12. PACKING AND TRANSPORT:**

Supplier shall ensure that all equipment 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:**

1 insulator sample to be provided during submission of technical bid.

**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 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. 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. DRAWINGS AND DOCUMENTS:**

Following drawings and documents shall be prepared based on TPCODL specifications and statutory requirements 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) Experience List
- d) Type test certificates.

**Drawings / documents to be submitted after the award of the contract are as under:**

| S No. | Description                           | For Approval | For Review Information | Final Submission |
|-------|---------------------------------------|--------------|------------------------|------------------|
| 1     | Technical Parameters                  | √            |                        | √                |
| 2     | General Arrangement Drawing           | √            |                        | √                |
| 3     | Mounting and fixing arrangement       |              | √                      | √                |
| 4     | Instruction for use                   |              | √                      | √                |
| 5     | QA & QC Plan & Type test certificates | √            | √                      | √                |

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|  | TECHNICAL SPECIFICATION                               |   |                                   |
| <b>Document Title</b>  | <b>SPECIFICATION FOR 33 KV POLYMER DISC INSULATOR</b> |   |                                   |
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| <b>Prepared by:</b><br>Vaibhav Srivastava                              | <b>Reviewed By:</b><br>Niranjan Khuntia               | <b>Approved By:</b><br>Khajan C. Bhardwaj | <b>Issued By:</b><br>Pourush Garg |

**17. GUARANTEED TECHNICAL PARTICULARS:**

Bidder shall submit guaranteed technical particulars in the attached format.

| Sl. No.  | Description  | Unit | Requirements   |   | To be furnished by bidder |
|----------|--|------|--|---|---------------------------|
|          |  |      |  |   |                           |
| 1        | Type of Insulator  |      | Polymeric 33 kV Ball and Socket Disc Insulator (90 KN) | Polymeric 33 kV Ball and Socket Disc Insulator (120 KN) |                           |
| 2        | Standard according to which the insulators manufactured and tested |      | IEC 61109  |   |                           |
| 3        | Material of housing and weather sheds                              |      | High Voltage Grade Silicone Rubber                     |   |                           |
| (a)      | Material of Core (FRP rod)   | kV   | ECR BORON FREE   |   |                           |
| (b)      | Material of end fittings   | Hz   | SGI Cast/Forged Steel                                  |   |                           |
| (c)      | Sealing compound for end fittings                                  |      | Silicone Sealant                                       |   |                           |
| 4        | Color of housing   |      | Grey   |   |                           |
| <b>5</b> | <b>Electrical characteristics</b>                                  |      |  |   |                           |
| (a)      | Nominal System Voltage   | kV   | 33   |   |                           |
| (b)      | Highest System Voltage   | kV   | 36   |   |                           |
| (d)      | Rated Frequency  | Hz   | 50   |   |                           |
| (e)      | Dry power frequency withstand voltage                              | kV   | 95   |   |                           |
| (f)      | Wet power frequency withstand voltage                              | kV   | 75   |   |                           |

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| <b>Prepared by:</b><br>Vaibhav Srivastava                              | <b>Reviewed By:</b><br>Niranjan Khuntia               | <b>Approved By:</b><br>Khajan C. Bhardwaj | <b>Issued By:</b><br>Pourush Garg |

|            |   |           |                       |            |
|------------|---|-----------|-----------------------|------------|
| (g)        | Dry lightning impulse withstand voltage                   | kV        | 170                   |            |
| (h)        | Visible Discharge Test Voltage                            | kV        | 27                    |            |
| (i)        | Inclined plane tracking and erosion resistance of housing | kV        | 4.5kV for 360 minutes |            |
| (j)        | FRP rod leakage current at 175 V/mm                       | mA        | <0.05mA               |            |
| <b>6.</b>  | <b>Other Physical &amp; Dimensional requirements</b>      |           |                       |            |
| (a)        | Dia of FRP Rod  | mm        | 16                    |            |
| (b)        | Dia of Weather Sheds                                      | mm        | 110                   |            |
| (c)        | No. of Weather Sheds                                      | Nos.      | 8                     |            |
| (d)        | Method of fixing sheds to housing                         |           | Injection Molding     |            |
| (e)        | Type of sheds   |           | Aerodynamic           |            |
| (f)        | Minimum Creepage distance                                 | mm        | 900                   |            |
| <b>(g)</b> | <b>Minimum Failing load</b>                               | <b>KN</b> | <b>90</b>             | <b>120</b> |

#### 18. SCHEDULES OF DEVIATIONS:

The Bidders shall set out all deviations from this specification, Clause by Clause in this schedule. Unless specifically mentioned in this schedule, the bidder shall be deemed to confirm the purchaser's specifications. (Format is attached)

#### **(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:

|           |  |                         |  |
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|  | <b>TECHNICAL SPECIFICATION</b>                        |   |                                   |
| <b>Document Title</b>  | <b>SPECIFICATION FOR 33 KV POLYMER DISC INSULATOR</b> |   |                                   |
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| <b>Prepared by:</b><br>Vaibhav Srivastava                              | <b>Reviewed By:</b><br>Niranjan Khuntia               | <b>Approved By:</b><br>Khajan C. Bhardwaj | <b>Issued By:</b><br>Pourush Garg |

| Sl. No. | Clause No. | Details of deviation with justifications |
|---------|------------|--|
|         |            |  |


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

Seal of the Company.

Designation:

Signature:


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|  | <b>TECHNICAL SPECIFICATION</b>  |                                    |                            |
| Doc. Title   | <b>Specification for B&amp;S type of Hardware fitting 70KN &amp; 90KN</b> |                                    |                            |
| Doc. No  | ENG-HV-025  | Eff. Date: 05.04.2021              |                            |
| Rev. No  | 00  | Page 1 of 12                       |                            |
| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia  | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

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| <br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA  |                                    |                            |
|  | TECHNICAL SPECIFICATION                                 |                                    |                            |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

## 1. SCOPE

The Specification covers the design, manufacture, testing (preferably at manufacturer's works before supply) and delivery of the combined unit of Cross Arm Strap bolted type Tension Clamp including loading,

The combined units offered shall be complete with all components which are necessary (excepting disc insulator) or usual for their effective performance and easy maintenance and inter changeability at site. Such parts shall be deemed to be within the scope of contract.

## 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 authorities:


| Ref. IS  | Description   |
|--|---|
| IS 5300  | Specification for Guy Insulator   |
| IS 2486 ( Part 1 ) : 1993                                | Specification for metal fittings of insulators for overhead power lines with nominal voltage greater than 1000 V. |
| IS 2486 (Part 2) : 1989<br>IS : 2486 ( Part III ) - 1989 | Specification for Insulator fittings for overhead power lines with nominal voltage greater than 1000 V.           |
| IS 4759 : 1996   | Specification for hot-dip zinc coatings on structural steel and other allied products .                           |
| IS : 6745 - 1872   | Determination of mass of zinc coating on zinc coated iron and steel articles.                                     |
| IS : 2633 - 1986   | Method for testing uniformity of coating on zinc coated.  |
| IS:1573 - 1986   | Specification for electroplated coatings of zinc on iron and steel.   |

## 3. CLIMATIC CONDITIONS OF THE INSTALLATION:

- |                                    |            |
|------------------------------------|------------|
| a) Max. Ambient Temperature        | : 50 deg.C |
| b) Max. Daily average ambient temp | : 40 deg.C |
| c) Min Ambient Temp                | : 0 deg.C  |
| d) Maximum Humidity                | : 90%      |
| e) Minimum Humidity                | : 10%      |
| f) Average Annual Rainfall         | : 1458 mm  |

The atmosphere across coastal divisions of TPCODL is very Saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

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#### 4. GENERAL TECHNICAL REQUIREMENTS

##### GUARANTEED TECHNICAL PARTICULARS FOR H/W FITTINGS (B&S) 70KN/90 KN

| Sl.No      | Description   | Specified   | 70KN (3 Bolted)                  | 90KN (4 Bolted)                  |
|------------|---|---|----------------------------------|----------------------------------|
| 1.         | Manufacturer Name & Address   | To be specified by Bidder   |                                  |                                  |
| 2          | Suitable for conductor size   | AAAC-80Sqmm, 100sqmm  | AAAC-80Sqmm, 100sqmm, 148sqmm    |                                  |
| 2A.        | Standard Specification to which Hardware Fittings shall confirm.                              | IS: 2486 (Part-I,II &II)/1989 is-1573, IS-2653,IS-2062,IS-209,IS-2121 |                                  |                                  |
| 3          | Ultimate strength   | 7000 Kg/9000Kg (min.)   | 70KN                             | 90KN                             |
| 4.         | Dimensions in accordance with   | IS: 2486(Part-II)   |                                  |                                  |
| 5          | Material used and reference to Standard:  |   |                                  |                                  |
| i)         | Cross arm Strap   | G.I Mild steel as per IS:1570   | UTS-70KN                         | UTS-90KN                         |
| ii)        | Ball Eye  | Forged Steel IS:2004  | UTS- 70KN                        | UTS- 90KN                        |
| iii)       | Socket Eye  | Malleable Cast Iron IS:2108/1962                                      | UTS-70KN                         | UTS-90KN                         |
| iv)        | Bolted type tension clamp & its keeper  | Aluminum Alloy LM-6, IS: 617  | 95% of UTS of relevant conductor | 95% of UTS of relevant conductor |
| 6.         | Galvanized conform to hardware fitting  | IS 2633, IS: 4759-1996 & IS: 6747                                     |                                  |                                  |
| 7.         | Mass of Zinc coating gm/mtr sqr   | Hardware -610, fastener- 305  |                                  |                                  |
| 8.         | Tolerance in dimension if any   | + 5%  |                                  |                                  |
| 9          | Manufacturing process of Tension clamp  | Gravity Die casting   |                                  |                                  |
| 10         | Material of security pin & clip used  | Stainless steel   |                                  |                                  |
| 9.         | Manufacturer trade mark to be embossed on the sets  | Specified by the Bidder   |                                  |                                  |
| 10.        | Specific drawing to be enclosed.  | Enclosed  |                                  |                                  |
| <b>NB.</b> | All ferrous fittings and the parts other than those of stainless steel , shall be galvanized. |   |                                  |                                  |

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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                            |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
| Doc. Title   |  |                                    |                            |
| Doc. No  | ENG-HV-25  | Eff. Date: 05.04.2021              |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia   | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

## 5. GENERAL REQUIREMENTS

6. Hardware Fittings with ultimate tensile strength of 70 KN/90 KN should be used for ASCR Wolf and Dog conductors.
7. The Fittings shall be free from defects, corrosion protected and shall meet the requirements of Galvanizing Test etc. as per IS.
8. All forging and casting shall be of good finish and free from flaws and other defects. The edges of the fittings such as the tongue, clevis and holes shall be rounded.
9. All parts of different fittings which provide the interconnection shall be made such that sufficient clearance is provided at the connection point to ensure free movement. All tongue and clevis connection shall be free in this manner but care shall be taken that too much clearance for the tongue & clevis is avoided.
10. Spring washer should be electro galvanized- Coating thickness as per IS: 1573-1986.

U bolt, Hexagonal Bolt, Nut, Plain Washer and all other ferrous parts shall be Hot Dip Galvanized. In case of Hot Dip Galvanization, minimum Value of Mass of zinc coating should be 610 g/m<sup>2</sup>. The split pin to be used on the cotter pin shall be of Humpback type & shall be made of Stainless Steel conforming to IS: 5522-1992 with a minimum hardness of 160 HV.

## 11. MARKING

Tension Hardware Fittings suitable for ACSR Wolf/Dog Conductor should be supplied in a string. Tension Clamp shall be legibly & indelibly marked with Name or Trade mark of manufacturer, year of manufacture, 70 KN/90 KN '.


## 12. TYPE TEST Report

Along with the bid, the bidder has to submit Type Test Reports on same fittings carried out within last five years from the date of opening of techno-commercial bid of the tender from any NABL accredited Laboratory having NABL logo.

Otherwise the tender may be rejected.

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|  | <b>TECHNICAL SPECIFICATION</b>   |                                    |                            |
| Doc. Title   | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b> |                                    |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                                       | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

The following shall constitute the Type Test for Tension Clamps

### TYPE TESTS

1. Visual Examination
2. Verification of dimensions
3. Mechanical Test (Slip Strength Test)
4. Ultimate Tensile Strength Test
5. Chemical Composition Test
6. Galvanizing/Electroplating Test (for ferrous parts)

The following shall constitute type test on tension hardware fittings except Clamp:

1. Visual Examination
2. Verification of dimensions
3. Mechanical Test
4. Galvanizing Test
5. Chemical Composition Test

### 13. ACCEPTANCE TESTS


The following shall constitute acceptance test for Clamps:

1. Visual Examination
2. Verification of dimensions
3. Mechanical Test (Slip Strength Test)
4. Ultimate Tensile Strength Test
5. Galvanizing Test (for ferrous parts)
6. Chemical Composition Test

### 14. PRE DISPATCH INSPECTION

The Material shall be subject to inspection by a duly authorized representative of the TPCODL. 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 TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the

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| Initiator |  | HOG (Engineering) |  |
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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA  |                                    |                            |
|  | TECHNICAL SPECIFICATION                                 |                                    |                            |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |                            |
| Doc. No  | ENG-HV-25   | Eff. Date: 05.04.2021              |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL.

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).

#### 15. INSPECTION AFTER RECEIPT AT STORES

The material received at TPCODL 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.

#### 16. 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 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.

#### 17. PACKING

Supplier shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport and be packed in such a manner so as to

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protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

#### 18. TENDER SAMPLE

Bidder shall submit the sample of material with the offer (in case of first supply to TPCODL).

#### 19. 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. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

#### 20. 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.

#### 21. 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.

#### 22. SPARES, ACCESSORIES AND TOOLS

Not applicable.

#### 23. DRAWINGS AND DOCUMENTS

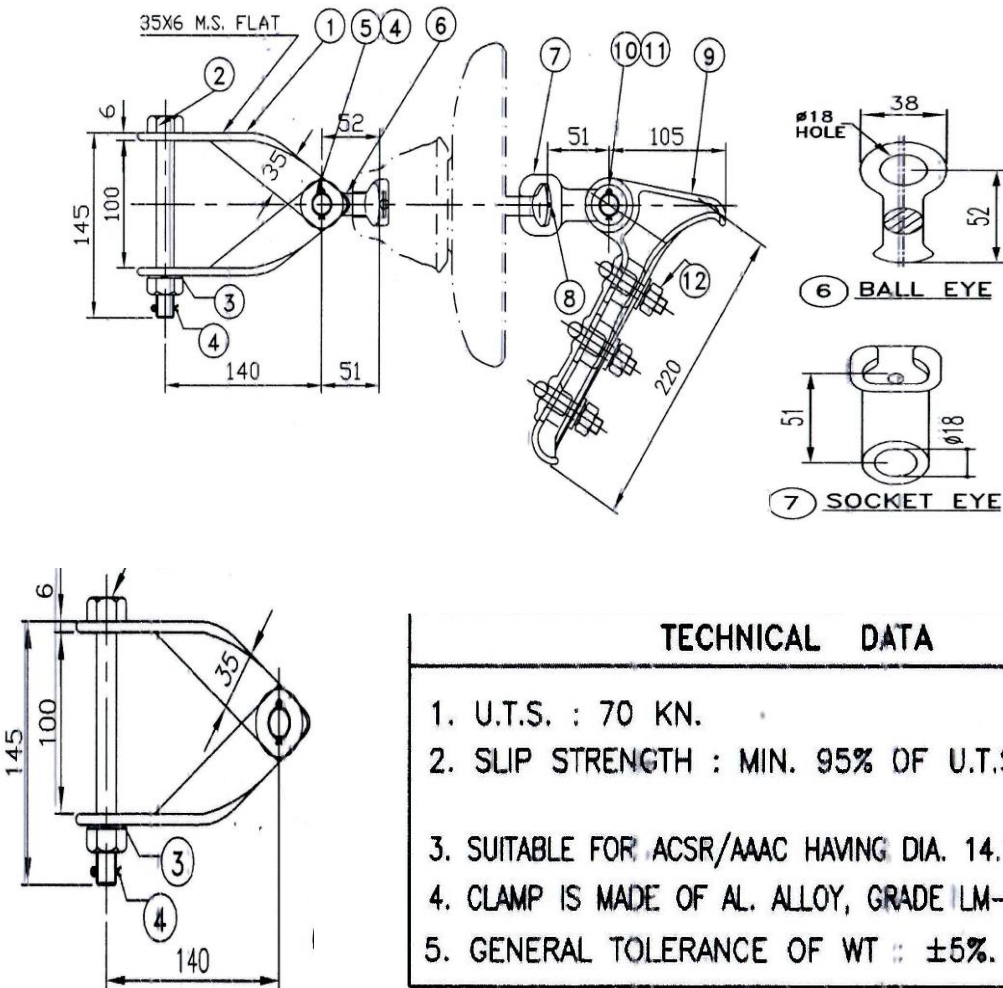
Following documents shall be prepared based on TPCODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) Completely filled in Technical Particulars.
- b) General description of the equipment and all components including brochures.
- c) Type test Certificates
- d) Experience List.

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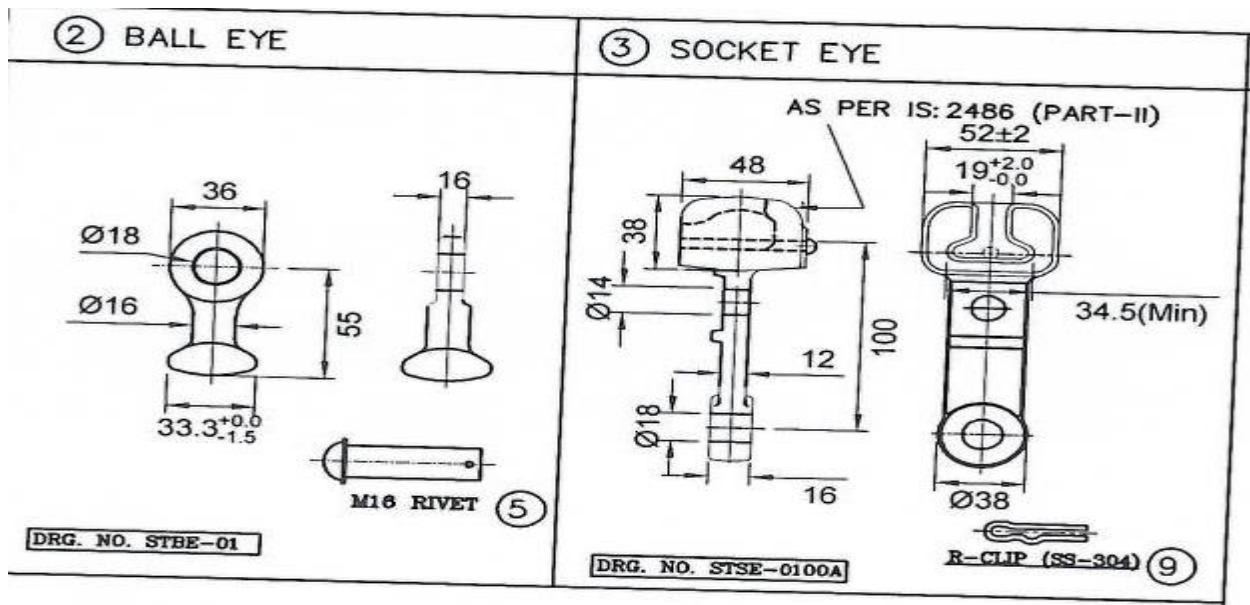
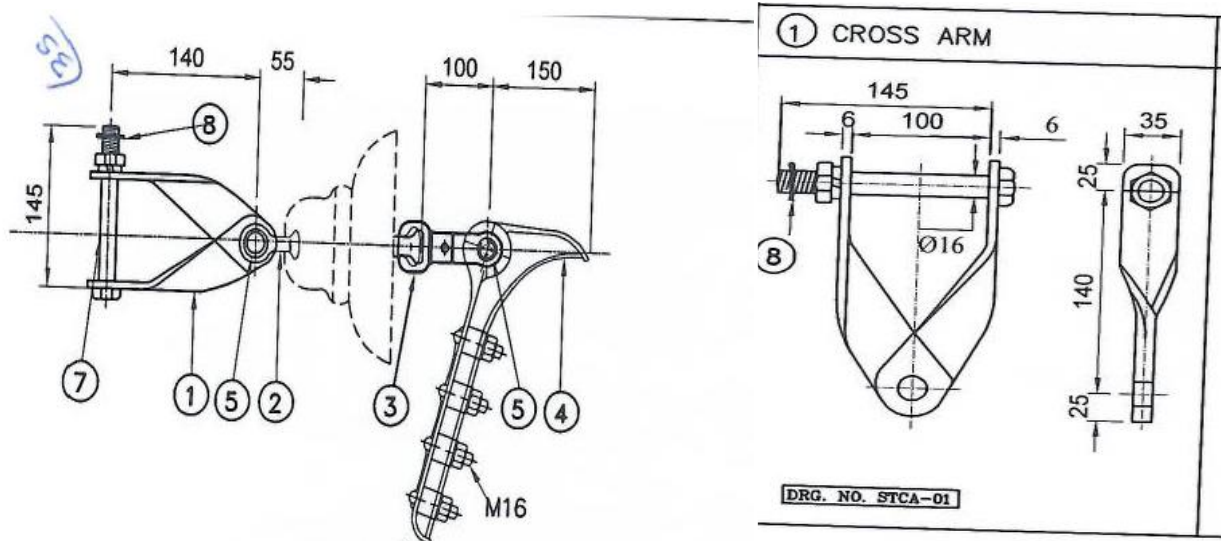
### Drawing 70KN -3 Bolted




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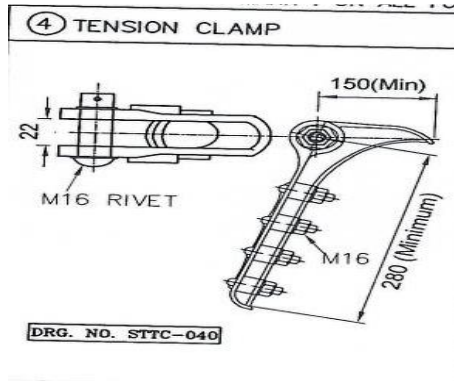
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### Hardware fitting 90KN 4Bolted



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| <b>TECHNICAL SPECIFICATION</b>   |  |
| Doc. Title   | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b> |
| Doc. No  | ENG-HV-25  |
| Rev. No  | 00   |
| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                                       |
|  | Approved By:<br>Khajan C. Bhardwaj                                     |
|  | Eff. Date: 05.04.2021  |
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|  | Issued By:<br>Pourush Garg   |



**\* TECHNICAL DATA \***

1. U.T.S. OF HARDWARE FITTING : 90 KN
2. MECHANICAL STRENGTH OF TENSION CLAMP : 90 KN
3. SLIP STRENGTH OF TENSION CLAMP : 95% UTS OF CONDUCTOR
4. BALL & SOCKET DESIGNATION : 16 mm AS PER I.S.: 2486, PART-II.
5. SPECN. TO WHICH H/W FITTING CONFORM – I.S.: 2486, PART-I.
6. ALL FERROUS PARTS (EXCEPT SPRING WASHER) SHALL BE HOT DIP GALVANISED CONFORMING TO I.S.: 2633 AND SPRING WASHER ELECTRO GALVANISED CONFORMING TO IS:1573, SERVICE COND. (Hardware:610gm/ sq mtr. & Fastner:305gm/sq mtr.)

After the approval 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 of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

**HARDWARE FITTINGS 70 KN DISC (T & C TYPE) FOR WOLF/DOG CONDUCTOR (fig-1)**

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.       |              | √                      | √                |
| 4     | Installation Instructions                      |              | √                      | √                |
| 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.

**24. GUARANTEED TECHNICAL PARTICULARS**

|           |  |                   |  |
|-----------|--|-------------------|--|
| Initiator |  | HOG (Engineering) |  |
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| Prepared by:<br>Vaibhav Srivastava   |  |                                    |                            |


**GUARANTEED TECHNICAL PARTICULARS FOR 33 KV H/W FITTINGS (B&S) 70KN/90 KN:**

| Sl.No. | Description   | Requirements                        |
|--------|---|-------------------------------------|
| 1.     | Manufacturer Name & Address                                       | ↑<br>↓<br>TO BE FURNISHED BY BIDDER |
| 2.     | Standard Specification to which Hard ware Fittings shall confirm. |                                     |
| 3.     | Ultimate strength   |                                     |
| 4.     | Dimensions in accordance with                                     |                                     |
| 5.     | Material used and reference to Standard:                          |                                     |
| i)     | Cross arm Strap   |                                     |
| ii)    | Ball Eye  |                                     |
| iii)   | Socket Eye  |                                     |
| iv)    | Bolted type tension clamp & its keeper                            |                                     |
| 6.     | Galvanised conform to   |                                     |
| 7.     | Weight of Fittings  |                                     |
| 8.     | Tolerance in dimension if any                                     |                                     |
| 9.     | Manufacturer trade mark to be embossed on the sets                |                                     |
| 10.    | Specific drawing to be enclosed.                                  |                                     |

**NB.**

| Sl.No. | Description   | Bidders Offer                       |
|--------|---|-------------------------------------|
| 1.     | Manufacturer Name & Address                                       | ↑<br>↓<br>TO BE FURNISHED BY BIDDER |
| 2.     | Standard Specification to which Hard ware Fittings shall confirm. |                                     |
| 3.     | Ultimate strength   |                                     |
| 4.     | Dimensions in accordance with                                     |                                     |
| 5.     | Material used and reference to Standard:                          |                                     |
| i)     | Cross arm Strap   |                                     |
| ii)    | Ball Eye  |                                     |
| iii)   | Socket Eye  |                                     |
| iv)    | Bolted type tension clamp & its keeper                            |                                     |

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|-----------|--|-------------------|--|
| Initiator |  | HOG (Engineering) |  |
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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                            |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
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| Rev. No  | Reviewed By:<br>Niranjan Khuntia   | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |
| Prepared by:<br>Vaibhav Srivastava   |  |                                    |                            |

|     |   |  |
|-----|---|--|
| 6.  | Galvanised conform to   |  |
| 7.  | Weight of Fittings  |  |
| 8.  | Tolerance in dimension if any   |  |
| 9.  | Manufacturer trade mark to beembossed on the sets   |  |
| 10. | Specific drawing to be enclosed.  |  |
| N.B | All ferrous fittings and the parts other than those of stainless steel , shall be galvanized. |  |

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

|           |  |                   |  |
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| Initiator |  | HOG (Engineering) |  |
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|  | <b>TECHNICAL SPECIFICATION</b>                                |  |                                  |
| <b>Document Title</b>  | <b>Specification for 11KV polymer Insulator</b>               |  |                                  |
| <b>Document No.</b>  | <b>ENG-HV-006</b>   | <b>Eff. Date: 1.03.2021</b>              |                                  |
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| <b>Prepared By</b><br>Priyanka Dash  | <b>Reviewed By</b><br>Niranjan Khuntia                        | <b>Approved By</b><br>Khajan C. Bhardwaj | <b>Issued By</b><br>Pourush Garg |

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|           |  |                          |  |
|-----------|--|--------------------------|--|
| Initiator |  | HOG ( PLANT ENGINEERING) |  |
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|  |  | <b>TECHNICAL SPECIFICATION</b>                                |                                  |
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|   |  |   |
|---|--|---|
| 1 | <b>SCOPE:</b>                                  | This specification covers the technical requirements of design, manufacture, test at manufacturer's works, packing & forwarding, supply and unloading at store/ site of 11 KV Pin polymer insulator 05 KN used in 11 KV Overhead Transmission lines.  |
| 2 | <b>APPLICABLE STANDARDS:</b>                   | Insulator shall comply with the requirements stated in the latest editions of the following standards- <ul style="list-style-type: none"> <li>a) IEC: 61109: Definition, test methods and acceptance criteria for composite insulators for A.C. overhead lines above 1000V.</li> <li>b) IEC: 61952: Insulators for overhead lines – Composite line post insulators for alternative current.</li> <li>c) IS: 2071/ IEC: 60060-1: Methods of High Voltage Testing.</li> <li>d) IS: 2486/ IEC: 60120: Specification for Insulator fittings for Overhead power Lines with a nominal voltage greater than 1000V General Requirements and Tests Dimensional Requirements Locking Devices.</li> <li>e) IEC: 60575: Thermal Mechanical Performance test and mechanical performance test on string insulator units.</li> <li>f) IS: 13134/ IEC: 60815: Guide for the selection of insulators in respect of polluted condition.</li> <li>g) STRI guide 1.92/1: Hydrophobicity Classification Guide.</li> <li>h) IEC: 60437: Methods of RI Test of HV insulators.</li> <li>i) IS: 4759: Hot dip zinc coatings on structural steel &amp; other allied products.</li> <li>j) IS: 2629: Recommended Practice for Hot, Dip Galvanization for iron and steel.</li> <li>k) IS: 6745: Determination of Weight of Zinc Coating on Zinc coated iron and steel articles.</li> <li>l) IS: 2633: Testing of Uniformity of Coating of zinc coated articles.</li> <li>m) ASTM D 578-05: Standard specification for glass fiber strands.</li> </ul> |
| 3 | <b>CLIMATIC CONDITIONS OF THE INSTALLATION</b> | The service conditions shall be as follows: <ol style="list-style-type: none"> <li>1. Maximum altitude above sea level 1,000m</li> <li>2. Maximum ambient air temperature 50°C</li> <li>3. Maximum daily average ambient air temperature 45°C</li> <li>4. Minimum ambient air temperature 0°C</li> <li>5. Maximum relative humidity 95%</li> <li>6. Average number of thunderstorm days per annum (isokeraunic level) 70</li> <li>7. Average number of rainy days per annum 120</li> <li>8. Average annual rainfall 1458mm</li> <li>9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g</li> <li>10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g<br/>(g being acceleration due to gravity)</li> <li>11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.</li> </ol>   |


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

| <b>4.0 GENERAL TECHNICAL REQUIREMENTS</b> |  |           |  |
|---|--|-----------|--|
| Sl No.                                    | Description  | Unit      | Requirements                               |
| 1   | Type of Insulator  |           | Polymeric Pin Insulator                    |
| 2   | Standard according to which the insulators manufactured and tested |           | IEC 61952 and IEC 61109                    |
| 3   | Material of housing and weather sheds                              |           | High voltage grade                         |
| (a)                                       | Material of Core (FRP rod)   | kV        | i) ECR-Glass<br>ii) BORRON FREE            |
| (b)                                       | Material of end fittings   | Hz        | SFI Cast/Forged Steel                      |
| (c)                                       | Sealing compound for end fittings                                  |           | Silicone Sealent                           |
| 4   | Colour of housing  | KN        | Grey                                       |
| 5   | Electrical characteristics   |           |  |
| (a)                                       | Type   |           | B  |
| (b)                                       | Rated Voltage  | kV        | 12   |
| (c)                                       | Service Voltage  | kV        | 11   |
| (d)                                       | Rated Frequency  | Hz        | 50   |
| (e)                                       | Visible discharge test voltage                                     | kV        | 9  |
| (f)                                       | Dry power frequency withstand voltage                              | KV(rms)   | 60   |
| (g)                                       | Wet power frequency withstand voltage                              | kV (rms)  | 35   |
| (h)                                       | Dry power Frequency Flashover Voltage                              | kV (rms)  | 75   |
| (i)                                       | Wet power frequency withstand voltage                              | kV (rms)  | 45   |
| (j)                                       | Impulse Lighting withstand voltage                                 | kV (peak) | Positive Peak -75KV<br>Negative Peak -80KV |
| (k)                                       | Impulse Lighting Flashover voltage                                 | KV (peak) | Positive : 95 KV<br>Negative : 100 KV      |


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| Initiator |  | HOG ( PLANT ENGINEERING) |  |
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|  |                         | <b>TECHNICAL SPECIFICATION</b>                                |                     |
| <b>Document Title</b>  |                         | <b>Specification for 11KV polymer Insulator</b>               |                     |
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| <b>Priyanka Dash</b>   | <b>Niranjan Khuntia</b> | <b>Khajan C. Bhardwaj</b>                                     | <b>Pourush Garg</b> |

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|-------|--|------|-------------------|
| (l)   | RIV at 1 MHz when energized at 10 KV / 30 KV (rms) under dry condition |      | < 50 microvolt    |
| (m)   | Creepage distance in heavily polluted atmosphere                       | Mm   | 320               |
| (n)   | Minimum failing loads  | kN   | 5                 |
| (o)   | Dia of FRP Rod   | Mm   | 24                |
|       | Dia of bottom end fitting  | Mm   | 20                |
|       | Thread length of bottom end fitting minimum                            | Mm   | 110               |
| (p)   | Length of FRP Rod  | Mm   | 195               |
| (q)   | Thickness of Housing   | Mm   | 3                 |
| ( r ) | No.of Weather Sheds  | No's | 3                 |
| ( s ) | Method of fixing shed to housing                                       |      | Injecting modules |
| ( T ) | Dry arc distance   | Mm   | 150mm             |
| (u)   | Type of sheds  |      | Aero Dynamics     |
| (s)   | Minimum failing loads  | kN   | 5                 |


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| 5   | <b>GENERAL CONSTRUCTIONS</b> | Polymeric Insulators shall be designed to meet the high quality, safety and reliability and are capable of withstanding a wide range of environmental conditions. Polymeric Insulators shall consist of THREE parts, at least two of which are insulating parts:- (a) Core- the internal insulating part (b)Housing- the external insulating part (c)Metal end fittings.  |
| 5.1 | <b>CORE</b>                  | Core shall be a glass-fiber reinforced epoxy resin rod of high strength (FRP rod). Glass fibers and resin shall be optimized in the FRP rod. Glass fibers shall be Boron free electrically corrosion resistant (ECR) glass fiber and shall exhibit both high electrical integrity and high resistance to acid corrosion. The matrix of the FRP rod shall be Hydrolysis resistant. The FRP rod shall be manufactured through Pultrusion process. The FRP rod shall be void free.   |
| 5.2 | <b>POLYMER HOUSING</b>       | The FRP rod shall be covered by a seamless sheath of high voltage grade Silicone rubber housing. It shall be one- piece housing using only Injection Molding process to cover the core. Primer should be used to bond the housing with FRP rod. The housing shall be designed to provide the necessary creepage distance and protection against environmental influences. Housing shall conform to the requirements of IEC 60815 with latest amendments. All surfaces shall be clean, smooth, without cuts, abrasions or projections. No part shall be subjected to excessive localized pressure. The insulator and metal parts shall be so designed and manufactured that it shall avoid local corona formation and not generate any radio interference beyond specified limit under the operating conditions. |
| 5.3 | <b>WEATHERSHEDS</b>          | The composite polymer weather sheds made of high voltage grade Silicone rubber polymer shall be molded as part of the sheath and shall be free from imperfections. It should protect the FRP rod against environmental influences, external pollution and humidity. The strength of   |

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|  | <b>TECHNICAL SPECIFICATION</b>                                |  |                                  |
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|     |                           | the weather shed to sheath interface shall be greater than the tearing strength of the polymer. The interface, if any, between sheds and sheath (housing) shall be free from voids. Housing and weather shed material shall have tensile strength of 3 MPa with 400% elongation minimum and tear strength of 16N/mm.  |
| 5.4 | <b>METAL END FITTINGS</b> | End fitting transmit the mechanical load to the core. They shall be made of spheroidal graphite cast iron, malleable cast iron or forged steel or aluminum alloy. Metal end fitting shall be suitable for pin type hardware support of respective specified mechanical load and shall be hot dip galvanized in accordance with IS 2629. They shall be connected to the rod by means of a controlled compression technique. The OD of end fittings should be machined to make the surface uniform round to ensure effective sealing when housing is molded over it. The material used in fittings shall be corrosion resistant. As the main duty of the end fittings is the transfer of mechanical loads to the core the fittings should be properly attached to the core by a coaxial or hexagonal compression process & should not damage the individual fibers or crack the core. The dimensions of end fittings of insulators shall be in accordance with the standard dimensions stated in IEC: 60120/ IS: 2486 - Part-II /1989. Outer portion of Pin should be Zinc sleeved with minimum 99.95% purity of Electrolytic high grade zinc. Bottom end metal fitting (Shank) of Pin insulator should be forged steel as per IS 2002/92. Bottom end fitting should be single unit without any joints. Nuts as per IS 1363 (P-III) and spring washer shall be as per IS 3063 with Latest amendments if any, Nuts and spring washer shall be hot dip galvanized. The design of the insulator shall be such that stresses due to expansion and contraction in any part of the insulators shall not lead to deterioration. The Pin insulator shall not engage directly with hard metal. |
| 6.0 | <b>MARKING:</b>           | Each insulator shall be legibly and indelibly marked with "PO no. with date, "Property of TPCODL, Bhubaneswar", "CODE NUMBER", along with following: <ol style="list-style-type: none"> <li>a. Manufacturer's name</li> <li>b. Type designation or serial no.</li> <li>c. Minimum failing load in kN</li> <li>d. No. of relevant standard</li> <li>e. Month and year of manufacture</li> <li>f. Country of manufacture</li> </ol>   |
| 7.0 | <b>TESTS:</b>             | All routine/acceptance tests shall be witnessed by the purchaser/his authorized representative. Following tests for 11kV Pin Polymer insulator should be done as per relevant standards:<br><b>Tests on Silicone Rubber:</b> <ul style="list-style-type: none"> <li>• Tensile Strength &amp; Elongation</li> <li>• Tear Strength</li> <li>• Inclined Plane Tracking &amp; Erosion</li> <li>• Volume resistivity</li> <li>• Dielectric Strength</li> <li>• Dielectric Constant</li> <li>• Density</li> <li>• Hardness</li> <li>• Arc Resistance</li> <li>• Silicone content</li> </ul>   |

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|  |  | <ul style="list-style-type: none"> <li>• Flammability</li> <li>• Resistance to weathering &amp; UV.</li> <li>• Limiting oxygen index test.</li> <li>• Specific gravity.</li> </ul> <p><b>Tests on FRP Rods:</b></p> <ul style="list-style-type: none"> <li>• Verification of dimensions.</li> <li>• Specific Gravity</li> <li>• Glass Content</li> <li>• Water Diffusion Test</li> <li>• Hardness</li> <li>• Dye Penetration Test.</li> <li>• Flexural strength.</li> <li>• Water absorption.</li> <li>• Brittle fracture resistance test.</li> <li>• Visible discharge test.</li> <li>• Dry lightning impulse withstand voltage test.</li> <li>• Wet power frequency withstand voltage test.</li> <li>• Power Arc test.</li> <li>• Accelerated weathering test.</li> <li>• Tracking &amp; erosion test.</li> </ul> <p><b>Tests on End Fittings:</b></p> <ul style="list-style-type: none"> <li>• Thickness of Zinc Coating</li> <li>• Uniformity of Zinc Coating</li> <li>• Micro-structural of metal fitting.</li> </ul> <p><b>Test of Complete polymer insulators:</b></p> <ul style="list-style-type: none"> <li>• Dry lightning impulse withstand voltage test.</li> <li>• Wet power frequency test.</li> <li>• Mechanical failing load test.</li> <li>• Radio interference test.</li> <li>• Mechanical performance test</li> <li>• U.V Resistance as per ASTM G 53: 1000 Hrs - UV Light for 8 Hours and condensation for 4 hours in a continuous cycle. Elongation to be limited to 20% (% Elongation to break before and after the test).</li> <li>• Salt Fog test: On insulators for 1000 hours as per IEC.</li> <li>• Galvanization test.</li> <li>• Visual examination.</li> <li>• Verification of dimensions.</li> <li>• Bending test.</li> <li>• Verification of the locking system or the tightness of the interface between end fitting and insulator housing.</li> <li>• Assembled core load time test.</li> <li>• Determination of the average failing load of the core of the assembled insulator.</li> </ul> <p><b>Design Tests:</b><br/>For composite insulators it is essential to carry out design test as per clause 4.1 of IEC 61109 / 92-93 with latest amendments. The design tests are intended to verify the suitability of the design, materials and method of manufacture (technology). When a composite insulator is submitted to the</p> |
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|     |                                 | <p>design tests, the result shall be considered valid for the whole class of insulators, which are represented by the one tested and having the following characteristics:</p> <ul style="list-style-type: none"> <li>• The materials for the core, and sheds and same manufacturing method;</li> <li>• The material of the fittings, the same design, the same method of attachment;</li> <li>• Polymer insulator should have greater layer thickness of the shed material over the core (including a sheath where used);</li> <li>• Polymer insulator should have smaller ratio of the highest system voltage to insulation length;</li> <li>• Polymer insulator should have smaller ratio of all mechanical loads to the smallest core diameter between fittings</li> <li>• Polymer insulator should have greater diameter of the core.</li> </ul> <p>The tested composite insulators shall be identified by a drawing giving all the dimensions with the manufacturing tolerances.<br/> Manufacturer should submit test reports for Design Tests as per IEC – 61109 (clause – 5) along with the bid. Additionally following tests shall be carried out or reports for the tests shall be submitted after award of contract: UV test: the test shall be carried out in line with clause 7.2 of ANSI C29.13.<br/> In addition, chemical composition test for silicon content would also be added in the testing list.</p> <p><b>Acceptance Tests</b><br/> For Composite Insulators</p> <ul style="list-style-type: none"> <li>• Verification of dimensions</li> <li>• Visual examination</li> <li>• Verification of the locking system or the tightness of the interface between end fitting and insulator housing</li> <li>• Galvanizing test</li> <li>• Verification of the specified mechanical load</li> <li>• Bending load test</li> <li>• Dry power frequency withstand voltage test</li> <li>• Analysis of material properties of housing material</li> <li>• Analysis of material properties of core material</li> </ul> <p><b>Routine Tests</b></p> <ul style="list-style-type: none"> <li>• Visual Examination</li> <li>• Mechanical load test as per IEC 61109 &amp; IEC 62231</li> </ul> |
| 8.0 | <b>TYPE TEST CERTIFICATES:</b>  | <p>The Bidder shall furnish the type test certificates of the 11 KV Pin polymer Insulators for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at <b>CPRI/ERDA/International Laboratory/NABL</b> as per the relevant standards. Type tests 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, same shall be carried out without any cost implication to TPCODL.</p>   |
| 9.0 | <b>PRE DISPATCH INSPECTION:</b> | <p>The material shall be subject to inspection by a duly authorized representative of the TPCODL. 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 TPCODL's</p>   |


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|      |  | <p>representatives at all times when the work is in progress. Inspection by the TPCODL 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 TPCODL.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> <li>a) Test reports</li> <li>b) MDCC issued by TPCODL</li> <li>c) TPCODL Invoice in duplicate</li> <li>d) Packing list</li> <li>e) Drawings &amp; catalogue</li> <li>f) Guarantee / Warrantee card</li> <li>g) Delivery Challan</li> <li>h) Other Documents (as applicable).</li> </ol>   |
| 10.0 | <b>INSPECTION AFTER RECEIPT AT STORES:</b> | The material received at TPCODL 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.   |
| 11.0 | <b>GUARANTEE:</b>                          | <p>Bidder shall stand guarantee towards design, materials, workmanship &amp; 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.</p> <p>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.</p> |
| 12.0 | <b>PACKING:</b>                            | 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 | <b>TENDER SAMPLE:</b>                      | As and when required   |
| 14.0 | <b>QUALITY CONTROL</b>                     | 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   |

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|      |                                       | carry out inspections.  |
| 15.0 | <b>MINIMUM TESTING FACILITIES:</b>    | The tenderer must clearly indicate what testing facilities are available in the works of the manufacturer and whether facilities are adequate to carry out all Routine & acceptance Tests. These facilities should be available to TPCODL Engineers if deputed or carry out or witness the tests in the manufacturer works. If any test cannot be carried out at the manufacturer's work, the reasons should be clearly stated in the tender. The insulators shall be tested in accordance with the procedure detailed in IEC 61109 / 92-93 with latest amendments. |
| 16.0 | <b>MANUFACTURING ACTIVITIES:</b>      | 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 | <b>SPARES, ACCESSORIES AND TOOLS:</b> | Not Applicable.   |
| 18.0 | <b>DRAWINGS AND DOCUMENTS:</b>        |   |

Following documents shall be prepared based on TPCODL 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) Generalized drawing for Pin Insulator
- d) Bill of Material
- e) Type test Certificates
- f) 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     | Installation Instructions                                 |              | √                      | √                |
| 5     | Instructions for use                                      |              | √                      | √                |
| 6     | Transport/shipping dimension drawing                      |              | √                      | √                |
| 7     | QA & QC Plan  | √            | √                      | √                |
| 8     | Routine, Acceptance and Type test Certificates            | √            | √                      | √                |


All the Documents and Drawings shall be in English Language.

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| <b>Instruction Manuals:</b> 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. |  |           |  |
| 19.0   | <b>GUARANTEED TECHNICAL PARTICULARS:</b>                               |           |  |
| <b>4.0 GENERAL TECHNICAL REQUIREMENTS</b>  |  |           |  |
| SI No.   | Description  | Unit      | Requirements                               |
| 1  | Type of Insulator  |           | Polymeric Pin Insulator                    |
| 2  | Standard according to which the insulators manufactured and tested     |           | IEC 61952 and IEC 61109                    |
| 3  | Material of housing and weather sheds                                  |           | High voltage grade                         |
| (a)  | Material of Core (FRP rod)   | kV        | i) ECR-Glass<br>ii) BORRON FREE            |
| (b)  | Material of end fittings   | Hz        | SGI Cast/Forged Steel                      |
| (c)  | Sealing compound for end fittings                                      |           | Silicone Sealent                           |
| 4  | Colour of housing  | KN        | Grey                                       |
| 5  | Electrical characteristics   |           |  |
| (a)  | Type   |           | B  |
| (b)  | Rated Voltage  | kV        | 12   |
| (c)  | Service Voltage  | kV        | 11   |
| (d)  | Rated Frequency  | Hz        | 50   |
| (e)  | Visible discharge test voltage   | kV        | 9  |
| (f)  | Dry power frequency withstand voltage                                  | KV(rms)   | 60   |
| (g)  | Wet power frequency withstand voltage                                  | kV (rms)  | 35   |
| (h)  | Dry power Frequency Flashover Voltage                                  | kV (rms)  | 75   |
| (i)  | Wet power frequency withstand voltage                                  | kV (rms)  | 45   |
| (j)  | Impulse Lighting withstand voltage                                     | kV (peak) | Positive Peak -75KV<br>Negative Peak -80KV |
| (k)  | Impulse Lighting Flashover voltage                                     | KV (peak) | Positive : 95 KV<br>Negative : 100 KV      |
| (l)  | RIV at 1 MHz when energized at 10 KV / 30 KV (rms) under dry condition |           | < 50 microvolt                             |
| (m)  | Creepage distance in heavily polluted atmosphere                       | Mm        | 320  |

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|-------|----------------------------------|------|-------------------|
| (n)   | Minimum failing loads            | kN   | 5                 |
| (o)   | Dia of FRP Rod                   | Mm   | 24                |
| (p)   | Length of FRP Rod                | Mm   | 195               |
| (q)   | Thickness of Housing             | Mm   | 3                 |
| ( r ) | No.of Weather Sheds              | No's | 3                 |
| ( s ) | Method of fixing shed to housing |      | Injecting modules |
| ( T ) | Dry arc distance                 | Mm   | 150mm             |
| (u)   | Type of sheds                    |      | Aero Dynamics     |
| (s)   | Minimum failing loads            | kN   | 5                 |

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.<br>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


|           |  |                          |  |
|-----------|--|--------------------------|--|
| Initiator |  | HOG ( PLANT ENGINEERING) |  |
|-----------|--|--------------------------|--|

|  |  |   |                                   |
|--|--|---|-----------------------------------|
| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b>       |   |                                   |
|  | <b>Doc. Title</b><br><b>Specification for B&amp;S type of Hardware fitting 70KN &amp; 90KN</b> |   |                                   |
| <b>Doc. No</b><br>ENG-HV-025   |  |   | <b>Eff. Date:</b> 05.04.2021      |
| <b>Rev. No</b><br>00   |  |   | Page 1 of 12                      |
| <b>Prepared by:</b><br>Vaibhav Srivastava  | <b>Reviewed By:</b><br>Niranjan Khuntia  | <b>Approved By:</b><br>Khajan C. Bhardwaj | <b>Issued By:</b><br>Pourush Garg |

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|           |  |                   |  |
|-----------|--|-------------------|--|
| Initiator |  | HOG (Engineering) |  |
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| <br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA  |                                    |                            |
|  | TECHNICAL SPECIFICATION                                 |                                    |                            |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |                            |
| Doc. No  | ENG-HV-25   | Eff. Date: 05.04.2021              |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

## 1. SCOPE

The Specification covers the design, manufacture, testing (preferably at manufacturer's works before supply) and delivery of the combined unit of Cross Arm Strap bolted type Tension Clamp including loading,

The combined units offered shall be complete with all components which are necessary (excepting disc insulator) or usual for their effective performance and easy maintenance and inter changeability at site. Such parts shall be deemed to be within the scope of contract.

## 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 authorities:


| Ref. IS  | Description   |
|--|---|
| IS 5300  | Specification for Guy Insulator   |
| IS 2486 ( Part 1 ) : 1993                                | Specification for metal fittings of insulators for overhead power lines with nominal voltage greater than 1000 V. |
| IS 2486 (Part 2) : 1989<br>IS : 2486 ( Part III ) - 1989 | Specification for Insulator fittings for overhead power lines with nominal voltage greater than 1000 V.           |
| IS 4759 : 1996   | Specification for hot-dip zinc coatings on structural steel and other allied products .                           |
| IS : 6745 - 1872   | Determination of mass of zinc coating on zinc coated iron and steel articles.                                     |
| IS : 2633 - 1986   | Method for testing uniformity of coating on zinc coated.  |
| IS:1573 - 1986   | Specification for electroplated coatings of zinc on iron and steel.   |

## 3. CLIMATIC CONDITIONS OF THE INSTALLATION:

- |                                    |            |
|------------------------------------|------------|
| a) Max. Ambient Temperature        | : 50 deg.C |
| b) Max. Daily average ambient temp | : 40 deg.C |
| c) Min Ambient Temp                | : 0 deg.C  |
| d) Maximum Humidity                | : 90%      |
| e) Minimum Humidity                | : 10%      |
| f) Average Annual Rainfall         | : 1458 mm  |

The atmosphere across coastal divisions of TPCODL is very Saline, laden with salt, acid and dust suspended during dry months and subjected to fog in cold months.

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|-----------|--|-------------------|--|
| Initiator |  | HOG (Engineering) |  |
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| <br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA  |                                    |                            |
|  | TECHNICAL SPECIFICATION                                 |                                    |                            |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

#### 4. GENERAL TECHNICAL REQUIREMENTS

##### GUARANTEED TECHNICAL PARTICULARS FOR H/W FITTINGS (B&S) 70KN/90 KN

| Sl.No      | Description   | Specified   | 70KN (3 Bolted)                  | 90KN (4 Bolted)                  |
|------------|---|---|----------------------------------|----------------------------------|
| 1.         | Manufacturer Name & Address   | To be specified by Bidder   |                                  |                                  |
| 2          | Suitable for conductor size   | AAAC-80Sqmm, 100sqmm  | AAAC-80Sqmm, 100sqmm, 148sqmm    |                                  |
| 2A.        | Standard Specification to which Hard ware Fittings shall confirm.                             | IS: 2486 (Part-I,II &II)/1989 is-1573, IS-2653,IS-2062,IS-209,IS-2121 |                                  |                                  |
| 3          | Ultimate strength   | 7000 Kg/9000Kg (min.)   | 70KN                             | 90KN                             |
| 4.         | Dimensions in accordance with   | IS: 2486(Part-II)   |                                  |                                  |
| 5          | Material used and reference to Standard:  |   |                                  |                                  |
| i)         | Cross arm Strap   | G.I Mild steel as per IS:1570   | UTS-70KN                         | UTS-90KN                         |
| ii)        | Ball Eye  | Forged Steel IS:2004  | UTS- 70KN                        | UTS- 90KN                        |
| iii)       | Socket Eye  | Malleable Cast Iron IS:2108/1962                                      | UTS-70KN                         | UTS-90KN                         |
| iv)        | Bolted type tension clamp & its keeper  | Aluminum Alloy LM-6, IS: 617  | 95% of UTS of relevant conductor | 95% of UTS of relevant conductor |
| 6.         | Galvanized conform to hardware fitting  | IS 2633, IS: 4759-1996 & IS: 6747                                     |                                  |                                  |
| 7.         | Mass of Zinc coating gm/mtr sqr   | Hardware -610, fastener- 305  |                                  |                                  |
| 8.         | Tolerance in dimension if any   | + 5%  |                                  |                                  |
| 9          | Manufacturing process of Tension clamp  | Gravity Die casting   |                                  |                                  |
| 10         | Material of security pin & clip used  | Stainless steel   |                                  |                                  |
| 9.         | Manufacturer trade mark to be embossed on the sets  | Specified by the Bidder   |                                  |                                  |
| 10.        | Specific drawing to be enclosed.  | Enclosed  |                                  |                                  |
| <b>NB.</b> | All ferrous fittings and the parts other than those of stainless steel , shall be galvanized. |   |                                  |                                  |

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| Initiator |  | HOG (Engineering) |  |
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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                            |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
| Doc. Title   | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
| Doc. No  | ENG-HV-25  | Eff. Date: 05.04.2021              |                            |
| Rev. No  | 00   | Page 4 of 12                       |                            |
| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia   | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

## 5. GENERAL REQUIREMENTS

6. Hardware Fittings with ultimate tensile strength of 70 KN/90 KN should be used for ASCR Wolf and Dog conductors.
7. The Fittings shall be free from defects, corrosion protected and shall meet the requirements of Galvanizing Test etc. as per IS.
8. All forging and casting shall be of good finish and free from flaws and other defects. The edges of the fittings such as the tongue, clevis and holes shall be rounded.
9. All parts of different fittings which provide the interconnection shall be made such that sufficient clearance is provided at the connection point to ensure free movement. All tongue and clevis connection shall be free in this manner but care shall be taken that too much clearance for the tongue & clevis is avoided.
10. Spring washer should be electro galvanized- Coating thickness as per IS: 1573-1986.

U bolt, Hexagonal Bolt, Nut, Plain Washer and all other ferrous parts shall be Hot Dip Galvanized. In case of Hot Dip Galvanization, minimum Value of Mass of zinc coating should be 610 g/m<sup>2</sup>. The split pin to be used on the cotter pin shall be of Humpback type & shall be made of Stainless Steel conforming to IS: 5522-1992 with a minimum hardness of 160 HV.

## 11. MARKING


Tension Hardware Fittings suitable for ACSR Wolf/Dog Conductor should be supplied in a string. Tension Clamp shall be legibly & indelibly marked with Name or Trade mark of manufacturer, year of manufacture, 70 KN/90 KN '.

## 12. TYPE TEST Report

Along with the bid, the bidder has to submit Type Test Reports on same fittings carried out within last five years from the date of opening of techno-commercial bid of the tender from any NABL accredited Laboratory having NABL logo.

Otherwise the tender may be rejected.

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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                            |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
| Doc. Title   |  |                                    |                            |
| Doc. No  | ENG-HV-25  | Eff. Date: 05.04.2021              |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia   | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

The following shall constitute the Type Test for Tension Clamps

### TYPE TESTS

1. Visual Examination
2. Verification of dimensions
3. Mechanical Test (Slip Strength Test)
4. Ultimate Tensile Strength Test
5. Chemical Composition Test
6. Galvanizing/Electroplating Test (for ferrous parts)

The following shall constitute type test on tension hardware fittings except Clamp:

1. Visual Examination
2. Verification of dimensions
3. Mechanical Test
4. Galvanizing Test
5. Chemical Composition Test

### 13. ACCEPTANCE TESTS

The following shall constitute acceptance test for Clamps:


1. Visual Examination
2. Verification of dimensions
3. Mechanical Test (Slip Strength Test)
4. Ultimate Tensile Strength Test
5. Galvanizing Test (for ferrous parts)
6. Chemical Composition Test

### 14. PRE DISPATCH INSPECTION

The Material shall be subject to inspection by a duly authorized representative of the TPCODL. 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 TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the

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|  | TECHNICAL SPECIFICATION                                 |                                    |                            |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |                            |
| Doc. No  | ENG-HV-25   | Eff. Date: 05.04.2021              |                            |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL.

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).

#### 15. INSPECTION AFTER RECEIPT AT STORES

The material received at TPCODL 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.

#### 16. 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 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.

#### 17. PACKING

Supplier shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport and be packed in such a manner so as to

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| Initiator |  | HOG (Engineering) |  |
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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                       |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                       |
| Doc. Title   |  |                                    | Eff. Date: 05.04.2021 |
| Doc. No  | ENG-HV-25  | Page 7 of 12                       |                       |
| Rev. No  | 00   | Issued By:<br>Pourush Garg         |                       |
| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia   | Approved By:<br>Khajan C. Bhardwaj |                       |

protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

#### 18. TENDER SAMPLE

Bidder shall submit the sample of material with the offer (in case of first supply to TPCODL).

#### 19. 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. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

#### 20. 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.

#### 21. 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.

#### 22. SPARES, ACCESSORIES AND TOOLS

Not applicable.

#### 23. DRAWINGS AND DOCUMENTS

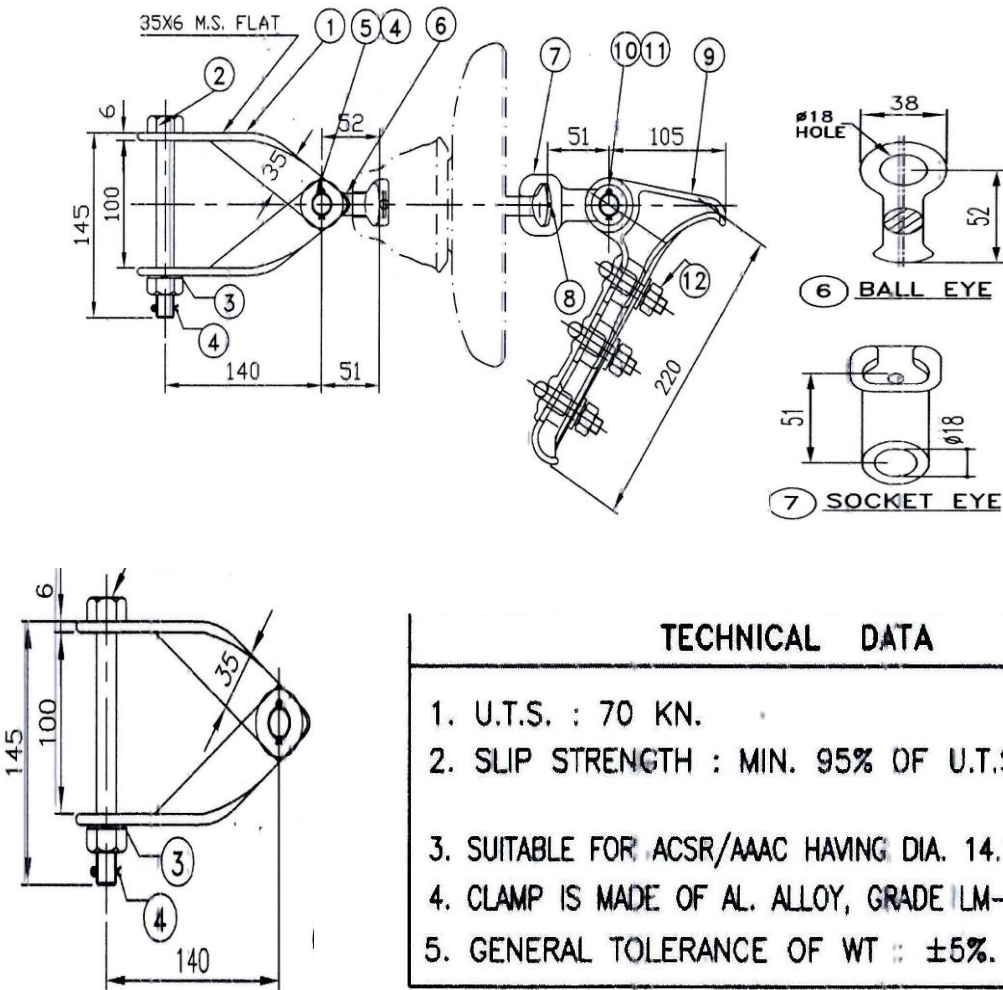
Following documents shall be prepared based on TPCODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- a) Completely filled in Technical Particulars.
- b) General description of the equipment and all components including brochures.
- c) Type test Certificates
- d) Experience List.

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| Initiator |  | HOG (Engineering) |  |
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| <b>TPCODL</b><br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | <b>TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA</b>          |                                    |                            |
|   | <b>TECHNICAL SPECIFICATION</b>   |                                    |                            |
| Doc. Title  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b> |                                    |                            |
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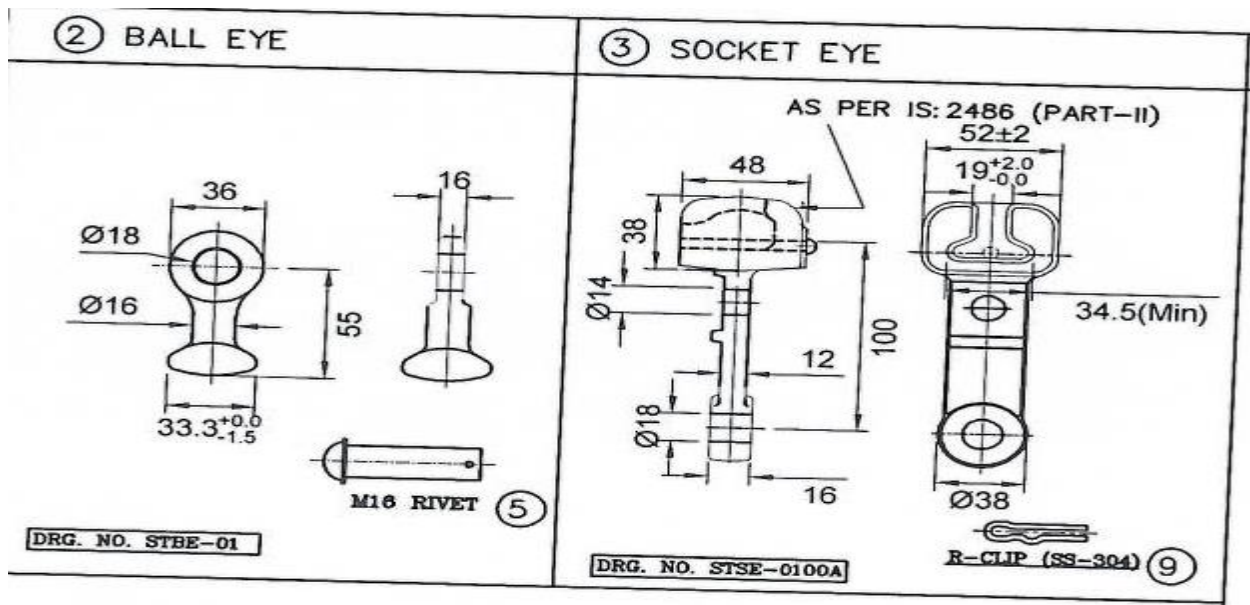
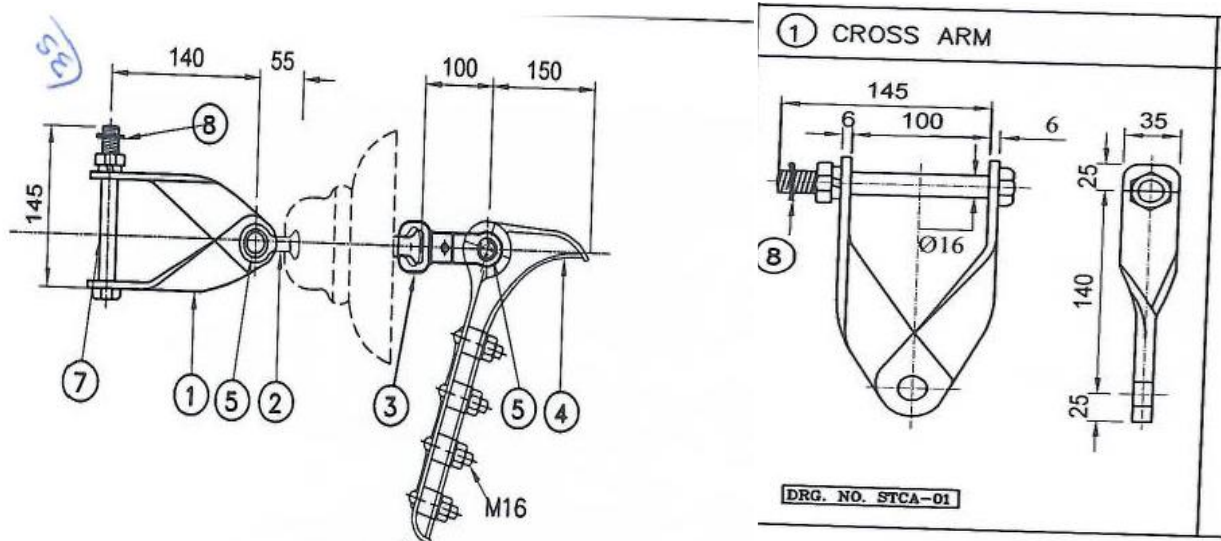
### Drawing 70KN -3 Bolted




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| Initiator |  | HOG (Engineering) |  |
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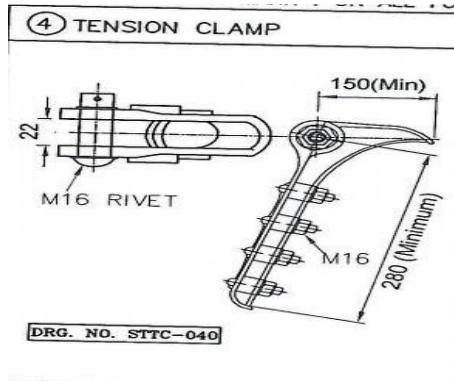
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|---|--|------------------------------------|----------------------------|
| <b>TPCODL</b><br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | <b>TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA</b>          |                                    |                            |
|   | <b>TECHNICAL SPECIFICATION</b>   |                                    |                            |
| Doc. Title  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b> |                                    |                            |
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| Prepared by:<br>Vaibhav Srivastava                      | Reviewed By:<br>Niranjan Khuntia                                       | Approved By:<br>Khajan C. Bhardwaj | Issued By:<br>Pourush Garg |

### Hardware fitting 90KN 4Bolted



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| Initiator |  | HOG (Engineering) |  |
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|--|--|------------------------------------|--|
|  <b>TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA</b> |  |                                    |  |
| <b>TECHNICAL SPECIFICATION</b>   |  |                                    |  |
| Doc. Title   | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b> |                                    |  |
| Doc. No  | ENG-HV-25  |                                    |  |
| Rev. No  | 00   |                                    |  |
| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                                       | Approved By:<br>Khajan C. Bhardwaj | Eff. Date: 05.04.2021<br>Page 10 of 12<br>Issued By:<br>Pourush Garg |



**\* TECHNICAL DATA \***

1. U.T.S. OF HARDWARE FITTING : 90 KN
2. MECHANICAL STRENGTH OF TENSION CLAMP : 90 KN
3. SLIP STRENGTH OF TENSION CLAMP : 95% UTS OF CONDUCTOR
4. BALL & SOCKET DESIGNATION : 16 mm AS PER I.S.: 2486, PART-II.
5. SPECN. TO WHICH H/W FITTING CONFORM – I.S.: 2486, PART-I.
6. ALL FERROUS PARTS (EXCEPT SPRING WASHER) SHALL BE HOT DIP GALVANISED CONFORMING TO I.S.: 2633 AND SPRING WASHER ELECTRO GALVANISED CONFORMING TO IS:1573, SERVICE COND. (Hardware:610gm/ sq mtr. & Fastner:305gm/sq mtr.)

After the approval 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 of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser.

**HARDWARE FITTINGS 70 KN DISC (T & C TYPE) FOR WOLF/DOG CONDUCTOR (fig-1)**

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.       |              | √                      | √                |
| 4     | Installation Instructions                      |              | √                      | √                |
| 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.

**24. GUARANTEED TECHNICAL PARTICULARS**

|           |  |                   |  |
|-----------|--|-------------------|--|
| Initiator |  | HOG (Engineering) |  |
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|--|---|------------------------------------|
| <br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA  |                                    |
|  | TECHNICAL SPECIFICATION                                 |                                    |
| Doc. Title   | Specification for B&S type Hardware fitting 70KN & 90KN |                                    |
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| Prepared by:<br>Vaibhav Srivastava   | Reviewed By:<br>Niranjan Khuntia                        | Approved By:<br>Khajan C. Bhardwaj |
|  |   | Issued By:<br>Pourush Garg         |


**GUARANTEED TECHNICAL PARTICULARS FOR 33 KV H/W FITTINGS (B&S) 70KN/90 KN:**

| Sl.No. | Description   | Requirements              |
|--------|---|---------------------------|
| 1.     | Manufacturer Name & Address                                       | ↑<br>↓                    |
| 2.     | Standard Specification to which Hard ware Fittings shall confirm. |                           |
| 3.     | Ultimate strength   |                           |
| 4.     | Dimensions in accordance with                                     |                           |
| 5.     | Material used and reference to Standard:                          |                           |
| i)     | Cross arm Strap   |                           |
| ii)    | Ball Eye  |                           |
| iii)   | Socket Eye  |                           |
| iv)    | Bolted type tension clamp & its keeper                            |                           |
| 6.     | Galvanised conform to   |                           |
| 7.     | Weight of Fittings  | TO BE FURNISHED BY BIDDER |
| 8.     | Tolerance in dimension if any                                     |                           |
| 9.     | Manufacturer trade mark to be embossed on the sets                |                           |
| 10.    | Specific drawing to be enclosed.                                  |                           |

**NB.**

| Sl.No. | Description   | Bidders Offer |
|--------|---|---------------|
| 1.     | Manufacturer Name & Address                                       | ↑<br>↓        |
| 2.     | Standard Specification to which Hard ware Fittings shall confirm. |               |
| 3.     | Ultimate strength   |               |
| 4.     | Dimensions in accordance with                                     |               |
| 5.     | Material used and reference to Standard:                          |               |
| i)     | Cross arm Strap   |               |
| ii)    | Ball Eye  |               |
| iii)   | Socket Eye  |               |
| iv)    | Bolted type tension clamp & its keeper                            |               |
|        |   |               |

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| <br>TPCODL<br>TP CENTRAL ODISHA DISTRIBUTION LIMITED | TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA<br><b>TECHNICAL SPECIFICATION</b> |                                    |                            |
|  | <b>Specification for B&amp;S type Hardware fitting 70KN &amp; 90KN</b>                   |                                    |                            |
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| Prepared by:<br>Vaibhav Srivastava   |  |                                    |                            |

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| 6.  | Galvanised conform to   |  |
| 7.  | Weight of Fittings  |  |
| 8.  | Tolerance in dimension if any   |  |
| 9.  | Manufacturer trade mark to beembossed on the sets   |  |
| 10. | Specific drawing to be enclosed.  |  |
| N.B | All ferrous fittings and the parts other than those of stainless steel , shall be galvanized. |  |

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

Seal of the Company:

Signature

Designation

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| Prepared By<br>Priyanka Dash  | Reviewed By<br>Niranjana Khuntia                              | Approved By<br>Khajan C. Bhardwaj | Issued By<br>Pourush Garg |

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| 1 | <b>SCOPE:</b>                | This specification covers the technical requirements of design, manufacture, performance, testing at manufacturer's works, packing & forwarding, supply and unloading at store/ site, performance of Ball and Socket Disc polymer insulator complete with all the accessories for trouble free and efficient performance.   |
| 2 | <b>APPLICABLE STANDARDS:</b> | <p>Insulator shall comply with the requirements stated in the latest editions of the following standards-</p> <ul style="list-style-type: none"> <li>a) IEC: 61109: Definition, test methods and acceptance criteria for composite insulators for A.C. overhead lines above 1000V.</li> <li>b) IS: 2071/ IEC: 60060-1: Methods of High Voltage Testing</li> <li>c) IS: 2486/ IEC: 60120/IEC: 60372: Specification for insulator fittings for overhead power lines with a nominal voltage greater than 1000V General Requirements and Tests Dimensional Requirements locking devices</li> <li>d) IEC: 60575: Thermal Mechanical Performance test and mechanical performance test on string insulator units.</li> <li>e) IS: 13134/ IEC: 60815: Guide for the selection of insulators in respect of polluted condition.</li> <li>f) IEC: 60433: Characteristics of string insulator units of the long rod type</li> <li>g) IS: 14329-1995: Malleable Iron Castings</li> <li>h) IS: 60437: Methods of RI Test of HV insulators</li> <li>i) STRI guide 1.92/1: Hydrophobicity Classification Guide.</li> <li>j) CISPR:18-2 part: Radio interference characteristics of overhead power lines and high-voltage equipment</li> <li>k) IS: 8263/ IEC: 260437: Methods of RI Test of HV Insulators</li> <li>l) ANSI C29 13-2000: Standard for insulators – Composite-Distribution Dead-end type</li> <li>m) IS: 4759/ISO: 1459/ ISO: 1461: Hot dip zinc coatings on structural steel &amp; other allied products.</li> <li>n) IS: 2629/ISO: 1461(E): Recommended Practice for Hot, Dip Galvanization for iron and steel.</li> <li>o) IS: 6745/ISO: 1460: Determination of Weight of Zinc Coating on Zinc coated iron and steel articles.</li> <li>p) IS: 3203/ISO: 2178: Methods of testing of local thickness of electroplated coatings.</li> <li>q) IS: 2633: Testing of Uniformity of Coating of zinc coated articles.</li> <li>r) ASTM D 578-05: Standard specification for glass fiber strands.</li> <li>s) ASTM E 1131-03: Standard test method for compositional analysis by Thermo-gravimetric</li> <li>t) IS: 4699: Specification for refined secondary zinc</li> </ul> |

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| 3 | <b>CLIMATIC CONDITIONS OF THE INSTALLATION</b> | <p>The service conditions shall be as follows:</p> <ol style="list-style-type: none"> <li>1. Maximum altitude above sea level 1,000m</li> <li>2. Maximum ambient air temperature 50°C</li> <li>3. Maximum daily average ambient air temperature 35°C</li> <li>4. Minimum ambient air temperature 0°C</li> <li>5. Maximum relative humidity 95%</li> <li>6. Average number of thunderstorm days per annum (isokeraunic level) 70</li> <li>7. Average number of rainy days per annum 120</li> <li>8. Average annual rainfall 150cm</li> <li>9. Earthquakes of an intensity in horizontal direction - equivalent to seismic acceleration of 0.3g</li> <li>10. Earthquakes of an intensity in vertical direction - equivalent to seismic acceleration of 0.15g<br/>(g being acceleration due to gravity)</li> <li>11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr.</li> </ol> <p>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.</p> <p>Therefore, Outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere</p> <p>The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1 g.</p> |
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| <b>4.0 GENERAL TECHNICAL REQUIREMENTS</b> |  |      |  |
|---|--|------|--|
| Sl No.                                    | Description  | Unit | Requirements                                   |
| 1   | Type of Insulator  |      | Polymeric 11 kV Ball and Socket Disc Insulator |
| 2   | Standard according to which the insulators manufactured and tested |      | IEC 61109                                      |
| 3   | Material of housing and weather sheds                              |      | High voltage grade Silicone Rubber             |
| (a)                                       | Material of Core (FRP rod)   | kV   | ECR BORON FREE                                 |
| (b)                                       | Material of end fittings   | Hz   | SGI Cast/Forged Steel                          |
| (c)                                       | Sealing compound for end fittings                                  |      | Silicone Sealant                               |
| 4   | Color of housing   | KN   | Grey   |
| 5   | Electrical characteristics   |      |  |
| (a)                                       | Nominal System Voltage   | kV   | 11   |
| (b)                                       | Highest System Voltage   | kV   | 12   |
| (d)                                       | Rated Frequency  | Hz   | 50   |

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| (f) | Wet power frequency withstand voltage                      | kV (rms)   | 35                           |
| (g) | Dry power Frequency withstand Voltage                      | KV (rms)   | 60                           |
| (h) | Dry power frequency Flashover voltage                      | KV(rms)    | 75                           |
| (i) | Wet power frequency Flashover voltage                      | KV(rms)    | 45                           |
| (j) | Dry lightning impulse withstand voltage                    | kV         | Positive -75<br>Negative-80  |
| (k) | Dry lightning impulse flashover voltage                    | KV         | Positive -95<br>Negative-100 |
| (l) | Visible Discharge Test Voltage(PF)                         | kV         | 9                            |
| (m) | RIV at 1MHZ when energized at 10KV RMS under Dry condition | Micro volt | Less than 50Micro volt       |
| (n) | Minimum creepage distance                                  | mm         | 320                          |
| (o) | Minimum Dry arc Distance                                   | mm         | 170                          |
| (p) | Inclined plane tracking and erosion resistance of housing  | kV         | 4.5kV for 360 minutes        |
| (q) | FRP rod leakage current at 175 V/mm                        | mA         | <0.05Ma                      |
| (r) | Minimum Failing load                                       | kN         | 70                           |
| (s) | Dia of FRP rod   |            | 16                           |
| (t) | Length of FRP Rod(Min)                                     |            | 200                          |
| (u) | Minimum Thickness of Housing                               | mm         | 3                            |
| (v) | Minimum No.of Weather sheds                                | No's       | 3                            |
| (w) | Dia of weather shed  | mm         | 100                          |
| (x) | Type of shed   |            | Aerodynamic                  |
| (y) | Method of fixing shed to housing                           |            | Injection Moulding           |

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| 5   | <b>GENERAL CONSTRUCTIONS</b> | Polymeric Insulators shall be designed to meet the high quality, safety and reliability and are capable of withstanding a wide range of environmental conditions. Polymeric Insulators shall consist of THREE parts, at least two of which are insulating parts:- (a) Core- the internal insulating part (b)Housing- the external insulating part (c)Metal end fittings.   |
| 5.1 | <b>CORE</b>                  | Core shall be a glass-fiber reinforced epoxy resin rod of high strength (FRP rod). Glass fibers and resin shall be optimized in the FRP rod. Glass fibers shall be Boron free electrically corrosion resistant (ECR) glass fiber (minimum 80%) and shall exhibit both high electrical integrity and high resistance to acid corrosion. FRP Rod Diameters Should be minimum 16mm for 70KN ball and socket insulator. The matrix of the FRP rod shall be Hydrolysis resistant. The FRP rod shall be manufactured through Pultrusion process. The FRP rod shall be void free. |

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| 5.2 | <b>POLYMER HOUSING</b>   | <p>The FRP rod shall be covered by a seamless sheath of high voltage grade Silicone rubber housing. It shall be one- piece housing using only Injection Molding process to cover the core. Primer should be used to bond the housing with FRP rod. The housing shall be designed to provide the necessary creepage distance and protection against environmental influences. Housing shall conform to the requirements of IEC 61109/93-93 with latest amendments. It shall be extruded or directly moulded on core and shall have chemical bonding with the FRP rod. The strength of the bond shall be greater than the tearing strength of the polymer. Sheath material in the bulk as well as in the sealing / bonding area shall be free from voids. All surfaces shall be clean, smooth, without cuts, abrasions or projections. No part shall be subjected to excessive localized pressure. The insulator and metal parts shall be so designed and manufactured that it shall avoid local corona formation and not generate any radio interference beyond specified limit under the operating conditions.</p>  |
| 5.3 | <b>WEATHERSHEDS</b>      | <p>The composite polymer weathersheds made of high voltage grade Silicone rubber polymer shall be molded as part of the sheath and shall be free from imperfections. It should protect the FRP rod against environmental influences, external pollution and humidity. The strength of the weather shed to sheath interface shall be greater than the tearing strength of the polymer. The Weathersheds should have silicon content of minimum 30% by weight. The interface, if any, between sheds and sheath (housing) shall be free from voids. Housing and weather shed material shall have tensile strength of 3 MPa with 400% elongation minimum and tear strength of 16N/mm.</p>   |
| 5.4 | <b>HARDWARE FITTINGS</b> | <p>a) Ball pin and socket couplings: Ball pin and socket shall be of forged steel and dimensions are as specified in IS 2486 (Part-2): 1989. Insulator metal caps shall be made of malleable cast iron conforming to IS 14329: 1995.</p> <p>b) Locking device of the coupling: The security clips to be used as a locking device for ball and socket coupling shall be 'R' shaped hump type or 'W' type as per IS 2486. The locking device shall be resilient, corrosion resistant, and of suitable mechanical strength. Material to be used for 'W' locking clip is phosphor bronze and for 'R' type locking clip is stainless steel. The hardness and temper of material are important for their satisfactory operation. The locking devices shall retain their ability after being operated from the locking to the coupling position at least twenty times at normal temperature. They should be effective at the lowest temperature likely to be encountered in service. Socket for use with W-clips have the lower edge of the rectangular slot at the level of bottom of the socket. The slot is so shaped that it will accept the W-clip and retain it in two distinct positions when operated for coupling and locking. The shape of the W-clip is such that complete withdrawal when moving from the locking to the coupling position prevented</p> <p>c) All ferrous parts shall be hot dip galvanized in accordance with the latest edition of IS 2629-1985. The Zinc to be used for galvanizing shall conform to grade Zn 99.99 as per IS 209-1992. The Zinc</p> |

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|     |  | coating shall be uniform, smoothly adherent, reasonably bright, continuous and free from impurities such as flux, ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the design dimensional requirement.  |
| 6.0 | <b>MARKING:</b>                                  | Each insulator box shall be legibly and indelibly marked with "PO no. with moth and year of manufacturing, "Property of TPCODL, Bhubaneswar", "CODE NUMBER", along with following:<br>a. Manufacturer's name<br>b. Type designation or serial no.<br>c. Minimum failing load in kN<br>d. No. of relevant standard<br>e. Month and year of manufacture<br>f. Country of manufacture<br>Each insulator shall be embossed with Manufacturer name/Logo.   |
| 7.0 | <b>TESTS</b>                                     | All routine, acceptance and type tests shall be witnessed by the purchaser/his authorized representative. Following tests for 11kV Ball and Socket Disc polymer insulator should be done as per relevant standards:   |
| 7.1 | <b>TYPE TESTS OF COMPLETE POLYMER INSULATORS</b> | <ul style="list-style-type: none"> <li>• Sudden load release Test.</li> <li>• Dry lightning impulse withstand voltage test.</li> <li>• Wet power frequency test.</li> <li>• Mechanical failing load test.</li> <li>• Radio interference test.</li> <li>• Mechanical performance test</li> </ul> U.V Resistance as per ASTM G 53: 1000 Hrs - UV Light for 8 Hours and condensation for 4 hours in a continuous cycle. Elongation to be limited to 20% (% Elongation to break before and after the test). <ul style="list-style-type: none"> <li>• Salt Fog test: On insulators for 1000 hours as per IEC.</li> <li>• Galvanization test.</li> <li>• Visual examination.</li> <li>• Verification of dimensions.</li> <li>• Bending test.</li> <li>• Verification of the locking system or the tightness of the interface between end fitting and insulator housing.</li> <li>• Assembled core load time test.</li> <li>• Determination of the average failing load of the core of the assembled insulator.</li> </ul> |
| 7.2 | <b>TYPE TESTS ON SILICONE RUBBER</b>             | <ul style="list-style-type: none"> <li>• Tensile Strength &amp; Elongation</li> <li>• Tear Strength</li> <li>• Inclined Plane Tracking &amp; Erosion</li> <li>• Volume resistivity</li> <li>• Dielectric Strength</li> <li>• Dielectric Constant</li> <li>• Density</li> <li>• Hardness</li> </ul>  |

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|     |                                   | <ul style="list-style-type: none"> <li>• Arc Resistance</li> <li>• Silicone content</li> <li>• Flammability</li> <li>• Resistance to weathering &amp; UV.</li> <li>• Limiting oxygen index test.</li> <li>• Specific gravity.</li> </ul>  |
| 7.3 | <b>TYPE TESTS ON FRP RODS</b>     | <ul style="list-style-type: none"> <li>• Verification of dimensions.</li> <li>• Specific Gravity</li> <li>• Glass Content</li> <li>• Water Diffusion Test</li> <li>• Hardness</li> <li>• Dye Penetration Test.</li> <li>• Flexural strength.</li> <li>• Water absorption.</li> <li>• Brittle fracture resistance test.</li> <li>• Visible discharge test.</li> <li>• Dry lightning impulse withstand voltage test.</li> <li>• Wet power frequency withstand voltage test.</li> <li>• Power Arc test.</li> <li>• Accelerated weathering test.</li> <li>• Tracking &amp; erosion test.</li> </ul>   |
| 7.4 | <b>TYPE TESTS ON END FITTINGS</b> | <ul style="list-style-type: none"> <li>• Thickness of Zinc Coating</li> <li>• Uniformity of Zinc Coating</li> <li>• Micro-structural of metal fitting.</li> </ul>   |
| 7.5 | <b>DESIGN TESTS</b>               | <p>For composite insulators it is essential to carry out design test as per clause 4.1 of IEC 61109 / 92-93 with latest amendments. The design tests are intended to verify the suitability of the design, materials and method of manufacture (technology). When a composite insulator is submitted to the design tests, the result shall be considered valid for the whole class of insulators, which are represented by the one tested and having the following characteristics:</p> <ul style="list-style-type: none"> <li>• The materials for the core, and sheds and same manufacturing method;</li> <li>• The material of the fittings, the same design, the same method of attachment;</li> <li>• Polymer insulator should have greater layer thickness of the shed material over the core (including a sheath where used);</li> <li>• Polymer insulator should have smaller ratio of the highest system voltage to insulation length;</li> <li>• Polymer insulator should have smaller ratio of all mechanical loads to the smallest core diameter between fittings</li> <li>• Polymer insulator should have greater diameter of the core.</li> </ul> <p>The tested composite insulators shall be identified by a drawing giving all the dimensions with the manufacturing tolerances.</p> <p>Manufacturer should submit test reports for Design Tests as per IEC – 61109 (clause – 5) along with the bid. Additionally following tests shall be carried out or reports for the tests shall be submitted after award of contract: UV test: the test shall be carried out in line with clause 7.2 of ANSI C29.13.</p> <p>In addition, chemical composition test for silicon content would also be</p> |

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| Prepared By<br>Priyanka Dash   | Reviewed By<br>Niranjan Khuntia                               | Approved By<br>Khajan C. Bhardwaj | Issued By<br>Pourush Garg |

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|      |  | added in the testing list.   |
| 7.6  | <b>ROUTINE TESTS</b>                       | <ul style="list-style-type: none"> <li>• Visual Examination (Free from void, cavity, foreign particle and scratch/nick spot).</li> <li>• Mechanical Routine Test</li> <li>• Electrical Routine Test</li> </ul>   |
| 7.7  | <b>ACCEPTANCE TESTS</b>                    | <ul style="list-style-type: none"> <li>• End Sealing test (FRP rod and Silicone rubber housing).</li> <li>• Visual examination (Free from void, cavity, foreign particle and scratch/nick spot).</li> <li>• Verification of dimensions.</li> <li>• Galvanizing Tests.</li> <li>• Bending load test.</li> <li>• Mechanical performance test.</li> <li>• Mechanical Failing Load test.</li> <li>• Dry power frequency withstand voltage test</li> <li>• Wet power frequency withstand voltage test.</li> </ul>   |
| 8.0  | <b>TYPE TEST CERTIFICATES:</b>             | The Bidder shall furnish the type test certificates of the 11 KV Ball and Socket Disc polymer Insulators for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at <b>CPRI/ERDA/International Laboratory/NABL</b> as per the relevant standards. Type tests 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, same shall be carried out without any cost implication to TPCODL.   |
| 9.0  | <b>PRE DISPATCH INSPECTION:</b>            | <p>The material shall be subject to inspection by a duly authorized representative of the TPCODL. 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 TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL 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 TPCODL.</p> <p>Following documents shall be sent along with material</p> <ol style="list-style-type: none"> <li>a) Test reports</li> <li>b) MDCC issued by TPCODL</li> <li>c) TPCODL Invoice in duplicate</li> <li>d) Packing list</li> <li>e) Drawings &amp; catalogue</li> <li>f) Guarantee / Warrantee card</li> <li>g) Delivery Challan</li> <li>h) Other Documents (as applicable).</li> </ol> |
| 10.0 | <b>INSPECTION AFTER RECEIPT AT STORES:</b> | The material received at TPCODL, 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 Engineering & contracts department.  |
| 11.0 | <b>GUARANTEE:</b>                          | Bidder shall stand guarantee towards design, materials, workmanship &  |

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| <b>TPCODL</b><br><small>TP CENTRAL ODISHA DISTRIBUTION LIMITED</small> | <b>TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA</b> |                                   |                           |
|  | <b>TECHNICAL SPECIFICATION</b>                                |                                   |                           |
| Document Title   | Specification for 11KV polymeric Disc Insulator 70KN          |                                   |                           |
| Document No.   | ENG-HV-011  | Eff. Date: 1.03.2021              |                           |
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| Prepared By<br>Priyanka Dash   | Reviewed By<br>Niranjana Khuntia                              | Approved By<br>Khajan C. Bhardwaj | Issued By<br>Pourush Garg |

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|      |                                       | <p>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.</p> <p>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.</p> |
| 12.0 | <b>PACKING:</b>                       | 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 | <b>TENDER SAMPLE:</b>                 | 1 insulator sample to be provided during submission of technical bid.  |
| 14.0 | <b>QUALITY CONTROL</b>                | 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.  |
| 15.0 | <b>MINIMUM TESTING FACILITIES:</b>    | The tenderer must clearly indicate what testing facilities are available in the works of the manufacturer and whether facilities are adequate to carry out all Routine & acceptance Tests. These facilities should be available to TPCODL Engineers if deputed or carry out or witness the tests in the manufacturer works. If any test cannot be carried out at the manufacturer's work, the reasons should be clearly stated in the tender. The insulators shall be tested in accordance with the procedure detailed in IEC 61109 / 92-93 with latest amendments.  |
| 16.0 | <b>MANUFACTURING ACTIVITIES:</b>      | 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 | <b>SPARES, ACCESSORIES AND TOOLS:</b> | Not Applicable.  |
| 18.0 | <b>DRAWINGS AND DOCUMENTS:</b>        | Following documents shall be prepared based on TPCODL specifications and statutory requirements<br>with complete BOM and shall be submitted with the bid:  |

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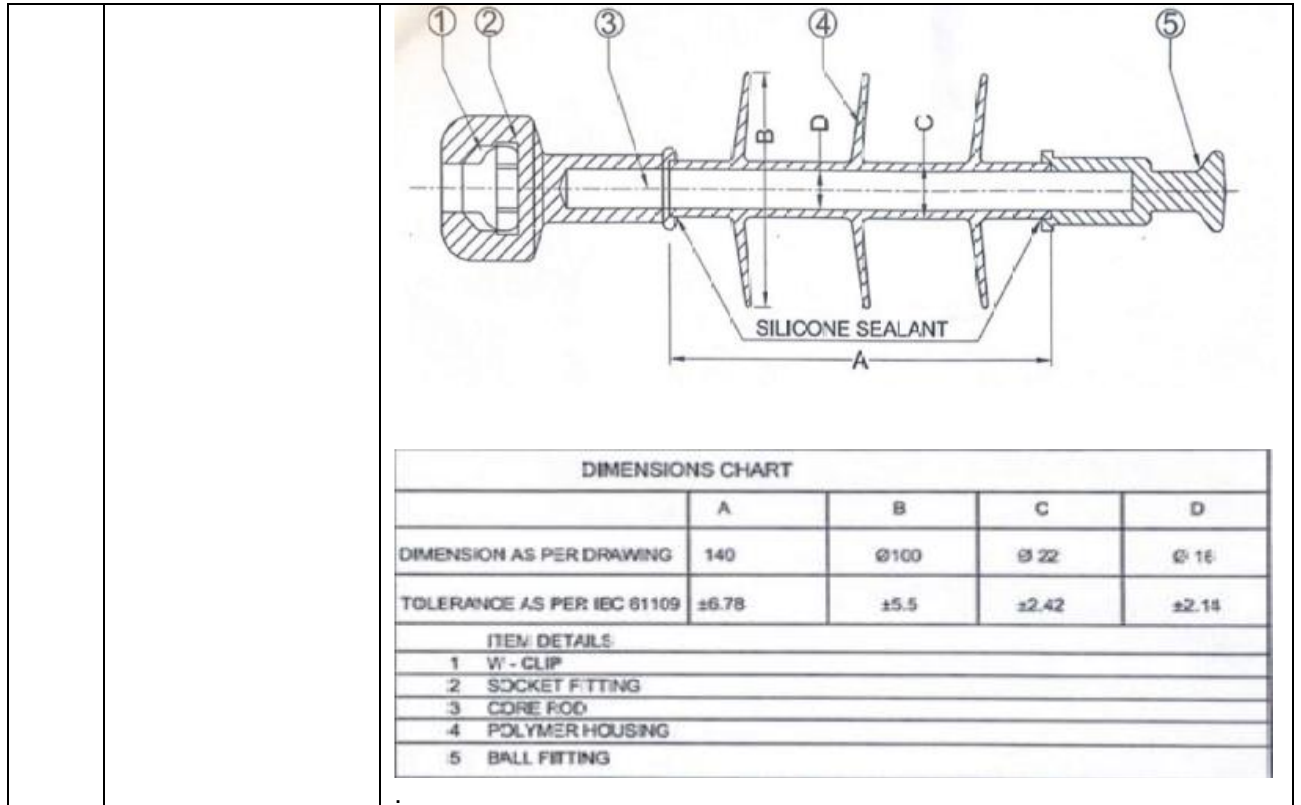


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| Prepared By<br>Priyanka Dash  | Reviewed By<br>Niranjan Khuntia                               | Approved By<br>Khajan C. Bhardwaj | Issued By<br>Pourush Garg |

|       |  | <p>a) Completely filled in Technical Particulars<br/> b) General description of the equipment and all components including brochures<br/> c) Generalized drawing for Disc Insulator<br/> d) Bill of Material<br/> e) Type test Certificates<br/> f) Experience List.</p> <p>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.</p> <p>Following Drawings/Documents shall be submitted after the award of the contract:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">S. No</th> <th style="width: 40%;">Description</th> <th style="width: 15%;">For Approval</th> <th style="width: 15%;">For Review Information</th> <th style="width: 25%;">Final Submission</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Technical Parameters</td> <td style="text-align: center;">√</td> <td></td> <td style="text-align: center;">√</td> </tr> <tr> <td style="text-align: center;">2</td> <td>General Arrangement drawings</td> <td style="text-align: center;">√</td> <td></td> <td style="text-align: center;">√</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Terminal and connection drawings</td> <td style="text-align: center;">√</td> <td></td> <td style="text-align: center;">√</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Manual catalogue</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td style="text-align: center;">5</td> <td>Installation/Commissioning Manuals</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td style="text-align: center;">6</td> <td>Instructions for use</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td style="text-align: center;">7</td> <td>Transport/shipping dimension drawing</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td style="text-align: center;">8</td> <td>QA &amp; QC Plan</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> </tr> <tr> <td style="text-align: center;">9</td> <td>Routine, Acceptance and Type test Certificates</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> </tr> </tbody> </table> <p>All the Documents and Drawings shall be in English Language.<br/> <b>Instruction Manuals:</b> 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</p> | S. No                  | Description      | For Approval | For Review Information | Final Submission | 1 | Technical Parameters | √ |  | √ | 2 | General Arrangement drawings | √ |  | √ | 3 | Terminal and connection drawings | √ |  | √ | 4 | Manual catalogue |  | √ |  | 5 | Installation/Commissioning Manuals |  | √ |  | 6 | Instructions for use |  | √ |  | 7 | Transport/shipping dimension drawing |  | √ |  | 8 | QA & QC Plan | √ | √ | √ | 9 | Routine, Acceptance and Type test Certificates | √ | √ | √ |
|-------|--|--|------------------------|------------------|--------------|------------------------|------------------|---|----------------------|---|--|---|---|------------------------------|---|--|---|---|----------------------------------|---|--|---|---|------------------|--|---|--|---|------------------------------------|--|---|--|---|----------------------|--|---|--|---|--------------------------------------|--|---|--|---|--------------|---|---|---|---|--|---|---|---|
| S. No | Description                                    | For Approval   | For Review Information | Final Submission |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 1     | Technical Parameters                           | √  |                        | √                |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 2     | General Arrangement drawings                   | √  |                        | √                |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 3     | Terminal and connection drawings               | √  |                        | √                |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 4     | Manual catalogue                               |  | √                      |                  |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 5     | Installation/Commissioning Manuals             |  | √                      |                  |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 6     | Instructions for use                           |  | √                      |                  |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 7     | Transport/shipping dimension drawing           |  | √                      |                  |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 8     | QA & QC Plan                                   | √  | √                      | √                |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |
| 9     | Routine, Acceptance and Type test Certificates | √  | √                      | √                |              |                        |                  |   |                      |   |  |   |   |                              |   |  |   |   |                                  |   |  |   |   |                  |  |   |  |   |                                    |  |   |  |   |                      |  |   |  |   |                                      |  |   |  |   |              |   |   |   |   |  |   |   |   |

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| Document No.   | ENG-HV-011  | Eff. Date: 1.03.2021              |                           |
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| Prepared By<br>Priyanka Dash                                       | Reviewed By<br>Niranjan Khuntia                               | Approved By<br>Khajan C. Bhardwaj | Issued By<br>Pourush Garg |



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| 19.0 | <b>GUARANTEED TECHNICAL PARTICULARS:</b> | Sl No. | Description  | Requirements                   | As furnished by Bidder |
|      |  | 1      | Type of insulator  | Polymeric Ball and Socket Disc | Bidder has to submit   |
|      |  | 2      | Standard according to which the insulators manufactured and tested | IEC 61952 & IEC 61109          |                        |
|      |  | 3      | Material of Housing and Weather sheds                              | High voltage grade             |                        |
|      |  | 4      | Material of Core (FRP Rod)   | ECR BORON                      |                        |
|      |  | 5      | Material of end fittings   | SGI Cast/ Forged               |                        |
|      |  | 6      | Sealing compound for end fittings                                  | Silicone Sealant               |                        |
|      |  | 7      | Colour of housing  | Grey                           |                        |
| 8    | Electrical characteristics               |        |  |                                |                        |

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|  |  | 9  | Nominal system voltage                      | 11kV   |  |  |
|  |  | 10 | Highest system voltage                      | 12kV   |  |  |
|  |  | 11 | Rated frequency                             | 50Hz   |  |  |
|  |  | 13 | Wet power frequency with stand voltage      | 35kV (rms)   |  |  |
|  |  | 14 | Impulse with stand voltage                  | 75kV (rms)   |  |  |
|  |  | 15 | Power frequency puncture with stand voltage | 1.3 times the actual dry flashover voltage of the unit |  |  |
|  |  | 16 | Visible Discharge test Voltage              | 9 kV   |  |  |
|  |  | 17 | Minimum creepage distance                   | 320mm  |  |  |
|  |  | 18 | Minimum Failing loads                       | 70 kN  |  |  |
|  |  | 19 | FRP rod dia.                                | 16 mm  |  |  |

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| 20.0  | <b>SCHEDULE OF DEVIATIONS</b><br><b>(TO BE ENCLOSED WITH TECHNICAL BID)</b> | <p style="text-align: center;"><b><u>(TO BE ENCLOSED WITH TECHNICAL BID)</u></b></p> <p>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:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">S.No.</th> <th style="width: 25%;">Clause No.</th> <th style="width: 60%;">Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td style="height: 200px;"></td> <td></td> <td></td> </tr> </tbody> </table> <p>We confirm that there are no deviations apart from those detailed above.</p> <p><b>Seal of the Company:</b></p> <p style="text-align: right;"><b>Designation<br/>Signature</b></p> | S.No. | Clause No. | Details of deviation with justifications |  |  |  |
|-------|---|--|-------|------------|--|--|--|--|
| S.No. | Clause No.  | Details of deviation with justifications   |       |            |  |  |  |  |
|       |   |  |       |            |  |  |  |  |

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