

Open Tender Notification

For

Rate Contract for SITC of FRTUs at TPCODL

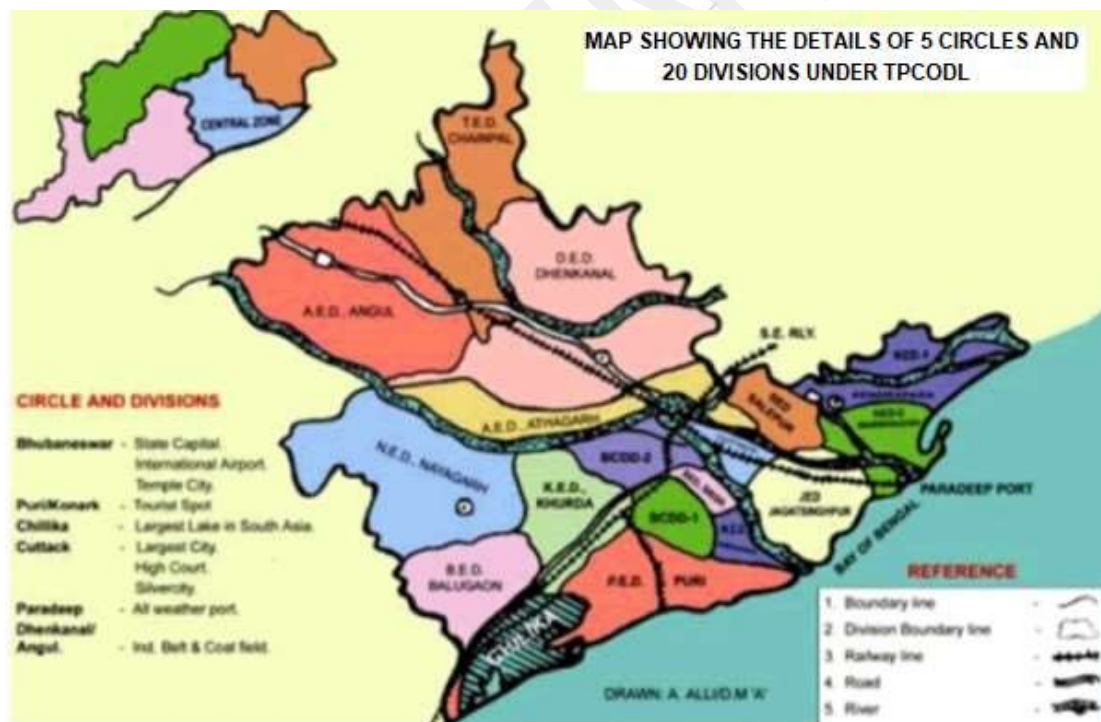
Tender Enquiry No.: TPCODL/P&S/1000002129/2024-25

Due Date for Bid Submission: 05-04-2025 [up to 20:00 Hrs.]

TP Central Odisha Distribution Limited
1st Floor, Anuj Building, Plot No.29, Satya Nagar, Bhubaneswar, Odisha
751007

PREAMBLE

TP Central Odisha Distribution Limited (TPCODL) is a joint venture between Tata Power and the Government of Odisha with the majority stake being held by Tata Power Company (51%). TPCODL is a state electricity distribution utility with sole rights to distribution of electricity in the Central Zone in Odisha covering the distribution circles of Bhubaneswar, Cuttack, Paradeep and Dhenkanal in accordance with the Electricity Act. Tata Power Company has successfully won the bid to own the license for the distribution and retail supply of electricity in Odisha's five circles constituting Central Electricity Supply Utility of Odisha (CESU). It came into operation with effect from 01.06.2020. TPCODL serves a population of 1.36 Crore with Customer Base of 26 Lakh and a vast Distribution Area of 29,354 Sq. Km. The primary business activity includes purchase of power from GRIDCO Ltd at BSP rate and distribute to consumers. The field structure has been presented below:



INFORMATION TO THE BIDDERS TO PARTICIPATE IN E-TENDER SYSTEM OF TPCODL**-: Steps for E-tender submission:-**

Bids are to be submitted only through online e-procurement platform, ARIBA. Any other form of bid submission will not be accepted. Online Link for submission of bid through ARIBA will be sent only after confirmation of payment of tender fee from bidder.

Step 1:

The bidder can get primary information about the tender from the Newspaper advertisement / TPCODL website <www.tpcentralodisha.com> and can download the tender document from the Vendor Zone above website.

Step 2:

Non-Refundable Tender Participation Fee, as indicated in tender document, to be submitted before last date of tender fee payment, in the form of direct deposit/NEFT/RTGS in the following bank account.

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

Step 3:

Eligible and Interested bidder to send an email to TPCODL attaching duly signed and stamped letter on Bidder's letterhead, with following details, expressing their intend to bid against above tender:

SI No	Description	Bidder's Response
i)	Tender Enquiry No.	
ii)	Description of materials / Works Tendered	
iii)	Name and address of the bidding company	
iv)	Name of the authorized contact person	
v)	Contact No. authorized person	
vi)	E-mail Id of the where online ARIBA link to be mailed.	
vii)	Tender Fee details (Amount / NEFT-RTGS UTR No / Date), Ref	
viii)	GST No. of bidder	

E-mail has to be sent to package owner Arabinda Sahu <arabinda.sahu@tpcentralodisha.com> with copy to

Asish Karmakar <Asish.Karmakar@tpcentralodisha.com> before "Last date and time for payment of Tender Participation Fee".

Step 4:

On receipt of the document as mentioned in Step 3 above and after due verification of the same, ARIBA link for participation in the tender will be sent to bidder's mail address from ARIBA system.

Step 5:

In this mail there will be an online link as [Click Here](#) to participate in the tender.

Step 6: Click "[Click Here](#)" to access this event.

Step 7:

If bidder is 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. Also a simple one-page registration screen will open for first time user. All * mark mandatory field to be filled in.

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

If bidder has got User name and password for their other customer, same will not be applicable for TPCODL.

Step 8: You will be able to see the RFQ

Step 9: After review and downloading of all documents click on "[Review Pre-requisites](#)"

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

Step 11: You can see attached pdf tender document 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.

Price schedule is attached in clause no.3.2. 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 in clause 3.2 For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

Step 13: After successfully putting Techno commercial offer and price part then click on "[Submit Entire Response](#)"

Step 13: In addition to above, Bidder shall have to mail to Package owner Arabinda Sahu <arabinda.sahu@tpcentralodisha.com> regarding items for which they have quoted their bid in the following table format before last date of bid submission.

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1.0 Event Information

1.1 Scope of work

Open Tenders are invited through the e-tender bidding process from interested Bidders for entering into One Year Rate Contract for SITC of FRTU as defined below:

Sl. No.	Description of materials	Unit	Qty	EMD Amount (Rs.) *	Tender Fee incl. of GST (Rs.)**
	SITC of FRTUs at TPCODL	EA	60	2,00,000/-	5,000/-
* EMD is exempted for MSMEs registered in the State of Odisha. ** MSMEs registered in the State of Odisha shall pay tender fee of Rs. 1,000/- including GST. For details of MSME norms, pls refer "Annexure VIII". • Quotation in all BOQ items in Price Schedule is mandatory.					

1.2 Availability of Tender Documents

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

1.3 Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website	From 06.03.2025 onwards
(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in "Procedure to Participate in Tender"	20.03.2025
(c)	Last Date and time of receipt of pre-bid queries, if any	25.03.2025
(d)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	29.03.2025
(e)	Last date and time of submission of Bids through AIBA E-Tender Portal	05.04.2025; 20:00 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, Bhubaneswar office the last date of submission of bids and date of opening of bids will be the following working day at appointed times.

1.4 Mandatory documents required along with the Bid:

- 1.4.1 EMD of requisite value and validity
- 1.4.2 Tender Fee in case the tender is downloaded from website
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.
- 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')
- 1.4.9 Signed copy of this RFQ as an unconditional acceptance.

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

1.5 Deviation from Tender

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

1.6 Right of Acceptance/ Rejection

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

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

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

1.7 Qualification Criteria

The bidder should meet the following criteria:

Technical Qualification:

1. The bidder should be either **an OEM** for tendered equipment's or **an authorized channel partner of OEM**. The channel partner is required to submit an Authorization Letter from OEM in this regard. In the case of OEM, the bidder must submit a self undertaking in this regard.
2. The intending bidder must have similar experience as envisaged in this tender of a minimum **50% of the total tender quantity** executed through a **single order / multiple orders** during the **last Five years**. Copy of supply order and client certified completion certificate or document evidencing supply of materials should be submitted to establish. If a bidder is **an authorized channel partner of OEM** against which bidder have submitted OEM's authorization for participation in this tender, supply experience of OEM shall also be considered.
3. **At least two (02) Performance Certificate of Bidder by any Discoms / PSUs / Reputed companies** is to be submitted. The work against these issued certificates should be completed **in last 07 years** from the date of bid submission. In case the bidder has got previous association with TP Discoms for supply of similar product, performance feedback of the same will be solely considered irrespective of the performance certificate issued by bidder's other customers. If a bidder is **an authorized channel partner of OEM** against which bidder have submitted OEM's authorization for participation in this tender, Performance Certificate of OEM shall also be considered.

4. OEM should have the **In-house testing facilities** for acceptance test as per tender specifications. In case of channel partner, they should arrange for inspection at OEM's premises. Self-undertaking to be submitted in this regard. DISCOM reserves the right to inspect the said manufacturing facility as a proof of compliance to this parameter.

Commercial Qualification:

1. The bidder should have **Average Annual turnover of at least Rs. 10 Cr.** in last 3 Financial Year (FY) (2021-22, 2022-23 & 2023-24). Qualification Requirement of Financial Turnover for MSME registered in the State of Odisha shall be reduced to 20% of the existing criteria. CA Audited Turn Over certificate, Audited Profit Loss Statement should be submitted in this regard.
2. Bidder should not be black-listed by any Central / State Government / Public Sector Undertaking in India. Undertaking to be submitted on company's letterhead for the same.
3. The prospective Bidder(s) should be have following certificates
 - a. Valid GST Registration Certificate.
 - b. Valid PAN No.
 - c. Odisha State MSME Certificate (if applicable)

Note :

TPCODL reserves the right to relax qualification criteria without assigning any reason thereof. Also, TPCODL reserve the right to scrutinize and reject any of such existing vendors without assigning reason what so ever may be. In case bidder has previous association with TPCODL for similar products and services, the performance feedback for that bidder by TPCODL's user group shall be considered.

1.8 Marketing Integrity

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

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

1.9 Supplier Confidentiality

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

2.0 Evaluation Criteria

- The bids will be evaluated technically on the compliance to tender terms and conditions.
- The bids will be evaluated commercially on **overall all-inclusive lowest cost for complete tender BOQ** as calculated in Schedule of Items [Annexure I] . TPCODL reserves the right to split the order line item wise and / or quantity wise, among maximum two Bidders. Hence all bidders are advised to quote their most competitive rates. TPCODL reserves the right to revise evaluation and splitting criteria.
- Bidder has to mandatorily quote as per schedule of line item[Annexure-I]. Failing to do so TPCODL may reject the bid. Bidder has to submit a unpriced bid with in part-1 technical bid document, for the each line item that he quote for.

NOTE: In case of a new bidder not registered, 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 3 (Three) parts:

FIRST PART: "EMD" as applicable for the line item(s) 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) favoring 'TP Central Odisha Distribution Limited' payable at Bhubaneswar. The EMD (BG) has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted and the bid as submitted shall be liable for rejection. A separate non-refundable tender fee of stipulated amount also needs to be transferred online through NEFT/ RTGS in case the tender document is downloaded from our website.

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

Account Name: TP Central Odisha Distribution Limited

Bank Name: SBI, IDCO Towers, Bhubaneswar

Bank Account No. : 10835304915

IFSC Code : SBIN0007891

EMD is strictly 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.

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,

1st Floor, Anuj Building, Plot No.29, Satya Nagar, Bhubaneswar, Odisha 751007

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.

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

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

SIGNING OF BID DOCUMENTS:

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

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

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

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

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

3.2 Contact Information

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

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

Communication Details:

Package Owner- Contract Branch

Name: Mr. Arabinda Sahu
Designation: Asst. EE – Contracts
Contact No: 94383-19343
E-Mail ID: arabinda.sahu@tpcentralodisha.com

Engineering Contact Person

Name: Mr. Nirojanalini Garnaik
Contact No: 97774-49901
E-Mail ID: Nirojanalini.Garnaik@tpcentralodisha.com

Escalation Matrix

Name: Mr. Asish Karmakar
Designation: HOD -Contracts
Contact No: 87684-55566
E-Mail ID: Asish.Karmakar@tpcentralodisha.com

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

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply / work 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.

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

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only.

3.5 Period of Validity of Bids

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

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

3.6 Alternative Bids

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

3.7 Modifications and Withdrawal of Bids

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

3.8 Earnest Money Deposit (EMD)

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

The EMD shall be 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 of:

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

Or

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

3.9 Type Tests (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.

4.0 Bid Opening & Evaluation process

4.1 Process to be confidential

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

4.2 Technical Bid Opening

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

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

4.3 Preliminary Examination of Bids/ Responsiveness

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

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

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

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

4.4 Techno Commercial Clarifications

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

4.5 Price Bid Opening

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

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

4.6 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.

Reverse Auction shall be as per the below approach:

No of bidders to be allowed in RA process shall be : Total No of bidders on whom tender would be split PLUS 2 more bidders .

Illustrative example: Total no of qualified bidders is 10 & tender needs to split amongst 4 bidders.

PLUS 2 means $(04 + 02 = 06)$ means lowest 6 bidders i.e., L1 to L6 bidders would be allowed in the RA process. Balance, H1 to H4 bidders would not be allowed in the RA process.

In case – Total no of qualified bidders is equal to or less than the PLUS 2 number, all qualified bidders shall be allowed in the RA process.

Illustrative example: Total no of qualified bidders is 4 & tender needs to split amongst 2 bidders. PLUS 2 means $(02 + 02 = 04)$, so all 4 qualified bidders would be allowed in the RA process.

Illustrative example: Total no of qualified bidders is 3 & tender would be awarded to single party only. PLUS 2 means $(01 + 02 = 03)$, so all 3 qualified bidders would be allowed in the RA process

TPCODL reserves the right to revise above criteria without assigning any reason thereof.

5.0 Award Decision

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

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

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

6.0 Order of Preference/Contradiction:

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

1. Schedule of Items (Annexure I)
2. Post Award Contract Administration (Clause 7.0)
3. Submission of Bid Documents (Clause 3.0)
4. Scope of Work and SLA (if any)
5. Technical Specifications (Annexure II)
6. Inspection Test Plan (if any)
7. Acceptance Form for Participation in Reverse Auction (Annexure VI)
8. General Conditions of Contract (Annexure VII)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

7.1.1. Award of Contract:

After finalization of tender, Rate Contract (RC) shall be issued on successful bidder valid for a **period of 1 year** from the placement of Rate Contract. Release Order (RO) shall be placed as per the requirement of TPCODL.

After RC issuance, the BA shall complete Master Document List (MDL) & Project Detailed, Project Execution Schedule submission & approval, Architecture and other Drawings, Bill of Material, finalization, Functional and Design Specifications (FDS), FAT & SAT documents submission & approval etc within 40 days of issue of the RC. Detail as per Technical specification.

7.1.2. Price / Rates / Taxes:

The Contract price comprising of Supply, Installation, Testing and Commissioning shall remain **FIRM** during the entire Contract period except statutory variation in Taxes, which shall be to the account of TPCODL against Tax Invoice.

7.1.3. Delivery Period/ Project Completion Period:

For Supply: Delivery period shall be **110 days** from date of RO issuance / documents approval, whichever is later.

For ITC : Completion period shall be **60 days** from date of receipt of panel at site as per above delivery schedule / Site Clearance for installation, whichever is later.

7.1.4. Warranty Period:

The BA/ Contractor shall guarantee that, the equipment/materials will be new, unused and in accordance with the Contract documents and free from defects in material and workmanship for a period of **5 Years commencing immediately after the satisfactory commissioning and handing over of the entire works under the RO**. The Contractor's liability shall be to the extent of repair/replacement of such defective equipment/material either arising from faulty design or defective equipment/materials and/or bad workmanship. Such defective equipment/materials shall be handed over to the Contractor for repair or replacement by a new one, unless otherwise repairable at site. The BA/ Contractor shall complete the repair/replacement work within the reasonable time frame intimated by the Order Manager. Detail as per Technical Specification.

7.1.5. Performance Bank Guarantee:

Business Associate (BA) shall submit applicable Performance Bank Guarantee within 30 days of issuance of RO. PBG applicable shall be **5% of Rate Contract Value or 10% of RO Value** valid till end of the Guarantee Period of contract basing on the stipulated delivery period plus additional 1 month claim period. The B.G validity period shall be extended from time to time as may be required under the contract.

7.1.6. Drawing/ Submittal/ Inspection:

The relevant drawings and GTPs/ type test report/ documents should be submitted as specified in technical specification.

7.1.7. Payment Terms:

(A) Due Date For Payments:

The payment shall be payable within **45 days** from the bill certification subject to fulfilment of all the conditions for release of such payment.

(B) Terms of Payment:

(i) FOR SUPPLY COMPONENT:

On supply of Materials/ Equipment, **80% (Eighty percent) of Basic price of Supply** along with 100% taxes and duties shall be paid progressively on delivery of the materials/ equipment at TPCODL's designated Stores / Site location .

Balance **20% (Twenty percent)** of Basic price of Supply shall be paid after successful Commissioning and takeover. *In case of delay in installation due to none site clearance by more than 4 months from the materials receipt; the 20% retention amount will be released.*

(ii) FOR ERECTION COMPONENT:

On successful of Commissioning and takeover of the works, **100% (Hundred percent)** of Erection along with taxes and duties shall be paid.

7.1.8. Liquidated Damages:

If the Contractor fails to supply the Materials/Equipment within the schedule delivery period, TPCODL has the right to levy LD **@1% for each week** of delay or part thereof of the contract price of undelivered portion of the materials / un-finished portion of works executed beyond scheduled delivery period subject to the maximum of **10% of the total un-delivered/ unfinished contract price of a RO.**

7.1.9 Delivery location of materials:

TPCODL Store / Site Location as per direction of Order Manager.

7.1.10 Submittals and Inspection:

The documents approval, Pre Dispatch Inspection, Post Delivery and Inspection of Completed Work shall be as per Technical specification.

7.2 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.

7.3 Ethics

TPCODL is an ethical organization and as a policy TPCODL lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.

TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:

- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer GCC attached for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID: ethics@tpcentralodisha.com.

8.0 Specification and standards:

Attached separately with tender.

9.0 General Condition of Contract

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

10.0 Safety

Safety related requirements as mentioned in our safety Manual is put in the Company's website and same shall be strictly followed.

<http://www.tpcentralodisha.com>

All Associates shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

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ANNEXURE I

Schedule of Items

Attached

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ANNEXURE II
Technical Specifications

Attached

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ANNEXURE II

Schedule of Deviations

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

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

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

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

Seal of the Bidder:

Signature:

Name:

ANNEXURE IV

Schedule of Commercial Specifications

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

S. No.	Particulars	Remarks
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm
1a.	If variable price variation on clause given	Not applicable
1b.	Ceiling	Not applicable
1c.	Inclusive of GST	Yes (18% rate)
1d.	Inclusive of transit insurance	Yes
2.	Delivery	As per Tender
3.	Guarantee clause acceptable	As per Tender
4.	Terms of payment acceptable	As per Tender
5.	Performance Bank Guarantee acceptable	As per Tender
6.	Liquidated damages clause acceptable	As per Tender
7.	Validity (180 days) (From the date of opening of technical bid)	Yes
8.	Inspection during stage of manufacture	Yes
9.	Rebate for increased quantity	No
10.	Change in price for reduced quantity	No
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

Signature & Seal of the Bidder

ANNEXURE V

Checklist of all the documents to be submitted with the Bid

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

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this RFQ	
3	Company profile/ organogram	
4	Signed copy of this RFQ as an unconditional acceptance	
4(i)	Unpriced bid for the line Item that quoted for(Annexure-I) schedule of Item (Un Price bid) (mention quoted/not quoted against the Line item)	
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	

Signature & Seal of the Bidder

Annexure VI**Acceptance Form for Participation In Reverse Auction Event**

(To be signed and stamped by the bidder)

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

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

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

Signature & Seal of the Bidder

Annexure VII

General Conditions of Contract –
Attached separately with the tender.

Annexure VIII**Preferential norms for procurement from Local MSMEs****1) Tender Fees**

To participate in the tender, MSMEs registered in the State of Odisha shall pay Rs.1,000/- including GST towards cost of tender paper.

2) Earnest Money Deposit (EMD)

EMD shall be exempted for MSME registered in the State of Odisha. However, Bidder shall be barred to participate in the tendering process for a period of 2 years in case it backs out post award of the contract.

3) Qualification Requirement for Open Tenders

Qualification Requirement of Financial Turnover for MSME registered in the State of Odisha shall be reduced to 20% of the existing criteria.

For past experience, instead of relying on the volumes / value of earlier Supplies / Projects, assessment of the Bidder shall be done on the basis of feedback from Customers. Past performance experience at Tata Power and its Group Companies shall supersede feedback from other Customers.

4) Reservation for MSME

It shall be mandatory to procure at least 20% of the total volume of the procurement from MSME registered in the State of Odisha (however, it shall not apply where goods/services are not available with the MSME), subject to matching L1 discovered prices and meeting technical specifications including quality requirements.

5) Performance Bank Guarantees

Performance Bank Guarantee for MSME registered in the State of Odisha shall be 25% of the value normally prescribed.

Annexure IX

Safety Policy and Safety Terms and Conditions –
Attached separately with the tender.

Annexure X

Tata Code of Conduct

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

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

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

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Annexure XI



CORPORATE ENVIRONMENT POLICY

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

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

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!





CORPORATE SUSTAINABILITY POLICY

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

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

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

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!



Annexure-XII Quality, Safety, Occupational Health & Environment



TP CENTRAL ODISHA
DISTRIBUTION LIMITED

(A Joint Venture of Tata Power and Government of Odisha)



Integrated Management System Policy

Quality, Safety, Occupational Health, Environment

We at TP Central Odisha Distribution Limited are committed to deliver world class service and reliable power through an energised workforce leading to ever increasing satisfaction of its customers, environmental protection and safe and healthy working condition.

This will be achieved by:

- Complying with all the requirements of ISO-9001, ISO-14001 and ISO-45001 management system standards through engaged workforce
- Complying with applicable Legal requirements
- Continually improving Quality, Environment and Occupational Health & Safety Performance
- Ensuring Environmental protection through Prevention of Pollution
- Conservation of Natural Resources
- Creating a work environment which encourages team work, safe work practices, learning and innovation
- Providing safe and healthy conditions that prevents work related injury and illness
- Eliminating hazards and reducing OH&S Risk
- Ensuring participation and consultation of workers

This policy will be made available to interested parties.

Date: 1st June, 2023

Arvind Singh
Chief Executive Officer

UNDER TAKING

Tender No:

Tender Subject:

This is to certify that

1. Apart from our bid in the name ofwe have not participated in this tender through any other name who is/are related firm (where owner, Partner, Director are same or holding stake in such firm).

2. In case such relation is found out between our firm and any other firm who has participated in this tender, TPCODL reserves right to disqualify bids from all such related firms or cancel Purchase Order placed on such firm/firms.

Signature and company seal of bidder

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
	Nos. of RMU Sites		60								
A	Pre-Wired FRTU Panel										
1	Pre-Wired FRTU Panel with FRTU	Pre-Wired FRTU Panel FRTU Redundancy : Optional I/O Requirement : with 48 DI, 16 DO, 8 AI with Auxiliary relay for each Digital Input & Output Communication Ports per FRTU : 2 Nos. Ethernet ports/CPU (Both the ports should support IEC 104, IEC 61850 & other standard protocols for Communication with Control center and substation IEDs), 2 Nos. RS 485 electrical ports for communication with serial devices over IEC60870-5-103, MODBUS (Serial) protocol in the FRTU. Power supply : Redundant 18-72 VDC (24 V) Supply with MCBs with add-on NO contact Protocols : IEC60870-5-103, IEC 60870-5-104, IEC 61850 (ED1, ED2), RSTP, MODBUS (Serial & TCP/IP), SNMP (V1.0, V2.0, V3.0), NTP & SNTP, MQTT Software Licenses : RTU OS, Application Software, Configuration tools, Diagnostic tools. Logic building Application-Interlock logic, Calculation Package, Application Software Licenses with 1000 Physical I/O tags, 10 IEDs - IEC61850 (ED1, ED2), 10 IEDs - Serial Protocol, RTU shall Communicate to Eight Independent Remote SCADA Master on IEC 60870-5-104 Mounting : To be supplied with prewired panel (Reputed make panel, IP Class : IP55/65/67). Other Accessories : Interface Modules, Pre-fabricated cables for I/O modules, Auxiliaries Relays for Power Supply monitoring, MCBs for all type of Power Supplies	No. / Site		1	60		18%	-	-	-
	Managed Layer2 Ethernet Switch (FRTU Panel)	Managed L2 Ethernet Switch for IED Communication & for SCADA Integration Communication Ports : 8 PORT (with 6 Copper ports and 2 Fibre Ports SM) 100/1000 MBPS Power Supply : Input power supply 18-72 VDC Supply Mounting Arrangement : To be mounted in FRTU Panel Preferred Make : Ruggedcom/Hirschman/MOXA/CISCO Software : Software for Local and Remote configuration of Ethernet Switches - Enabling Monitoring, Configuration, Maintenance and backup of configuration files Shall support : 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol and also suitable for Ring Configuration, IEEE 1613 compliance, IEC 61850, MODBUS, Ethernet/IP Compliance, IEEE1588 V2, Suitable for PRP/HSR architecture, Web-based, Telnet & Command Line Interface (CLI) for quickly configuring major managed functions, SNMPv1/v2c/v3 for different levels of network management, SNTP.	No. / Site		1	60		18%	-	-	-
	Sub Total of FRTU System										-
B	Contact Multiplier Relay with Mounting Base										

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
		Nos. of RMU Sites	60								
1	CMR with Mounting Base for Digital Inputs	Contact Multiplier Relay with Mounting Base: 1. Contact Material : Silver Alloy 2. Contact Rating : 5 Amps. @ 24 V/48 V DC 3. Contact Resistance : 50 Mohms max. (Initial) 4. Dielectric Strength : i) Between open contacts : 500 V RMS ii) Between Contact and Coil : 2000 V RMS 5. Insulation Resistance : 500 Mohms @ 500 V DC, 250 C 6. Operate time at Nominal Voltage : 20 milli seconds 7. Release time at nominal Voltage : 10 milli seconds 8. Ambient temperature : -40°C to +70°C 9. Life expectancy : i) Mechanical : 20 million DC Relay ii) Electrical : More than 100,000 Operations 10. Coil Resistance at Nominal Voltage (DC) : 30,000 Ohms +10% at 250°C 11. Type of Contact Multiplier : 1 NO + 1 NC with LED Indicator + Free wheeling 12. Type of mounting : DIN RAIL MOUNTING WITH SOCKET 13. No. of Poles : 1 NO + 1 NC 14. Other Accessories: Necessary TB, Din rail channel and other accessories	Nos./ Site		20	1200		18%	-	-	-
		Sub Total of Contact Multiplier Relay with Mounting Base									-
C		Interposing Relay with Mounting Base for Digital Output									
1	Interposing Relay for Digital Output	Interposing Relay with Mounting Base for Digital Output 1. Auxiliary Power. : 24 V / 48 V DC 2. Input signal from field : 24 V / 48 V DC 3. Input impedance : More than 50 Kohms 4. Output signal of the RTU : 24 V / 48 V DC 5. Contact mechanism : Self Reset 6. Contact Make & Carry : 30 A for 3 Sec. & 5A continuously at 660V 7. Number of Contacts : 2 NO with LED Indicator + Free wheeling 8. Operating time : Less than 15 msec. 9. Other Accessories: Necessary TB, Din rail channel and other accessories	Nos./ Site		16	960		18%	-	-	-
		Sub Total of Interposing Relay with Mounting Base									-
D		Battery Charger & Battery									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
	Nos. of RMU Sites		60								
1	Battery Charger	Battery Charger : 1. Charger Input Voltage : Single phase (2 wire) voltage 250V AC +30% to -20%, Frequency 50Hz ± 5%. 2. Constant Voltage and Current limiting charger. Charger with inbuilt battery health monitoring is highly preferable. 3. Battery & charger Alarms : Potential free contacts must be available to integrate with SCADA for abnormality if any. Most preferred alarms are like: AC supply fail , DC supply fail, Battery Low, Battery Fail, Battery Charger fail, Battery polarity reverse. Serial Communication is preferred. 4. Charger current : 10 Ampere 5. Efficiency : Not less than 85% at full rated load 6. Current limit : 110% of rated load 7. Regulation : ± 1% 8. Insulation : Not less than 5 mega Ohms. 9. Protection : AC input MCCB & ELBS with input ON/OFF switch and fuses/ contactor.DC output MCCB with output ON/OFF switch and fuses.Current limit protection, soft start feature, surge suppressor.	Nos./ Site		1	60		18%	-	-	-
2	Battery	Battery: 1. Voltage : 24 VDC specified at 27 deg.C. 2. Battery Type : SMF, VRLA with chargers of conventional type 3. Voltage/cell : 2 Volts 4. Capacity of Batteries : 42 AH,10 Amps 5. Connecting cables : Cable size selection should provide the lowest voltage Drop possible between battery system and operating Equipment. 6. Method of charging : Constant voltage method and current limit(variable Current) 7. Efficiency : Not less than 90% at full rated load	Nos./ Site		1	60		18%	-	-	-
	Sub Total of Battery Charger & Battery										-
E	4G Modem cum Router										

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
		Nos. of RMU Sites	60								
1	4G Modem cum Router	4G Modem cum Router: 1. 5G Fall back to 4G/3G/2G 2. Modem should support multiband connectivity with FDD 5G & TDD 5G 3. Support Band 1,3,5,8,40 and Band 48. 4. Cellular interface : Cellular modem should have dual SIM provision for network redundancy /backup . Dual SIM operation ensures that the cellular connection is always available. It will automatically disconnect the 1st SIM card's low/weak cellular connection and will reconnect to establish a stronger connection using the 2nd SIM card. 5. Network Protocols : TCP/IP ,UDP/IP, HTTP, ARP,DHCP, ICMP, SNMP, V1/V2 &V1, NTP, SSL/TLS 6. Routing : Astatic Routing, RIP 1 &2 ,OSPF V2 &V1 7. VPN : Open VPN , IP Sec, L2TP, PPTP, GRE 8. Alarm Message : Device shall have alarm notification on SNMP trap 9. Management /Monitoring : Cellular modem should shall support Local / Remote management through web HTMLS , SSHP & Telnet- 4. It shall support monitoring through system logs & SNMP version V1/V2 & V3. Notification & command shall be possible over SMS. Firmware upgradation through Web, backup & restore of configuration shall be possible. 10. SCADA Protocols : IEC 104 – 104 Master – Multi Slave Mode: The modem should be capable to reading FRTUs in IEC60870-5-104 protocol and communicate with SCADA system on IEC 60870-5-104 protocol upto 8 masters. Adequate data interlock mechanisms should be implemented to avoid data loss. 11. No Of Antenna : The 5G Cellular modem Should have two antenna connection (MIMO). One is primary cellular antenna & second is diversity antenna(MIMO). Cable should have Low loss RF Cable with minimum 5M. Antenna Should be Omni directional with high gain (High gain ≥5). Power Supply : 18-72 V DC	Nos./ Site		1	60		18%	-	-	-
		Sub Total of 4G Modem									-
F		Instrumentation Cable for Status, Control & Power Supply									
1	Instrumentation Cable 12 C X 0.5 mm2, Armored cable for Status and Indications	Instrumentation Cable for Status and Indications 12 C X 0.5 mm2, Armored, 1100 V Rated, Annealed Stranded Copper, PVC insulated, Overall shielded field cable Preferred Make: CCI / FINOLEX / HAVELLS / Universal Cables / Incab / Asian Cable / KEI / Polycab / Ruchika/Equivalent	Meters/ Site		40	2400		18%	-	-	-
2	Instrumentation Cable 7 C X 1.5 mm2, Armored for Control Output	Instrumentation Cable for Control Output 7 C X 1.5 mm2. Armored, 1100 V Rated, Annealed Stranded Copper, PVC insulated, Overall shielded field cable Preferred Make: CCI / FORT GLOSTER / FINOLEX / HAVELLS / Indian aluminum Cables / Universal Cables / Incab / Asian Cable / KEI / Polycab / Ruchika/Equivalent	Meters/ Site		40	2400		18%	-	-	-

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
	Nos. of RMU Sites		60								
3	Twisted Pair Shielded & Over all shielded Instrumentation Cable 5 P X 1.0 mm2, Armored for Analog Input	Twisted paired Shielded & Overall Shielded Cable for Analog Inputs 5 P X 1.0 mm2, Armored, Copper twisted paired and Overall shielded cable for Analog inputs from CRP/Field panel to the RTU panel Preferred Make: CCI / FORT GLOSTER / FINOLEX / HAVELLS / Indian aluminum Cables / Universal Cables / Incab / Asian Cable / KEI / Polycab / Ruchika//Equivalent	Meters/ Site		10	600		18%	-	-	-
4	4 C X 2.5 mm2 Copper cable for extension of CT & PT	Control Cable for CT & PT Extension 4 C X 2.5 mm2, multistrand copper cable for extending CT & CVT inputs to the MFM in the CRP panel. Preferred Make: CCI / FORT GLOSTER / FINOLEX / HAVELLS / Indian aluminum Cables / Universal Cables / Incab / Asian Cable / KEI / Polycab / Ruchika/Prime//Equivalent	Meters/ Site		20	1200		18%	-	-	-
	Sub Total of Instrumentation Cable for Status, Control & Power Supply										-
G	Communication Cable for MFM, IEDs Integration										
1	4P X 0.36 mm2, Armored Communication Cable for MFM	Communication Cable: 4 P X 0.36 mm2 Armored multistrand Pair and Overall shielded, for Multifunction Meter looping. Preferred Make : Belden/LAPP/SATYAM/KEC/Digisol/Polycab/Parashield	Meters/ Site		20	1200		18%	-	-	-
2	Armored CAT6 SFTP Cable	Armored CAT6 SFTP Cable Preferred Make : Systemax/Finolex/Polycab/Digisol	Meters/ Site		10	600		18%	-	-	-
3	Un-Armored CAT6 SFTP Cable	Un-Armored CAT6 SFTP Cable Preferred Make : Systemax/Finolex/Polycab/Digisol	Meters/ Site		10	600		18%	-	-	-
	Sub Total of Communication Cable for MFM, IEDs Integration										-
H	Multi Function Meter										

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
	Nos. of RMU Sites		60								
1	Multi Function Meter	Multi Function Meter: Requirement : For all 33 & 11 KV Feeders, Bus Voltages (33 & 11 kV), Station Trf, ACDB Multifunctional 3-phase Power meter, four quadrant active and reactive energy polyphase static meter Form Factor: 96 X 96 mm Accuracy Class: 0.2 S as per IEC62053:22 Voltage Inputs: Operating range : 690 V AC line-to-line, 460 V AC line-to-neutral Current Inputs: 1A / 5A (User selectable CT secondary 1A / 5A, PT Secondary) Wiring configurations: 3OP2, 4LN3, 3DIR2, 4LL3, 3OP3, 3LN3, 3LL3, 3BLN3, 3BLL3 (All wiring configurations selected via the front panel) Communication Port: RS 485 Serial Port with removable connector Protocols: MODBUS RTU, Device Address (User Configurable - (1-247)) Auxiliary Supply: 18-72 V DC (24 V DC) Other Accessories: Necessary TB, Din rail channel and other accessories for flash mounting in RMU Preferred Make: Reputed Make	Nos./ Site		1	60		18%	-	-	-
	Sub Total of Multi Function Meter										-
	Grand Total Supply (A+B+C+D+E+F+G+H)										-
I	Services for FRTU Panel, Communication and Other Supplied System										
1	Services of FRTU Panel, Communication and Other Supplied System	Integration and Commissioning FRTU System a) Site Survey, Design, Engineering, Finalization of BOM, FDS b) Transportation, Delivery, Unloading and Storage c) Installation and Commissioning of Pre-wired FRTU Panel, Networking equipment & other Accessories d) Civil Activities for Installation of FRTU panel e) Cable laying, termination and continuity check of all cables (Instrumentation, Communication & Power cables) f) Integration of all Protection, IMF, and other IEDs. g) Powering up of all supplied materials h) Configuration of FRTU and its accessories i) I/O testing, Pre- SAT testing of Hardware and Software functionality j) Integrated FAT & SAT for Hardware and Software k) Integrated testing with Purchaser's SCADA System l) Demonstration of System Capacity and Performance Guarantee Test m) Submission of As-Built Drawings, FRTU Backup	Lumpsum / Site		1	60		18%	-	-	-
	Total of Services (I)										-
	Grand Total (Supply + Services)										-
J	Training (10 Man-days of Trainer)										
1	Training	On-site Training on Supplied equipment and Application Software	Man-days			10		18%	-	-	-

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	Item	Description	UOM	HSN/SAC Code	Qty/ RMU	Total Required Quantity (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
	Nos. of RMU Sites		60								
	Total of Training										-
	Grand Total (Supply + Services + Training)										-
K	Mandatory Spares										
1	Mandatory Spares (Unit Cost to be utilised for addition/ deletion of quantity as per site requirement)	FRTU Chassis	No.		-	3		18%	-	-	-
2		CPU Module of the FRTU	No.		-	5		18%	-	-	-
3		Power Supply Module of the FRTU	No.		-	5		18%	-	-	-
4		Memory Module of the FRTU	No.		-	5		18%	-	-	-
5		Communication Module (Ethernet)	No.		-	5		18%	-	-	-
6		Communication Module (Serial)	No.		-	5		18%	-	-	-
7		DI Cards with Interface Module & Cables for Digital Inputs	Sets		-	10		18%	-	-	-
8		DO Cards with Interface Module & Cables for Digital Output	Sets		-	10		18%	-	-	-
9		AI Cards with Interface Module & Cables for Analog Inputs	Sets		-	5		18%	-	-	-
11		Any Other Modules Specific to OEM Solution	Lot		-	1		18%	-	-	-
12		Managed Ethernet Switch - FRTU	No.		-	5		18%	-	-	-
13		CMR Relay with Base	No.		-	20		18%	-	-	-
14		HDR Relay with Base	No.		-	20		18%	-	-	-
15		Battery Charger	No.		-	5		18%	-	-	-
16		Multi Function Meter	No.		-	10		18%	-	-	-
	Total of Mandatory Spares										-
	Grand Total (Supply + Services+ Training + Mandatory Spares)										-

1	2
Sl. No.	Information to Bidder
1	Bill of Quantity mentioned in the tables are indicative, this may vary to meet the functional or site requirement. It is the responsibility of the Bidder to include all Hardware, Software, Configuration tools and Services as per functional requirement specified in the RFP.
2	Bidder to refer Approved make and model of the equipment to be considered for this project. All bidder's own and bought out items shall be subject to Purchaser's prior approval. Lead Bidder to submit all the Purchase orders released to Sub-vendors for TPCODL Review and Records.
3	The bidder shall propose and design the solution considering all the functional requirement stated in the RFP and shall submit the overall System Architecture.
4	System shall be modular in such a way that it shall allow flexible configuration of the system, adding modules as and when required.
5	Bidder shall also consider the enterprise version of software as feasible to meet the required functionality and to reduce the overall cost.
6	All the offered system will be with Operating System and shall be of latest version at the time of delivery.
7	All Systems Application, OS and configuration tools shall be kept current with latest OS version, Application Software, Configuration tools.
8	Configuration of all FRTU and other system shall be identical except IP Schema and specific requirement of the site.
9	The FRTU should be modular to enhance the capacity and expected communication response speed with final architecture frozen during detailed engineering.
10	The offered solution shall meet all the Cyber Security Requirement as per the standards such as NERC_CIP, NISTR, ISO 27001 and NCIIPC guidelines. All the Cyber Security measures shall address Operational Technology requirement. Bidder shall ensure the proposed architecture are certified by Cyber Security auditor for the compliance as per Industry standards. Bidder to demonstrate all the cyber security measures considered and implemented during FAT and SAT. Bidder to ensure that all the product own and sub-vendor product offered are tested at CPRI Lab for cyber security as per the Guidelines of MoP Order No.25-L7 /6/2018-PG dated 2nd July, 2020
11	The platform services shall be common to the whole family of products; thus, integrated control of power system network is possible from one base platform. Allows data to be distributed across a number of sites and systems.
12	The bid shall include Unified data engineering environment for data take-on and data maintenance, facilitating a single point of entry for both data configuration and use for multiple application/calculation and data management.
13	Bidder to indicate clearly the no. of Software licenses (proprietary & third party) included, taking into account no. of FRTUs, Communication Equipment, Controller, I/O Tags etc. Bidder shall also indicate the (slab-wise) incremental price for each of these licenses as applicable. It will be deemed to be nil if not indicated separately. Bidder shall consider enterprise license for common applications for proposed system.
14	Each selected application shall include necessary prerequisites, if any.
15	All cabling (Communication, Power Supply, Field, Interfaces) is in Bidder's scope. This includes supply, laying, termination and connection to equipment.
16	All Networking accessories and all types of Cables required for integration of other systems shall be considered by the bidder.
17	Necessary Communication equipment (Industrial grade) such as Layer2 switches, Router, Networking cables, patch cords etc. for integrating the Secondary Distribution Automation System with Purchaser's SCADA System through NBSP Communication network shall be in the scope of the Bidder. All structure cabling at site (if any) is in Bidder scope. All the Communication equipment shall be DC Powered.
18	Bidder to ensure the deployment of the resources and service requirement during Warranty Support for all the supplied equipment (Bidder's Own and bought out items). SLA will be prepared with the successful bidder to achieve the 24X7 availability and reliability of the installed system
19	It is the responsibility of the bidder to provide Patch Management, Software upgradation, Firmware Upgradation for Bidder's Owned items, Sub-vendor items, Communication and Networking items during Warranty period as per the SLA.
20	Purchaser may procure any item from elsewhere. Integration of those with supplied system is in Bidder's scope.
21	All annual maintenance charges of supplied Hardware, OS & Software are inclusive in the Warranty of Bidder's Owned items, Sub-vendor items, Communication and Networking items, software licenses their renewal, upgrades etc.
22	All the materials to be delivered should be F.O.R at TPCODL sites.
23	The bidders are advised to quote Unit prices strictly in the format attached.
24	The bidder must fill each column of the format attached. Mentioning "extra/inclusive" in any of the column may lead for rejection of the price bid.
25	No cutting / overwriting in the prices is permissible.
26	The unit price to be indicated in col. No. 8 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.
27	The bids will be evaluated commercially on the overall all-inclusive lowest cost lowest for the individual LOT as defined in the tender BOQ as calculated in Schedule of Items TPCODL however, reserves right to split the order line item wise and/or quantity wise among more than one Bidder. Hence, all bidders are advised to quote their most competitive rates against each line item.
28	In case of increase in quantity for any item, the unit rate mentioned will be considered for the same.
29	HSN/SAC codes for respective line item must be mandatorily provided wherever applicable.
30	TPCODL reserve the right to split the order quantity to any extent amongst the bidders.

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Section – A

Project Specification

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1.0 Intent of Specification

TP Central Odisha Distribution Limited (TPCODL) hereinafter called the "OWNER" or "PURCHASER", proposes to implement FRTU for its RMUs to integrate with SCADA, DMS & OMS System at the Purchaser's Main Control Center (MCC) and Backup Control Centre (BCC) for remote monitoring and control. The proposed Feeder Remote Terminal Unit (FRTU) shall communicate with the SCADA, DMS & OMS System at MCC and BCC over IEC 60870-5-104 protocol for real time status of the RMU and other accessories. The FRTU shall be capable to acquire signal through hardwiring and communication (IEC 61850, IEC60870-5-103, IEC60870-5-104 and Modbus Protocol). The proposed FRTU shall communicate simultaneously with Purchaser's minimum eight (8) SCADA System (redundant) over IEC 60870-5-104 with different network.

This specification covers design, engineering, manufacture; shop testing, inspection, packing and delivery of FRTU for RMU automation, complete with all accessories suitable for application for Secondary Distribution Network System. It is not the intent to specify completely herein all details of the equipment's nevertheless the equipment shall be complete and operative in all respects and shall confirm to the highest standard of engineering, design and workmanship

Bidder shall refer the entire project specifications to understand the execution methodology and interface equipment specification for the complete Scope of Work for this project. The bidder shall consider the entire scope of supply and services accordingly.

1.1 Introduction to TP Central Odisha Distribution Limited

TP Central Odisha Distribution Limited (TPCODL) is incorporated as a joint venture of Tata Power (51%) and Govt of Odisha (49%) on the Public-Private Partnership (PPP) model. Govt. of Odisha (GoO)'s share is held by it through its 100% owned company GRIDCO.

2.0 Project Information

Sl. No.	Item Description	
1.0	Owner	TP Central Odisha Distribution Limited (A Tata Power & Odisha Govt. Joint Venture), 2nd Floor, IDCO Tower, Janpath, Bhubaneswar, Odisha 751022
2.0	Consultant	Not Applicable
3.0	Location of the sites	Within the Operational Area/Distribution Network of TPCODL
4.0	Connectivity	Sites are connected by road to Bhubaneswar, Cuttack, Paradeep, Dhenkanal
5.0	Transport	Access roads are available for movement of materials to site. Movement of heavy materials would be through existing roads/rail up to TPCODL Premises

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Sl. No.	Item Description	
6.0	Maximum Altitude above Sea Level	1000 mtr.
7.0	Climatic Conditions	
7.1	Temperatures	
(a)	Maximum Ambient Air Temperature	50 Degree C
(b)	Maximum Daily Average Ambient Air Temperature	35 Degree C
(c)	Minimum dry bulb temperature	10 Degree C
(d)	Design temperature for electrical equipment / devices	65 Degree C
7.2	Relative humidity	
(a)	Maximum during monsoon	100%
(b)	Minimum during December	22%
(c)	Design humidity	95%
7.3	Rainfall	Annual average rainfall is about 150 cm (most of which occurs during the monsoon season from June to September)
(a)	Average Number of Thunderstorm days per annum	70 (isokeraunic level)
(b)	Average Number of Rainy Days per Annum	120 days
7.4	Wind Velocity: 300 km/hr., 200 km/hr. and 160 km/hr. environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for electronic equipment. Some places are in heavily industrial polluted areas. Therefore, all supplied material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.	
7.5	Seismic conditions	The proposed sites are in seismic zone III as per the Indian Standard IS 1893 and importance factor of 1.75
(a)	Earthquakes of an intensity in horizontal direction	Equivalent to seismic acceleration of 0.3g
(b)	Earthquakes of an intensity in vertical direction	Equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)
7.6	Air Quality	Atmosphere polluted with industrial gases and wastes because of proximity to industrial area.
8.0	Auxiliary Power Supply	
(a)	AC supply	230V, 1 phase, 2 wire, 50 Hz supply with one lead earthed shall be provided Voltage variation $\pm 10\%$, Frequency variation $\pm 5\%$ Combined voltage & frequency variation 10%
(b)	DC Supply	24V $\pm 10\%$, DC from the Sub Station DC System 48V $\pm 10\%$, DC from the Sub Station DC System

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3.0 Scope of Work

The scope of this specification covers all the technical requirement with all accessories, tools and tackles of Design, Engineering, Supply, Insurance, Testing at Manufacturer's works, packing, forwarding, Transportation, Delivery at site, unloading at site/stores, material storage, Installation, Testing & Commissioning of FRTU with all accessories and seamless integration with Purchaser's SCADA Systems, and RTU system of the 33/11 kV Primary Substations, Standard Warranty support as per the detailed specifications. Including all works required for successful integration with all RMUs (I/Os, IEDs, Meters etc.).

Any item though not specifically mentioned but is required to complete the project shall be considered and the same shall be supplied and installed by the bidder.

The indicative Bill of Material is attached with this document for bidder's reference and for bid purpose only (***Refer Annexure-10 of Section-E, Indicative Bill of Material for Proposed FRTU with all accessories***). Attached BOM is indicative, Bidder shall submit the detailed BOM along with the offer, as per the System/Architecture offered to meet the specified requirements.

Bidder to note that the proposed solution shall give more emphasis on the following aspects

- a. Reliability
- b. High Availability
- c. Cyber Security Resilience

3.1 General

- a. It is in the interest of the bidder to visit the site(s), at his own cost, to assess the requirements before bidding for the project, with in the defined timelines as mentioned in Calendar of events.

After the placement of the award, the bidder shall carry out site survey of all RMUs, to collect the required information for completion of detailed engineering. Bidder to note that any addition of the quantity required for sites during detailed engineering, will be in the scope of the bidder, with no commercial implication to TPCODL.

- b. ***Bidder to note that any system (Hardware & Software) considered under this RFP for meeting the functional requirement shall be from the same OEM.***
- c. ***No Hardware & Software shall be manufactured, delivered, customized exclusively for this Project/Contract.***

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3.2 Engineering

- a. Based on the Site Survey, bidder to finalize the site wise scope of work, BOM, Identification of the Contacts for Status, Protection and Control, Communicable IEDs, Availability of CT/PT for analog measurement.
- b. Finalization of Functional Design Specifications, System Architecture, GTP, I/O List, Schematic Diagrams of FRTU Panel, Cable Requirement, Auxiliary Power System requirement.
- c. Preparation of Interconnecting Schedule (Field, Communication, Inter/Intra Panel)
- d. Layout finalization for installation of FRTU Panels, Cable route etc.
 - Space available near the RMUs will be utilized to house all the FRTU panels. Bidder to ensure optimal utilization of space to accommodate the FRTU panel.
 - Appropriate IP class shall be considered for all the equipment planned under this project. IP class of the panel enclosure shall be IP55/IP65/IP67 as per the site requirement.

3.3 Installation & Commissioning

3.3.1 Activities in Existing RMUs

- a. Supply, installation and wiring of multipliers for providing potential free contacts for Digital Inputs such as status indication of Isolators, Breakers and others signal in the existing RMUs as per "Indicative Signal List" (*Refer Annexure-4 of Section-E for Indicative Signal List*).
- b. Providing and mounting adequate copper lugs, TBs & Din rail channel of standard make in the RMU.
- c. If required, bidder to mount the CMRs with bases in RMUs panel with proper arrangement i.e. segregated for Input, Output and Power Supply requirement. Mounting of TBs for the proposed scope shall not disturb the existing wiring and arrangement.
- d. The auxiliary contact used in RMUs panel for Digital Inputs (Status and Protection) shall be used for contact multiplication to extend the same to proposed FRTU. The other contact of the CMR shall be restored in the RMUs for current application, if no potential free contact is available.
- e. Supply, Installation and Commissioning of the MFM in the RMUs shall be in the scope of the Bidder. Bidder shall make Din-Rail arrangement in the RMUs panel for installation of MFM.
- f. Supply, Laying and Termination of power supply cable for extending 24V/48V DC inputs to the MFM in the RMUs.
- g. All the MFM shall be looped for communication with the proposed FRTU.

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- h. Supply, Laying and Termination of CT, PT cables for extending CT & CVT / PT inputs to the MFM from the TTB located in the RMUs.
- i. Instrumentation and control cable shall be laid properly from RMUs to FRTUs.
- j. Integration of IEDs through Ethernet/Serial Cable with FRTU. Bidder to consider all networking accessories to connect site IEDs to all the proposed managed ethernet switches.

3.3.2 FRTU

- a. Data acquisition and Control through BCPUs should be explored. The communicable BCPUs to be integrated with the proposed FRTUs through ethernet switch.
- b. In RMUs, where the data acquisition and control are not available through BCPUs, same will be achieved through hardwiring with CMR & HDR respectively.
- c. Supply, laying, wiring with proper termination of copper control cable for extending the status inputs from RMU panels (CMR output contact) to the FRTU panel.
- d. Interposing Relay (Heavy duty Relay) shall be supplied and installed in the FRTU panel along with wiring of the control cable to extend the control output of the FRTU to RMU panel.
- e. Analog measurement shall be through MFM and other analog signals shall be wired to Analog input card of the FRTU. Required instrumentation cable supplying, laying and termination is in the scope of the bidder.
- f. AC & DC Power Supply used in RMU and FRTU panel shall be monitored and communicated to Purchasers' SCADA System through FRTU.
- g. Configuration of the FRTU as per requirement, integration of the IEDs/BCPUs and Condition Monitoring devices of the Auxiliary System.
- h. Configuration of the Ethernet switches.
- i. The ITC cost is inclusive of any addition of Module/s in a FRTU Rack for the RMUs as per the site requirements.

3.4 Electronic Earthing for FRTU

- a. Bidder to submit the details of earthing requirement for the proposed solution.
- b. Providing of proper earthing to FRTU and armored cable with separate Earth pit shall be in the scope of the Bidder. Earthing cable with proper sizing shall be laid from the FRTU panel to the earth pits.
- c. Bidder to ensure maximum earth value of 2 Ohms.

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3.5 Control, Instrumentation and Communication Cable

- a. Supply, Laying and termination of all types of Control, Instrumentation and Communication Cable is in the scope of the bidder.
- b. The bidder shall supply armored control cable and shall lay the cable properly.
- c. The auxiliary contact in RMUs panel for Digital Inputs (Status and Protection) shall be used for contact multiplication to extend the same to proposed FRTU panel.
- d. Supply, Laying and termination of control cable from FRTU to RMU Panel for digital output.
- e. Supply, Laying, Wiring and Termination of control cable, multi-strand copper control cable for extending CT & CVT / PT inputs to the MFM in the RMUs.
- f. Supply, Laying and termination of communication cable for IEDs and Condition monitoring devices and auxiliary system.
- g. Supplying, Laying and Termination of DC power supply cable for extending DC supply from Battery Charger of RMUs to the MFMs. All the MFM shall be looped to the FRTU panel for communication with the FRTU.
- h. Supplying, Laying and Termination of AC power supply cable for extending AC supply from RMUs to the FRTUs.
- i. Special care to be taken for minimal outside exposure of the cables laid between RMUs & FRTUs.
- j. All cables to and from any equipment supplied by Bidder
- k. All cables shall be tagged appropriately, cross ferruling shall be used for identification of the Cable, Inter/Intra Panel wiring.
- l. All cables between Purchaser's Power Supply Distribution Board to any equipment supplied by the Bidder.
- m. Earthing interface to earth pit based on the earthing scheme provided by the Bidder (It shall be completely Bidder's responsibility to ensure proper earthing).
- n. The above includes all electrical and communication cables (if any) and all associated terminals, Connectors, tools, distribution board, MCBs and Automation accessories.
- o. Appropriate civil work for housing the control cable, communication cables at RMU location site.

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3.6 Panel Erection

- a. Appropriate civil work shall be carried out before installation of FRTU panel.
- b. The metal legs of the FRTU panel to properly fastened to fix the panel on the Cement floor through nuts and bolts.
- c. Appropriate IP class shall be considered for outdoor application bidder shall consider panel enclosure with IP55/65/67 as per the site requirement.

3.7 Communication Infrastructure

- a. Communication components and accessories such as Ethernet switches, Modem and associated accessories such as cables, connectors etc. shall be in the scope of the bidder.
- b. Installation of Ethernet Switches, Modem cum Router, communication cable supply, laying, termination is in the scope of the bidder to meet all the functional requirement specified in this RFP.
- c. As all Communication equipment to be housed inside the FRTU panel, Bidder to ensure the size of the panel accordingly, Panel GA will be finalized during detailed engineering.

3.8 Integration

- a. Configuration of the FRTU and Communication Systems as per RFP shall be carried out by the Bidder followed by local testing, FAT and SAT.
- b. During local testing (Pre-SAT) each Digital Input, Digital output and Analog Inputs shall be tested with the FRTU, by simulating at RMU/Switchgear end with satisfactory result. Each MFM data shall be verified with FRTU after integration over Modbus protocol.
- c. FRTU configuration shall be tested completely in all respect so that integration testing shall be carried out smoothly without any technical issues during point-to-point testing with Purchaser's SCADA Systems. However, the necessary configuration at the Control Centre end shall be taken care by the Purchaser.

3.9 Documentation, Backup

- a. Bidder shall provide all documentation in soft / hard form about licensing information for each software supplied (OS, application software, configuration, diagnostics, simulation & testing tools).
- b. The Documents shall be submitted as proposed. Master Document List (MDL) shall be prepared by Bidder and submitted for Purchaser's approval.

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- c. The offered system shall store the copy of the system configuration, user configurable database, tools and relevant software as a backup at Purchaser's identified location for restoration under a disaster recovery plan.
- d. The bidder shall provide complete engineering data, drawings, reports, manuals and services offered etc. i.e., complete set of documentation / drawings / architectures/ Inter-Operability Tables (IOTs) submission of Test Reports, job progress reports etc.
- e. It is the responsibility of the Bidder to handover all project related drawings in AutoCAD formats only. The pdf version of above drawings / documents shall also be submitted for formal approval process.
- f. Submission of technical documentation related to design, installation, testing, operation & maintenance of the equipment and submission of Test Reports, job progress reports etc. in hard copies (3 sets) and soft copies (3 sets, preferably in PDF).
- g. Providing complete source code, including customization

4.0 Terminal Points

4.1 Bidder

- 4.1.1 Site Survey, BOM and Scope finalization, Engineering, Preparation of Architecture, Layout, ICS and other documents Substation/RMU wise covering all the functional requirement envisaged by the Purchaser and documented in the RFP.
- 4.1.2 Supply and Installation of FRTU and other offered systems.
- 4.1.3 Integration of the existing system field devices and hardware signals (IEDs, MFM & hardware signals) to proposed FRTU. Supply of the required material including cables, erection, installation, cable laying & termination, database and logic development, FAT, pre-SAT testing, SAT and demonstration of the required performance is the sole responsibility of the bidder.
- 4.1.4 The offered product shall comply to all open protocols used in electrical substation application such as IEC60870-5-xxx, IEC61850 (ED1, ED2), Modbus, Serial and TCP/IP etc. and compatible with all other OEMs product. Any interoperability issues arising during commissioning and during guarantee period, bidder shall undertake to resolve them within maximum 1 months' period without any additional cost to the Purchaser.
- 4.1.5 Provision of the required power supply from RMU panels. It is the bidder's responsibility to lay the required cable up to the equipment supplied by bidder and further make the provision to distribute for the systems supplied under this contract.

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- 4.1.6 Suitable separate Earthing system (including earth pit) for offered system.
- 4.1.7 Integration with Control Centre SCADA Systems as specified in the specifications.
- 4.1.8 Bidder shall depute adequate manpower, resources and material to complete the project as per the schedule mentioned in the RFP. If Purchaser feels that the adequate resources and material are not provided, reserves the right to ask the bidder to supply the required material and depute additional resources to complete the project in time.
- 4.1.9 There shall be only one point of contact for Purchaser, i.e. the bidder who will be awarded the contract will be responsible for delivering the project solely. Any Sub-Contracting of any part of the work will be the responsibility of the lead Bidder as specified by Purchaser.
- 4.1.10 All application software, hardware, data, plans, drawings, specifications, designs, reports and other documents procured or developed by the selected Bidder in the execution of the contract shall remain the property of the Purchaser, right from the beginning of the contract, during the whole duration of the project and after the expiry or termination of the contract. Purchaser shall also remain the sole owner of the property (Hardware/software) in case the contract is terminated for any other reason. The source code/Application of the customized part of the application software in FRTU will remain as exclusive property of Purchaser, even after the termination or expiry of the contract. The ownership shall also remain with Purchaser in case the selected Bidder fails to execute tasks to the satisfaction of the Purchaser.
- 4.1.11 Any deviation from this RFP / Technical Specification or as per the requirement of Purchaser, if noticed, may be brought forth in the Bid offer / pre-bid meeting / meeting before award of contract. Any such deviation, if informed thereafter bidder will supply Hardware and Software as per the site and functional requirement free of cost to the Purchaser. The decision of Purchaser will be final.
- 4.1.12 The selected bidder, after award of contract, will finalize the actual quantities to be deployed based on site survey, after approval from Purchaser, before initiating the purchase process of such items. All the hardware and software shall be procured and delivered after taking prior approval of Purchaser for each consignment. However, if any change in the quantity of the material, there should not be any additional cost to the purchaser.
- 4.1.13 Engineering and technical assistance during the contract and standard warranty and maintenance period.
- 4.1.14 Provide calculation for power requirement for each cabinet and equipment
- 4.1.15 Bidder to submit all the purchase order placed on Sub-vendor to TPCODL for their review and records.

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- 4.1.16 Maintaining backup of all FRTU configuration for all substations and handover the same in duplicate to Purchaser.
- 4.1.17 Provide a Quality Assurance Plan and access to the manufacturing process.
- 4.1.18 The bidder shall provide all additional equipment and services required to ensure compatibility with Purchaser's systems.
- 4.1.19 The bidder shall demonstrate a specified level of performance of the system during FAT & SAT.
- 4.1.20 Bidder shall submit the project plan with major milestone prior to the start of the execution of the project.
- 4.1.21 Bidder must agree for handing over, to Purchaser, all project related drawings in AutoCAD format as a part of as built drawings at the end of the project in addition to pdf. The pdf versions of above drawings shall be submitted for formal approval process during detailed engineering.
- 4.2 **Purchaser**
 - 4.2.1 Will assist the bidder to provide the necessary work permits for working in operational area/site
 - 4.2.2 Participation of Purchaser's engineers during FRTU Engineering & Configuration, however bidder shall be responsible for validation of this database.
 - 4.2.3 Providing all the necessary data regarding the electrical network
 - 4.2.4 Providing details of the existing systems for specified integration
 - 4.2.5 Review and Approval of IP Schema for all the IEDs, FRTU, in-line with existing System
 - 4.2.6 Providing communication backbone for interconnection with existing systems
 - 4.2.7 Review and approval of the Bidder's designs, drawings, and recommendations
 - 4.2.8 Review and approval of test procedures
 - 4.2.9 Participation in and approval of "Type", factory and site acceptance tests
 - 4.2.10 Review and approval of training plans.
 - 4.2.11 Coordination of the Bidder's activities with the Purchaser's concerned departments

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5.0 Exclusions

The Bidder shall be responsible for providing all the hardware and software, FRTU Engineering /Configuration and services required for commissioning of project except mentioned below

- 5.1 Buildings
- 5.2 Air Conditioning
- 5.3 Fire Fighting/Detection system
- 5.4 Fencing of the Area

6.0 Instruction to Bidders

6.1 Bidder Confidentiality

All information contained in this specification is confidential and shall not be disclosed, published, shared or advertised in any manner without written authorization from Purchaser, includes all bidding information submitted. All specification, data and documents submitted by bidder remain the property of Purchaser and all bidders are required to return these documents to Purchaser upon request.

Bidder to note that no part of this RFP shall be shared in the format of TPCODL with other Equipment supplier and service provider.

Bidders who do not honor the above-mentioned confidentiality, will be excluded from participating in future bidding events.

- 6.1.1 Bidders shall quote for the entire Scope of Supply / work with a breakup of prices for individual items and Taxes & duties. The total bid price shall also cover all the Bidder's mentioned in or obligations mentioned in or reasonably to be inferred from the bidding documents in respect of Design, Supply, Transportation to site, all in accordance with the requirement of bidding documents. 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 Purchaser. The 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.
- 6.1.2 The quantity breakup shown else-where in Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated but are required to complete the job, shall be deemed to be included in prices quoted.

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- 6.1.3 Bidder/Principal shall demonstrate required functionality and capability in Purchaser's office during technical evaluation before bid submission
- 6.1.4 In case of agreement dishonored by any party (Bidder/ Principal), during life of the delivered system, Principal shall be responsible for providing the services to the Purchaser. Bidder/ Principal shall submit the address and contact details of the Principal's Purchaser account holder.
- 6.1.5 The Bidder (including Principal) shall give an undertaking to provide full range of services (including hardware and software maintenance, modifications, and upgrade support) for the life of the delivered FRTU system and other sub-vendor equipment and services.

6.2 Type Tests Reports

The type tests specified in Purchaser 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 Purchaser. Type test reports should be issued by third party government accredited laboratory or internationally recognized laboratory like NABL / CPRI / ERDA / KEMA / International Accredited Lab.

7.0 Codes and Standards Applicable

The design, manufacture and performance of the FRTU System shall comply with all the requirements of the latest editions of international codes and standards applicable. Nothing in this specification shall be construed to relieve the Bidder of this responsibility.

Emissions Standards		
1	EN55011 (CISPR 11)	ISM RF Equipment – Electromagnetic Disturbance Characteristics
2	60255-25	Electromagnetic emission tests for measuring relays and protection equipment
3	61000-3-2:2000	EMC-Limits for harmonic current Emissions.
4	61000-3-3:1994+2001	EMC Limits-Limitations in voltage changes, voltage fluctuations and flicker in public low-voltage supply systems.
Immunity Standards		
1	61000-4-2 1995-01 60255-22-2, IEEE C37.90.3	Electrostatic discharge (ESD) immunity test
2	61000-4-3 1998-11, 60255-22-3	Radiated, radio-frequency electromagnetic field immunity test

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	IEEE C37.90.2 (10V/m)	
3	61000-4-4 1995-01 60255-22-4 IEEE C37.90.1	Electrical fast transient/burst immunity test
4	61000-4-5 1995-02	Surge immunity test
5	61000-4-6 1996-03	Immunity to conducted disturbances, induced by radio-frequency fields
6	60255-22-6	Electrical fast transient/burst immunity test
7	61000-4-81993-06	Immunity to power frequency magnetic fields
8	61000-4-12	Oscillatory waves immunity test
9	1995-05, 60255-22-1, IEEE C37.90.1	(Damped Oscillatory and Ring wave)
Safety		
1	61010-1	Harmonized Safety Standard
2	60255-5 2000-12	Insulation coordination for measuring relays and protection equipment- Requirements and tests
Power Supply Standards		
1	61000-4-11 1994-06	AC Power supply interruptions
2	61000-4-16 1998-01	Immunity to conducted, common mode disturbances.
3	61000-4-17	Ripple on D.C. power supply
4	61000-4-29+ 2000-08 60255-11	Voltage dips, short interruptions & voltage variations on D.C. input power port immunity test
Environmental Standards		
1	60068-2-1 1994-05	Environmental Testing Cold
2	60068-2-2 1974	Environmental Testing Dry Heat
3	60068-2-6 1995-03 60255-21-1	Environmental Testing Vibration tests (sinusoidal)
4	60068-2-27 1987	Environmental Testing Shock
5	60068-2-29 1987	Environmental Testing Bump
6	60068-2-30 1980	Environmental Damp Heat cyclic (12+12 hour cycle)
7	60068-2-31 1969	Environmental Testing Drop and Topple
8	60255-21-2	Shock and bump tests
9	IEC 61850-3	Substation Environment Requirement
Communication Standards		
1	IEC 61850-5 to 10	Substation Comm. Standard access method and physical layer

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	IEEE 802.3 CSMA/CD	specifications
Other Applicable Standards		
1	IS 9000	Basic Environmental testing procedure for electrical and electronic items
2	IS 694-1990	PVC insulated cables for working voltage up to and including 1100V
3	IS 2629-1985	Recommended practice for Hot Dip Galvanizing of iron & Steel.
4	IS 2633-1986	Test for uniformity of Zinc Coating
5	IEC 60529	Degrees of Protection provided by enclosures (IP Code)
6	IEC 62052-11	Electricity metering equipment (a.c.) – General requirements, tests & test conditions
7	IEC 62053-22	Static meter for active energy (Class 0.2S and 0.5S)
Product Conformance as per Gol Letter No. 12/34/2020-T&R dated 8th June 2021, Ministry's Order No. 25-17/6/2018-PG dated 2nd July 2020		
1	• IEC 60870-5-101 & IEC 60870-5-104, Security Conformance • IEC 62351-100-1: Clause 5, Clause 6, Clause 7, Clause 8 • IEC 62351-100-3: Clause 5, Clause 6, Clause 7 (IEC 62351-3:2014 / AMDI: 2018, Clause 7), • IEC TS 62351-5/IEC TS 60870-5-7	IEC 60870-5-7 Telecontrol equipment and Systems – Part 5-7; Transmission protocols – Security extensions to IEC 60870-5-101 and IEC 60870-5-104 protocol (Applying IEC 62351) IEC 60870-5-7 Security extension & IEC 62351 series (IEC 62351-100 parts 1 & 3) and other cross-referenced standards. IEC 61850 – 5, 6, 7, 8, 9, 10 Certificate of Common Criteria as per ISO/IEC 15408

Wherever, new standards and revisions are issued during the period of the contract, the Bidder shall attempt to comply with such standards, provided there is no additional financial implication to Purchaser.

In the event of the bidder offers to supply material and/or equipment in compliance to any standard other than those listed herein, the bidder shall include with their proposal, full salient characteristics of the new standard for comparison.

8.0 Bidder's Experience, Evaluation Criteria

8.1 Bidder's Project Experience

- 8.1.1 Bidder shall provide details of projects with application modules, which have been successfully completed during the last 5 financial years as per the format below. Please do not supply the names of clients who are no longer using your product/system. Bidders need to submit the

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details as per the format in the table provided and necessary supporting documents should be attached with RFP:

Sl. No.	Name of the Project	Client Name and Contact Details	Whether the Project was successfully commissioned	Date and Year of Commissioning	Value of the Project	Indicate the FRTU with modules implemented in the project	Indicate the integration with SCADA System	Indicate whether interface was included in the project? If Yes, please provide the details	Indicate the protocol implemented viz IEC60870-5-101/104, IEC61850, Modbus (IP, Serial)

Table: Details of Project Experience

Note: Kindly provide Client Performance Certificates for the completed projects provided for establishing/confirming the requisite details for project experience as mentioned above Or Copy of LoA/ Work Order along with proof of release of final payment.

- 8.1.2 The Bidder should have at least 20 personnel on its roles with a minimum experience of 5 years on FRTU and field substation automation/Communication System/Cyber Security. Signed resume of employees authenticated & signed by the bidder needs to be submitted. Scanned signatures of the employees shall be accepted.
- 8.1.3 The offered product shall comply to all open protocols used in electrical substation application such as IEC60870-5-xxx, IEC61850 (ED1, ED2), Modbus, Serial and TCP/IP etc. and compatible with all other OEMs product. Any interoperability issues arising during commissioning and during guarantee period, bidder shall undertake to resolve them within maximum 1 months' period without any additional cost to the Purchaser.
- 8.1.4 Product shall confirm to Cyber Security norms from product development, design and engineering for Power Utility, compliance to industry standard NERC-CIP, IEC62443, NIST and IEC62351.
- 8.1.5 Bidder shall agree to comply with minimum quality requirements and Contractor Safety Code of Conduct, defined in bid documents.
- 8.1.6 Bidder must agree for handing over, to Purchaser, all project related drawings in AutoCAD format only. The pdf versions of above drawings shall be submitted for formal approval process.
- 8.1.7 Bidder shall submit the acceptance of TPCODL's preferred list of Vendor / Sub Vendor / OEM, which is shared as part of Technical Specifications and the same shall be acceptable to the bidder. *(Refer Annexure-7 of Section-E, Preferred/Approved make of Equipment/System).*

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8.1.8 Bidder shall confirm the equipment and Spare Support and Availability for the period of 10 years. Bidder shall submit each equipment product life cycle details along with the technical proposal (for Own and Sub Vendor Equipment).

8.2 Bid Evaluation Criteria

8.2.1 The Bids will be evaluated technically (in terms of quality, technical merit, functional characteristics, schedule, after-sales service, local support in India and technical back-up). The technical merits and quality and functional characteristics of the offered equipment and work will be evaluated in terms of its ability to meet specific technical requirements included in the Contract Documents. The Bidder shall therefore be prepared to submit at the request of Purchaser adequate information or Work meets the intent of the technical requirements.

8.2.2 Purchaser shall be fully entitled to adopt whatever means it deem fit to evaluate the bids at its sole discretion, which shall not be questioned by the bidder under any circumstances whatsoever.

8.2.3 The evaluation team will thoroughly review the proposals submitted by various bidders. The broad technical evaluation will be based as below

- a. Technical Proposal: 100% Weight
- b. Pre-bid meetings will be conducted with all the bidders

Minimum qualification mark for technical score as mentioned in the RFP shall be **75 out of 100**.

8.2.4 Technical Evaluation

The technical bid has a weightage of 100%. Technical evaluation will happen in two stages.

- a. **Stage-1:** Preliminary Evaluation

In Stage-1, the following shall be confirmed: Deviations, Acceptance of terms and conditions, Acceptance to scope of work and compliance to technical specification (***Scope of work as mentioned in Section A and technical details in Section B***). In case the bid doesn't meet all the mandatory requirements, the bid shall be termed as non-responsive and will not be evaluated further.

- b. **Stage-2:** The distribution of weights for bid-evaluation are as follows

Sl. No.	Description	Weight	
A	Technical Proposal		100
1	Project Experience	40	
2	Presence in India	10	

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3	Team Details (CV)	15	
4	Technical Know-How	35	
	Total Marks		100

Sl. No.	Description	Max Score
Technical Solution Score		100
1	Project Experience	40
a)	Number of FRTU Based Automation projects successfully completed in last 5 years. Similar to Technical Requirements as per the specification ▪ 10 marks shall be awarded for a single project meeting the functionality as mentioned in the QR. • In case multiple projects are submitted, 2 marks shall be awarded for each project subject to a ceiling of 10 marks. • Satisfactory performance certificates of the running projects ▪ 5 marks shall be awarded for FRTU integration with multiple OEM's RMUs/ protection, control and condition monitoring devices on industry standard protocol.	15
b)	Project experience in implementation of FRTU based Automation Systems having similar solution	25
	Bidder having experience in satisfying the following criteria: • Execution of Automation project in non-SCADA enabled Conventional Types of RMUs/Field Equipment (5 Marks) • FRTU integration over IEC 60870-5-104 protocol with multiple OEM's SCADA Systems. (4 marks) • Experience on implementation of Cyber Security measure in Field Automation (FRTU, IEDs etc.) (4 marks) • Experience on implementation of IOT based application for FRTU based Field Automation Systems (4 marks)	
	• Project Experience in FRTU Integration over (5 marks) a) IEC 61850 (ED1 & latest ED2), implementation of logic using GOOSE b) MODBUS (RTU, TCP/IP), integration of multiple OEM IEDs/RMUs c) Communication of multiple FRTUs to RTU over IEC 104	
	• Project experience in integration of Renewable Energy System (Solar, Battery Storage) (3 marks)	
	The bidder shall be awarded marks indicated for satisfying the above criteria in one project or multiple projects put together. For satisfying of single criteria, only indicated marks shall be awarded, irrespective of its implementation in number of projects.	
2	Presence in India	10
	a) Manufacturing in India as an initiative of Government of India "Make in India"; (3 Marks)	3

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Sl. No.	Description	Max Score
	b) The bidder with design / Engineering / Testing / Installation / Commissioning / Maintenance / Patch Management / Timely Upgradation facility in house (In India) as on date of release of RFP; (7 Marks)	7
3	Team Details (CVs)	15
	Experience minimum 5 years in area of FRTU based Automation Systems engineering and commissioning based on IEC 61850 (Ed.1 & Latest Ed.2), IEC60870-5-103, IEC 60870-5-104, Modbus RTU & TCP etc. For submission of CV, 1 mark shall be awarded per CV subject to ceiling of 5 marks that can be obtained in this category.	5
	Experience minimum 5 years in area of Control and protection systems engineering and commissioning in power distribution application. For submission of CV, 1 mark shall be awarded per CV subject to ceiling of 4 marks that can be obtained in this category.	4
	Experience minimum 5 years in area of FRTU integration with SCADA systems on IEC 60870-5-104, Cyber Security and Communication Networking. For submission of CV, 01 mark shall be awarded per CV subject to ceiling of 4 marks that can be obtained in this category.	4
	Experience minimum 5 years in implementation of logic based FRTU systems like load shading, group control, control logic, reverse blocking, auto reclose & self-healing etc. For submission of CV, 01 mark shall be awarded per CV subject to ceiling of 2 marks that can be obtained in this category. Bidder to note that the CV submitted of the engineers for the above-mentioned criteria's, will only be permitted for the execution of project.	2
4	Technical Know-How: The Bidder is expected to satisfy the following criteria for the proposed FRTU based Automation Systems for RMUs:	35
a)	Proposed product should be under life cycle growth (latest and having a life span under production for minimum next 10 years) as per Life Cycle of the product.	3
b)	FRTU shall be capable to import multiple SCD files generated by multiple OEM	2
c)	FRTU shall acts as SNTP Server & Client	3
	FRTU shall support SNMP for Network & Asset Management	
d)	Configuration Tools should be complete in all respect like configuration of all types of interfaces and application as per RFP and complied to the format of SCD file for integration of multi vendors substation protection and control IEDs with RTU.	2
e)	Hardware and software of the proposed FRTU shall be of the same OEM	3
f)	FRTU integration with multiple OEM's protection, control, condition monitoring devices and SCADA on industry standard protocol	2
g)	Upload and Download of the configuration file from FRTU to the engineering station.	3
h)	FRTU shall support web-based monitoring from remote as well as local	2
i)	FRTU systems implemented for applications such as load shading, group control, control logic, reverse blocking, auto reclose & self-healing etc.	3

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Sl. No.	Description	Max Score
j)	FRTU shall be complied to Cyber Security requirement for critical infrastructure.	2
k)	FRTU shall support Measurement Event storage capacity more than 10000	3
l)	FRTU panel have Ingress Protection of 65/67	2
m)	FRTU has I/O handling Capacity more than 1000 Physical Tags	3
n)	Hot-Swappable module replacement in FRTU	2

- 8.2.5 The bids will be evaluated technically on the compliance to specification terms and conditions as detailed in the various sections of the document.
- 8.2.6 Bidder must mandatorily quote against each item as per the functional requirement and of indicative bill of material.
- 8.2.7 Bidder must comply with Qualification requirement and compliance sheet.
- 8.2.8 Bidder must submit the list of sites and contact details in which similar solution have been developed and successfully running its operation. Purchaser team reserves the right to visit those sites and bidder shall facilitate such visit.
- 8.2.9 Bidders shall quote for all items specified including options and all the sub items in the specified format. Bids not complying with this requirement shall be liable for rejection. All bids and combination of bids shall be opened and evaluated simultaneously so as to determine the bid combination offering the most advantageous solution for the Purchaser.
- 8.2.10 The evaluation shall be made primarily on technical parameters and also the overall cost of the items and quantities mentioned in the schedule of quantities. However, while placing the order, or during the execution, the Purchaser reserves the right to modify the quantities of individual items.

9.0 Project Schedule / Calendar of Events / Milestones

- The Bidder shall provide a detailed Implementation Schedule indicating major Bidder and Purchaser activities, major completion milestone events, and interdependencies between events. Required Purchaser activities and associated dates must be clearly shown and include interdependencies to the Bidder's scheduled activities. The schedule shall be in terms of months after Receipt of Order (ARO), not absolute dates.
- The Bidder shall perform all scheduling activities with Microsoft Project/any standard software, such that all schedules as periodically transmitted to Purchaser include both hard copy and electronic versions.
- Following is the expected delivery schedule.

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9.1 Delivery Schedule

9.1.1 Delivery schedule for the project SITC of FRTU System

Sr. No.	Milestone	Target
1	PO Placement	Zero Day
2	MDL & Project Detailed, Project Execution Schedule submission & approval	Within 15 days from Sr. No. 1
3	Architecture and other Drawings, Bill of Material finalization, Functional and Design Specifications (FDS), FAT & SAT documents submission & approval	Within 40 days from Sr. No. 1
4	Procurement of Hardware, Software and Manufacturing of Panel	Within 80 days from Sr. No. 3
5	Inspection of equipment (FAT)	Within 15 days from Sr. No. 4
6	Delivery of FRTU Panel and Automation System	Within 15 days from Sr. No. 5
7	Completion of installation of FRTU Panel and other system, cable laying, termination, FRTU configuration as per data points etc.	Within 60 days from Sr. No. 6
8	Pre-SAT Testing	Within 30 days from Sr. No. 7
9	Final Integration Testing with SCADA	Within 30 days from Sr. No. 8
10	Resolving punch points and demonstration to Purchaser	Within 20 days from Sr. No. 9
11	Project closure after resolving of Punch points submission of documents and Software licenses	After 10 days from Sr. No. 10
12	Overall project schedule	300 days

9.2 Milestones

Payment shall be made as per the finalized payment terms with Purchaser's procurement team as per the milestones mentioned below:

Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)
1	MS-01	Prebid meeting, Bid Submission, Bid Discussion, PO Placement	-
5	MS-02	Submission and Approval of following • Site Survey • List of Deliverables (BOM) • Configuration Drawings • Detailed Project Schedule • Functional Design Document • Design Documentation for Hardware & Software	15% of Total Contract Price

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Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)
		System /Application Overview Document • Any Other Documentation related to Design Engineering	
6	MS-03	System hardware staging completed in the Factory, Complete installation of all the Bidder standard baseline system (Hardware & Software) • Hardware/ Software Test Review & Signoff • Function Test Review & Signoff • Successful completion of FAT and resolution of all variances to Purchaser's satisfaction Delivery of the System (Hardware, Networks, Operating Systems, etc.) & acceptance by TPCODL EIC	45% of Total Contract Price on Pro-rata Basis
8	MS-04	• Complete installation of the system at Purchaser's site, and successful completion of system startup activities. • Installation and commissioning of FRTU based Automation System and its applications as per specification etc. Pre-SAT test acceptance. • Successful completion of SAT and resolution of all variances to Purchaser's satisfaction after completion of all test plans and procedures • Training on O & M of System • Availability of Complete functionality as specified in the specification and scope of Work • Demonstration of Performance Guarantee Parameters, Cyber Security Test • System Handover for Operation	30% of Total Contract Price on Pro-rata Basis
10	MS-05	Operational Acceptance and submission As-built drawings, spares: • Successful completion of System Availability and Performance Guarantee tests • Submission of Operator's User's Manual, Modification if any to the Operator's User's manual and submission of approved manual • Submission of Backup of entire system on secondary media • Delivery of all As-built drawings, database and logic files, source code and final documents Delivery of spares, maintenance & testing equipment's etc.	10% of Total Contract Price on Pro-rata Basis

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10.0 Submissions by Bidders

10.1 Mandatory Documents required along with the Bid

Bidders are requested to submit their offer in line with this bid document. Purchaser shall respond to the clarification raised by various bidders and the replies will be sent to all participating bidders through ARIBA.

Bidder shall submit the document as specified in **Section-D** and as described in various section of this document.

The technical bid shall be properly indexed and is to be submitted in Soft Copy and three nos. Hard Copy.

CPRI report for the product offered as per the GoI order no. 25-17/6/2018-PG dated 2nd July 2020 and subsequent order No. 12/34/2020-T&R dated 8th June 2021

10.2 Departure from Specifications

Bidder shall necessarily submit a signed and stamped copy of this BID (in original) as a token of acceptance of all the terms and conditions of this BID. Replication of this BID on bidders' document shall not be acceptable. Normally no deviation is accepted to BID document supplied with the bid & bid with deviation is liable to be rejected. However, in case of any deviations to this BID, all such deviations shall be furnished by the bidders in the Schedule of Deviations attached as Section-C, Item-C3, and submit the same as a part of the Technical Bid.

10.3 Right of Acceptance / Rejection of Technical Proposal

Bids would be rejected in absence of following documents:

- a. Details required for PQR not submitted
- b. Complete technical details are not enclosed
- c. Proposed Architecture not submitted
- d. The offer does not contain un-priced detailed Bill of Material as per the proposed architecture
- e. Bid is received after due date and time
- f. False Information / Details

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

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10.4 Documentation & Licenses

Bidder shall submit the documents as per **Section D** for bid submission and Post Award. Bidder to ensure that all software procured shall be perpetual license in the name of the Purchaser.

11.0 Project Management

11.1 Project Management

The Bidder and Purchaser shall assign a project manager with the authority to make commitments and decisions that are binding on the either side with the following responsibilities:

11.1.1 Purchaser's Project Manager

Purchaser's project manager shall be responsible for representing Purchaser's interests throughout the project. Purchaser's project manager will, from time to time, authorize other staff to act in this regard for specific tasks. The project manager will also change such assignments from time to time. Such actions shall be submitted to the Bidder in writing.

All correspondence with Purchaser shall be addressed to Purchaser's project manager.

11.1.2 The Bidder's Project Manager and Project Personnel

The Bidder shall designate a project manager who shall be responsible for the co-ordination of all project work and for the communications between the Bidder and Purchaser. Except for conditions outside the control of the Bidder, the Bidder's project manager shall not be removed or replaced without the approval of Purchaser.

Bidder shall submit the manpower deployment plan along with the bids, describing the key roles of each person. The project shall be staffed with a core project team. Additional personnel shall be assigned to work under the direction of the core team. Core project team members shall have experience as stated elsewhere in this document.

11.2 Project Schedule

The project should be implemented as per the prescribed schedule. Based upon this schedule the bidder shall submit a preliminary implementation plan along with the bid. The detail project implementation schedule shall be submitted by the bidder after award for Purchaser's approval, which shall include at least the following activities:

- a. Site Survey
- b. Documents submission and approval schedule

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- c. Factory & Site Testing Schedule
- d. FRTU Database development schedule
- e. Hardware purchase & Manufacturing, Software development & integration schedule
- f. Dispatch Schedule
- g. Installation / commissioning schedule
- h. Training schedule

11.3 Progress report

A progress report shall be prepared by the Bidder each month against the activities listed in the project schedule. The report shall be made available to Purchaser on a monthly basis, e.g., the 10th of each month. The progress report shall include all the completed, ongoing and scheduled activities.

11.4 Bidder's Responsibilities

The Bidder's specific responsibilities shall include:

- a. Providing all FRTU and Communication systems equipment and related support materials, including all interconnecting cables and wiring between all Bidder-provided equipment and between the FRTU and RMUs
- b. Defining the stock of spare parts needed to maintain for system availability
- c. Providing all engineering, software design, development, and integration services necessary for FRTU and Communication Systems implementation
- d. Ensuring that all reasonable security measures have been incorporated in the FRTU and Communication Systems upon delivery, is free of viruses, trapdoors, and other software contaminants, contains no software enabled with "electronic self-help", is purged of all sample scripts and sample code, and has had all default accounts and passwords removed or disabled.
- e. Managing, coordinating, and scheduling the activities of all Sub-vendors employed by the Bidder for this project. This shall include the resolution of all problems that may arise in connection with the hardware, software, and services supplied by the Sub-vendors.
- f. Implementing the FRTU and Communication Systems according to the quality standards acceptable to Purchaser.
- g. Training Purchaser staff so that they will be self-sufficient and able to operate, maintain, and upgrade the complete FRTU and Communication Systems.

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- h. Supplying FRTU and Communication Systems documentation such as instruction manuals, maintenance manuals, drawings, software design and user documentation, and other appropriate material that together fully defines the supplied system and allows Purchaser to operate, maintain, backup, restore, and upgrade the FRTU and Communication Systems hardware and software
- i. Supplying final (“as built”) documentation that is accurate and complete.
- j. Providing adequate facilities and resources for, as well as performing, factory testing
- k. Providing an environment that allows for reproducible execution of all FRTU and Communication Systems functional performance tests conducted during factory acceptance testing
- l. Transportation, delivery and temporary storage of all Bidder-provided equipment and materials to Purchaser's site or sites
- m. Performing the installation of the FRTU and Communication Systems at Purchaser's site under Purchaser's supervision
- n. Performing, with Purchaser's assistance, system start-up after satisfactory system installation, i.e. powering up the system, loading correct versions of all software and databases, activating data links, verifying correct operation of the system, and turning over to Purchaser an operational system ready for site testing
- o. Performing after delivery and start-up of the system, but prior to any site testing, setting up all functions for proper operation (system and function “tuning”)
- p. Performing the test at Purchaser's site, including correcting all reported variances
- q. Ensuring and periodically demonstrating that the work is progressing according to the approved schedule
- r. Maintaining the FRTU and Communication Systems up to the start of the warranty
- s. Providing and implementing all required warranty services

11.4.1 Purchaser's Responsibilities

Purchaser will be responsible for the following:

- a. Providing input AC power to equipment enclosures
- b. Reviewing and approving project deliverables such as, but not limited to, detailed implementation schedule, software and hardware functional design documents, user manuals,

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drawings, progress reports, training program, quality assurance plan, test plans and procedures, test results, support services (including maintenance), and as-built system documents

- c. Coordinating and supervising the Bidder's work to be performed at Purchaser facilities
- d. Attending pre-factory tests (at Purchaser's discretion)
- e. Participating in factory tests and approving test results
- f. Assist the Bidder with the installation
- g. Monitoring the site tests and approving test results
- h. Monitoring the availability test and approving test results
- i. Preparing variance reports, resolving variance issues, and approving corrected variances
- j. Determining if the Bidder's work is progressing in accordance with the schedule
- k. Verification of all Bidder materials, installation practices, and workmanship conform to requirements
- l. Providing facilities for on-site training and Bidder offices.

12.0 Quality Requirements, Inspection, Installation, Commissioning and Testing

12.1 Quality Assurance

Quality of service - Bidder must provide details of their proposed approach to quality assurance to ensure the quality of services in accordance with RFP Document. This should include:

- a. Responsibility of quality of service.
- b. How the bidder will ensure quality service is provided.
- c. How quality will be measured
- d. Bidder shall submit their quality certification / Assessment document. Bidder shall provide the following information along with the documents.

Description	Bidder's Response
Certification / Assessment Name	
Who issued the Certification / Assessment?	
When was the Certification / Assessment obtained?	
Does this Certification / Assessment process involve periodic reviews and observations / remarks after such review? If so, please provide details and specify when your company is due for its next quality review?	

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Table: Details of Certification

All materials and parts of the Bidder's own and Sub-Vendors System / Sub-System to be supplied under this project shall be current, in line with industry standard.

12.1.1 Quality Assurance and Testing

12.1.2 To ensure that the Bidder produces a well-engineered and contractually compliant FRTU and Communication Systems, a quality assurance program shall be followed and both structured and unstructured tests shall be performed.

12.1.3 Quality Assurance Program

The Bidder must employ documented Quality Assurance (QA) techniques and practices throughout this project. This QA program shall be adhered to for the preparation of all Contract deliverables, including documentation, hardware, firmware and software. The program shall provide for the minimization of defects, the early detection of actual or potential deficiencies, timely and effective corrective action, and a method to track all such deficiencies.

12.2 Inspection

Purchaser shall be allowed access to the Bidder's facilities during system design, manufacturing and testing and to any facility where hardware or software is being produced. The Bidder shall provide office facilities, equipment, and documentation necessary to complete all inspections and to verify that the FRTU and Communication Systems is being fabricated and maintained in accordance with the Specification to Purchaser's representatives.

Purchaser shall be allowed to review and verify the functional implementation of FRTU and Communication Systems software informally in conjunction with scheduled project meetings at the Bidder's facilities. No test plans, procedures, or reports are required to support these informal software demonstrations.

Purchaser shall be allowed to inspect the Bidder's hardware and software quality assurance standards, procedures, and records. Documents identified in the approved product quality assurance plan will be inspected to verify that the Bidder has performed the required quality assurance activities.

The inspection rights described above shall not apply to sub-bidders supplying standard computer or peripheral equipment and third-party software products. However, inspection rights shall apply to Sub-Vendors that are developing new software, offering solutions for inclusion in the FRTU and Communication Systems.

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12.3 Commissioning

12.3.1 Receipt at site, Handling, Storage & Insurance

- a. Bidder shall make his own necessary arrangements for storage space for the proposed system and shift the material at site as per the execution plan or the purchaser can provide the space in the nearby substation to keep the material. However, transportation, loss of material or any damage shall be the liability of the bidder.
- b. Bidder will be responsible for unpacking of the material supplied during the site execution, in the presence of TPCODL EIC/Site in charge. In case of any material discrepancy will be the liability of the bidder.

Delivery and movement of material to site from Purchaser's Sites/Stores / Substations shall be the responsibility of the Bidder.

12.3.2 Installation

Installation of the complete system is under Bidder's scope. Installation work shall be scheduled and carried out in coordination with Purchaser's representatives. All related drawings, installation manuals and recommended practices shall be submitted in advance for Purchaser's approval. Installation shall be certified by the Principal's representative.

12.3.3 Commissioning Activities

- a. The commissioning of the system (hardware and software) including SAT and one Month Trouble free operation shall be the responsibility of Bidder.
- b. Adequate number of qualified engineers (Hardware & Software) as approved by Purchaser shall be posted at site during the entire period of installation & commissioning for FRTU based field automation system.
- c. Daily site work shall be planned and executed as per due approvals from Purchaser's representative.
- d. Bidder shall submit detailed site organization chart of Personnel for Purchaser's approval. Purchaser reserve the right to review the same. Bidder's commissioning engineers shall also train purchaser's engineers during commissioning apart from scheduled Training.
- e. The responsibility for Installation, Commissioning, Performance guarantee and warranty shall remain with the Bidder.
- f. The Bidder shall furnish procedures, protocols for commissioning and acceptance test activities.

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- g. All tools (both hardware and software), test instruments, simulation jigs, documents, programming equipment etc. required for Installation, Testing & Commissioning are in the scope of bidder.
- h. All passwords, access keys etc. are the property of the Purchaser and shall be handed over to the Purchaser.
- i. All interoperability tables for interfacing to Automation systems shall be supplied.
- j. Principal's qualified representatives including specialists shall participate at site for supervision, & certification of commissioning and Acceptance tests.

The Bidder shall comply and adhere to the safety policy of the Purchaser. Hence necessary safety apparels shall be borne and used by Bidder for their personnel at their cost. Also, it is the responsibility of the Bidder to ensure their compliance to statutory requirements of their workmen. All the workmen engaged at the TPCODL site should have necessary ESIC and PF registration.

12.4 Testing

12.4.1 Test Responsibilities

Both Purchaser and the Bidder shall designate, in writing and prior to the start of the factory test, a test coordinator. Each coordinator shall be responsible for ensuring that the tests are conducted in accordance with the requirements of this Contract. The coordinators shall each have the authority to make binding commitments for their Purchaser such as approvals of test results and scheduling for variance corrections or, as a minimum, to cause such commitments to be expeditiously made.

Unless otherwise stated in this Specification, the Bidder shall be responsible for all factory tests. This responsibility shall include the conduct of the tests and all record keeping and document production. Bidder will support the factory testing by supplying staff to execute the test procedures under the Purchaser's supervision.

12.4.2 Factory Acceptance Test (FAT)

Factory tests shall include:

- a. Equipment test
- b. Functional test
- c. Performance test
- d. Stability test

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e. Unstructured test

a. **Equipment Test**

The equipment test shall verify that the FRTU and Communication Systems includes all required equipment, that the equipment is properly configured, and that the equipment can successfully execute the diagnostic programs provided.

The equipment tests shall include a visual inspection for proper workmanship, including cables, connectors, and labeling. The assembly drawings and configuration drawings shall also be verified at this time. These tests shall also verify that the required FRTU and Communication Systems capacity performance and expansion requirements as specified in this specification have been satisfied.

b. **Functional Test**

The functional test shall use an equipment configuration that may include an extension of the Bidder's deliverables as required to prove the correct functionality of the FRTU and Communication Systems. The test procedures shall consider all additional test equipment and shall ensure that the additional equipment does not create false test results. The functional tests shall rigorously exercise all functions and devices, both individually and collectively, and shall verify the correct functional operation of all hardware and software. These tests shall include the following, as may be applicable to the system under test:

- a. Verification of all required functionality of the system, such as FRTU and Communication Systems, applications, data exchange, and information storage and retrieval. Verification shall include all standard and custom functions as well as purchased options.
- b. Verification of communications maintenance capabilities including diagnostics, communications maintenance (FRTU, data links, interfaces etc.), and local input/output maintenance.

c. **Performance Test**

The performance test shall verify that the specified performance requirements are met. Simulation shall be provided by the Bidder, where necessary, to create the conditions for the specified performance scenarios. The simulations shall be tested first to verify that the desired activity is being simulated. Execution of the performance tests shall be automated as much as possible so that test runs can be reproduced.

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d. **Stability Test**

A 100-hour continuous run of the system shall be performed after successful completion of the functional and performance tests. The stability test will be considered successful if no critical function is lost, no major hardware failure occurs, no failover occurs, and no restarts occur within the test period.

Major hardware failure is defined for the purpose of this test as the loss of hardware such as a processor, Power Supply, Communication port, I/O cards etc.

During this test, the system shall be exercised (with simulated inputs, events, and conditions) in a manner that approximates an operational environment. Purchaser will simulate unstructured user activity during this test. Purchaser will not purposely cause any hardware or software failure, that is, failover and restart testing is not a goal of this test.

The Bidder shall assist Purchaser in this test as required by Purchaser; this assistance will be primarily in the form of helping the set-up of the test, explaining the best procedures to run the test, and explaining all unexpected results.

12.4.3 **Availability Test**

FRTU and Communication Systems and device availability in accordance with the criteria specified in the specification, System Availability shall be demonstrated by the availability test.

Predicted availability of equipment supplied shall exceed the following:

System Function	System Availability
Control and Monitoring of any one equipment (Breaker, Isolator etc.)	99.99%
Monitoring of Any One Single Alarm	99.99%
Monitoring of Any One Analog Input	99.99%

Duration and Criteria for Passing

In order to establish that all failures have been satisfactorily repaired prior to the end of the availability test, no downtime, intermittent (hold time) failures, or more than one uncommanded failover shall have occurred within 200 hours of the test's conclusion. The test shall be extended, if necessary, to satisfy this requirement.

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After successful completion of site acceptance test and 72 hours have passed, system availability shall be computed using the following formula:

$$\text{System_Availability} = [(\text{Test_time} - \text{Down Time}) / \text{Test_time}] \times 100\%$$

If the system availability requirements presented in the specification, System Availability, have not been met, the test shall continue until the specified availability is achieved. Alternatively, and at Purchaser's discretion, the test may be restarted.

When it has been determined that the system availability requirement has been met, the availability of each System device shall be calculated and compared against the device availability requirements as specified, Availability Requirements – FRTU and Communication Systems. If one or more devices do not meet the requirements, the test shall be extended until Purchaser and the Bidder mutually agree that corrective action has been completed for those devices. Corrective action shall include all necessary procedures to test and verify proper operation to Purchaser's satisfaction.

13.0 System Capacity, Performance and Demonstration

Proposed System shall meet performance standards required to maintain real-time monitoring and control of the network. Performance shall be evaluated according to the amount of time and controller resources required for accomplishing a variety of tasks. The tasks are grouped into the following major function areas:

- a. Data Acquisition and processing
- b. Data Archive processing
- c. Data transfer to Control Centre
- d. Response to the request of SCADA/DMS & OMS System

13.1 System Capacity

The system functions and associated databases shall be capable of accommodating at least a 100% increase in the delivered capacity without requiring regeneration, recompilation, or any other processing other than definition of the database by Purchaser.

Similarly, the FRTU rack shall have provision to add additional DI (32 DI) module, DO module (16 DO) and AI module (4 AI) to meet the site requirement.

- a. The system functions and their associated databases shall be dimensioned as per the functional requirement of the Purchaser, specified in this document. E.g., additional RMU integration, Integration of distribution level data etc.

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- b. The main memory of each processor shall be capable enough to twice the delivered capacity within the delivered enclosures by Purchaser.
- c. Fifty percent of the auxiliary memory capacity of each Controller shall be completely available for future use by Purchaser. The auxiliary memory of each processor, console, and storage unit shall be expandable to twice the delivered capacity within the delivered enclosures by Purchaser.
- d. Inspection and verification, to the extent possible, that provision to upgrade and expand the system are furnished as required by the contract.

13.1.1 System Functional Tests

The purpose of the system functional tests is to rigorously exercise all functions and to verify the correct functional operation of all hardware and software. The system functional tests shall include, but not be limited to, the following tests. The Purchaser shall also be able to perform other tests not specifically mentioned.

- a. Verification of proper data acquisition & control from the FRTUs, IEDs/Communicable Relay
- b. Verification of proper data acquisition from the Multifunction Meters
- c. Verification of proper data acquisition & control from Purchaser's other condition monitoring systems.
- d. Verification of the proper response of the system to include
 - i. Loss / Restoration of IEDs and FRTUs
 - ii. Loss / Restoration of Input Power
 - iii. Loss / Restoration of Communication System
- e. Verification of System Redundancy including fail-over procedures and restart.
- f. Verification of all development and maintenance capabilities Including:
 - i. Database Generation and Maintenance
 - ii. Back-up and Restoration functions of all systems.

13.2 System Response

Satisfaction of the performance requirements will be verified during factory test and the site test for each of the system and applications and the other functional requirement mentioned in the specification. Under Base Condition, Steady State Condition and High Activity Scenario

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Condition the system response shall be tested and response time as per the specifications shall be achieved.

- a. All Digital Inputs shall be reported with a resolution of 1 msec.
- b. All Digital Inputs shall have individual channel reporting
- c. Supervisory control operation shall be completed, and the result displayed at workstation consoles within 1 seconds plus scan-in progress, communication, and field device operation delays.
- d. The system shall report correct Time Stamping when all process inputs scanning & processing is in progress & all the data is transmitted over Data Bus every sec.

13.2.2 Resource Monitoring

Resource utilization shall be measured, calculated and displayed for the System processors, devices, and networks. The minimum set of parameters to be presented include:

- a. Time utilization (percent processor utilization) of each function per processor
- b. Time Synchronization
- c. Time utilization of each function
- d. Data transfers per second/minute/hourly

13.2.3 System Utilization

Name	Utilization	Comments
Main Memory	30%	Normal
	50%	Peak
Processor Utilization		
Application processor	<30%	Normal
	<50%	Peak
Communication processor	<30%	Normal
	<50%	Peak
Local Area Networks	40%	Normal Loading
	60%	Peak Loading
Auxiliary Memory		
Allocated capacity	50%	
Access and transfer capacity	30%	Normal
	50%	Peak

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13.2.4 Site Acceptance Test (SAT)

The site test includes the installation test, the functional test, and the performance test as specified in the factory test that will be conducted at Purchaser's site after shipment and installation of the FRTU and Communication Systems.

SAT shall cover all equipment and functions as specified for the complete system (all hardware & software) and connectivity with Purchaser's system. As such SAT shall cover all the tests listed in FAT along with site-specific tests including interconnections with field equipment and other systems. Apart from testing and commissioning, SAT shall include one month of continuous trouble-free operation of the complete system without major intervention. In case of interruptions, one month trial shall be restarted after attending to the problem.

- i. IEDs used for protection, control, etc.; the inter-bay bus (and associated communications hardware/software), the station bus (and associated communications hardware/software), the time synchronization system and the local/station HMI (if any) are to be considered as SAS components, and shall undergo commissioning requirements as part of the SAT.
- ii. Vendor shall furnish, advance SAT protocols and list of vendor's instruments for site testing. Tests shall include demonstration of loading & expandability of the system.
- iii. SAT shall be performed after the system has been installed, the final software has been loaded in each subsystem, all I/Os and functionality checked, system has been running and all commissioning checks have been completed successfully.
- iv. Unstructured tests shall be employed as necessary, to verify overall system operation under field conditions.

14.0 Warranty, Maintenance, Upgrades, Patch Management & Database Modification Requirements

This Section specifies the requirements for Warranty, hardware and software maintenance for the System, Warranty maintenance and support, system upgrades, patch management etc.

Bidder to note the environmental condition of locations, the proposed system is being planned to be installed and operational.

- a. Bidder shall provide facilities for carrying out online and offline maintenance of the components supplied as a part of the system. In general, this should include adequate testing equipment, tools, safety devices and other accessories. Bidder shall provide the details in their bid.

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- b. Bidder should provide Maintenance strategy of the product (Own & Sub-Vendor) being offered so as to schedule appropriate timeline for maintenance.

14.1 Maintenance Performance Requirement

Purchaser envisaged that all offered equipment shall not require routine or planned maintenance. Therefore, no fans or moving parts shall be used in any of the system to avoid any need for maintenance. To ensure this, all the supplied equipment should be constructed to resist the entry of Dust, Water etc. A single technician shall be able to remove and replace for repair purposes, without special tools and test equipment, all equipment involved in the offered system. Restoration of equipment to full operational use shall be possible within 15 minutes (nominally) of repairs being completed. It should not be necessary to dismantle (remove multiple pieces of) the system in order to replace a module.

14.2 Service Life

Purchaser prefers that the equipment shall be capable of complying with this standard, including performing its intended purpose, for a minimum of 10 years from the date of commissioning.

The supplier shall indicate the following:

- The date at which the product was released for sale.
- The anticipated date at which the product will be withdrawn from sale, but support will continue to be provided for Spares and Services.
- The anticipated date that product support will be withdrawn, i.e., spares and technical support will no longer be available.

14.3 Interchangeability

All the parts/modules shall be interchangeable individually (e.g., FRTU parts/modules shall be interchangeable individually, and FRTU). This is applicable for all the parts/module supplied by the bidder under this contract.

Any such change or replacement shall not reduce the capability of the equipment to conform to the requirements of this specification.

14.4 Definitions

The responsibility for maintenance of hardware and software will vary depending on the time during the Contract. So that the times for changes in responsibility can be determined, the following definitions shall be used:

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Delivery – Delivery of any item shall be interpreted as receipt of the item at Purchaser's facility.

Commissioning – Commissioning of any item shall be interpreted as receipt of the item at Purchaser's facility, installation on-site, successful completion of the site tests, and correction of all variances from the tests.

14.5 Deliverable Hardware and Software Version

The delivered Hardware and Software shall be the latest version being delivered by the manufacturer of the Hardware & Software six months prior to its delivery to Purchaser's facility. During delivery of the system, all the FRTU of a Bidder across the TPCODL network shall be upgraded to the latest version.

All hardware and software shall be of compatible versions. That is, the Bidder shall be responsible to ensure that all delivered hardware and software versions will inter-operate successfully. If it becomes necessary to upgrade some hardware or software to meet this requirement, the cost and time shall be borne by the Bidder. If it is necessary to revert to a previous version of any hardware or software to overcome incompatibilities among the hardware or software, the Bidder shall bear the cost and time of the "downgrade" and shall present a plan to correct the problems with the newer release. Such corrections shall also be at the Bidder's sole expense.

14.6 Warranty support

- a. **Maintenance services** for the supplied Hardware, System and application Software up-gradation, Patch Management services including sub-vendor products during the Standard **warranty period of 5 Years from the date of system handover after SAT**, resolution of all punch point of SAT and trouble-free operation of the entire system for a period of one month.
- b. Bidder shall provide Software up-gradation (if any), Patch Management services including sub-vendor products for next 5 years over and above as mentioned in item a.
- c. Training

SLA will be prepared and adhered by Bidder, Sub-Vendor's of bidder for extending the Hardware, Software and Service support to Purchaser for the period mentioned above. To mitigate major failure like Complete system failure, FRTU system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or operational capability. Some of the salient points as example are documented below:

- a. Bidder shall report to site within 48 hours of receipt of reporting of the failure occurrence

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- b. Bidder shall provide replacement of the faulty equipment within 7 days after confirmation of the fact that the equipment can't be repaired at site. Failure to this clause may have some penalty reference on Bidder.
- c. Bidder will mandatorily provide detailed analysis report of the faulty equipment within 15 days from the date of the site visit.
- d. Any spare Equipment replacement, testing and its commissioning to be done by bidder, with no cost implications to Purchaser. Any tools, equipment, Software or Hardware required for testing of the System (e.g., IEDs/FRTU/Communication Equipment) will be the responsibility of the Bidder, this includes all system supplied by bidder under this contract.
- e. Any up gradation in application software and hardware will be informed to Purchaser and necessary up gradation to be carried out by Bidder with no cost implications to Purchaser.

Bidder to note that Tri-Party agreement will be prepared for Bidder, Sub-Vendor to have protection against quitting of executing bidder and its alliances during commissioning, warranty and post warranty period as specified in this document.

14.7 Hardware Maintenance

The project schedule shall include an allowance for hardware maintenance prior to the availability test. The Bidder will not be granted any relief for project delays caused by maintenance problems prior to the availability test.

14.7.1 Maintenance During Commissioning

The Bidder shall have the responsibility for maintenance of all hardware after delivery and prior to commencement of the Warranty. This maintenance may be performed by a maintenance contract with OEMs or other parties or by Bidder staff using spare parts from the Bidder's stores or other sources.

Failed equipment shall be replaced or repaired, and spares inventories (if any) replenished to their delivered level throughout the period of commissioning. Any spare parts found to be defective during initial delivery inspection or during this period shall be replaced within one week after notification. There shall be no charges to Purchaser for these replacement parts, including delivery charges. All spare parts replaced under maintenance shall be new parts unless otherwise accepted by Purchaser.

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14.7.2 Maintenance Under Warranty

Maintenance during the warranty shall be in conformance with the terms of the warranty sections of this RFP. During the warranty period, Purchaser's hardware maintenance responsibilities will include the following:

- Provision of trained staff, responsible for call-out when problems occur
- Providing local assistance to the Purchaser during problem resolutions

The Bidder's hardware maintenance responsibilities shall include the following:

- Providing maintenance of all equipment, including spare parts
- Providing materials and instruction for appropriate engineering changes for equipment
- Provision of technical guidance towards the resolution of all hardware problems for equipment.

When needed, the Bidder shall respond to requests for technical support within Two Hours, 24 hours a day, seven days a week.

Failed equipment shall be replaced or repaired, and spares inventories replenished to their delivered level throughout this period. Any spare parts found to be defective during initial delivery inspection or during the Warranty period shall be replaced within one week after notification. There shall be no charges to Purchaser for these replacement parts, including delivery charges. All spare parts replaced under maintenance shall be new parts unless otherwise accepted by Purchaser.

The Bidder's technical support staff shall work with Purchaser's technical staff to establish a strategy to efficiently resolve each identified problem. If at any time, Purchaser believes that the Bidder's technical support is not effectively resolving a problem, Purchaser may request that the Bidder's system expert or staff from the equipment's manufacturer be dispatched to Purchaser's facility. The Bidder's technical team shall be at Purchaser's facility within 48 hours of that request to provide hands-on support towards the problem resolution. Purchaser will not be responsible for any expenses connected to the technical support, including travel expenses.

The Resolution time for different complaints shall be as per the below matrix:

Category	Definition	Maximum Resolution Time
Severity 1 Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or operational capability	0-14 hrs.

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Severity 2 Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost Non-availability of Manpower at site during working hours	0-36 hrs.
Severity 3 Minor	Any other system defect, failure, or unexpected operation. Request for information, technical configuration assistance, "how to" guidance, and enhancement requests.	0-72 hrs.

Failure by the Bidder to comply with the above-mentioned timelines, shall attract a penalty @ Rs. 1000 per hour limited to 10% of the Contract Value. Penalty amounts shall be recovered from the amounts due to Bidder or by invoking the Contract Performance Bank Guarantee submitted by Bidder against this Contract will be capped to maximum of 10% of the Contract value. Overall penalty including LD cumulatively will be 10% of the contract value.

14.7.3 Hardware Minimum Support Period

The Bidder shall guarantee the availability of spare parts and hardware maintenance support services for all System equipment for a minimum period of 10 years. Subsequent to this minimum support period, the Bidder shall provide to Purchaser a minimum of two year's advance notice of their intent to terminate such services.

14.8 Upgrades, Patch Management & Modifications

- Bidder shall continuously keep the Purchaser informed of all Software and Hardware upgrades as & when these are released.
- Bidder shall supply upgrades and patches of all installed software (both own and third party) for a period of ten years from the date of system acceptance without commercial implication.
- Bidder shall rectify all design defects and software bugs at no extra cost for a period of 10 years from the date of system acceptance.
- Bidder shall support the system totally for ten (10) years, even if no upgrades are implemented.
- Bidder shall provide lifetime support (10 years) for the system. To meet this requirement, Bidder shall refer with OEMs on the product's life cycle management and obsolescence. Bidder shall attach the product life cycle matrix for hardware and software offered under this RFP.
- The system referred to above includes Bidder's own as well as third party components.

14.9 Database modification during Warranty Period

All database modification major or minor is in the scope of the bidder, after the system handover and during the warranty period. The Scope covers FRTU configuration and necessary changes for control center communication. It is bidder's responsibility to provide resources as

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and when required by the purchaser for these changes and testing of the same as per the project and planned activity schedule. One of the examples of Configuration changes/modification are as mentioned below:

- a. Addition of Tags
- b. Addition/ Deletion of System/IEDs/Devices/SCADA enabled equipment/sensors
- c. Reconfiguration of FRTU for new Control Centers

15.0 Training

Bidder shall provide training to the Purchaser's personnel on the operation and maintenance of the system supplied equipment including Non-OEM equipment/3rd Party equipment. The training shall cover development, integration, installation and commissioning of both software & hardware components of the system.

The Bidder shall provide Classroom as well as hands-on training on the offered System. All required training materials such as System Catalogs, Test Instruments, Demo Equipment, and Simulation Jigs, etc. shall be arranged by the Bidder for own and Sub-Vendor Equipment. The training shall equip the Purchaser's engineers for Installation, Commissioning, Operation and Warranty Maintenance of Hardware, Software (Operating System, Administration and Applications), protocols and all Sub-Vendor systems.

The Bidder shall prepare and deliver a comprehensive training program on the operation and maintenance of FRTU, Communication equipment and associated accessories under this project. Configuration of FRTU, training shall cover the skills required for the maintenance and expansion. Hardware training shall qualify Purchaser to perform routine preventive maintenance, diagnostic testing on the processors, peripheral equipment, LANs & communications equipment.

Bidder shall indicate their Training facilities including test tools and simulation facilities. Bidder shall provide the training calendar and details of topics considered for the equipment offered.

The schedule, location and detailed content of each course will be finalized during detailed engineering.

Bidder to consider 10 man-days of the trainer for on-site training to Purchaser's personnel. Bidder to note that the indicated man-days will be utilized in batches, according to availability of the Purchaser's personnel.

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15.1 Training Requirement

Bidder shall provide training to the purchaser's personnel on the operation and maintenance of the system supplied by him.

General requirements relating to the training are specified below:

- a) Personnel who speak understandable English and who are experienced in instruction shall conduct training courses.
- b) Classroom and Hands-on training shall be on the identical system being supplied to Purchaser.
- c) Bidder shall provide all necessary training material. Each trainee shall receive individual copies of the technical manuals and pertinent documents. These materials shall be supplied at least one month before the scheduled commencement of the training course.
- d) The purchaser shall be permitted to video tape all training classes.
- e) Class materials, including documents sent before the training classes and class handouts, shall become the purchaser's property. The purchaser may copy this material for in-house training and organization use only.
- f) Training sessions conducted at site shall accommodate the number of candidates in batches.
- g) Bidder to note that, requirement of Training for FRTU system is explained in detail, on similar line bidder to arrange training for all Non-OEM systems such as Ethernet Switch etc.

15.1.1 FRTU Hardware Training

FRTU system hardware course shall be designed to provide Purchaser's personnel enough knowledge of the overall design and operation of the system so that they can correct obvious problems, configure the hardware, perform preventive maintenance, run diagnostic programs, and communicate with OEM personnel. The following subjects shall be covered:

- a) Configuration of the System Hardware.
- b) Basic and advance training of operation, maintenance techniques and diagnostic procedures for each element of the offered system, e.g., Processors, Auxiliary Memories, LANs, Routers etc. Configuration of all the hardware equipment.
- c) Techniques and procedures to expand and add IEDs/Feeder/Substation/Communication channels etc.
- d) Theory of operation and maintenance of the redundant/non-redundant hardware configuration, failover hardware, configuration control panels, and failover switches. Maintenance of protective devices and power supplies.

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- e) Theory of design and operation, maintenance techniques and practices, diagnostic procedures, and (where applicable) expansion techniques and procedures. Course content shall include hands-on training for the specific subsystems that are part of Purchaser's equipment or part of similarly designed and configured subsystems. All interfaces to the computing equipment shall be covered in detail.
- f) Preventive and Corrective maintenance of all equipment, including use of special tools and instruments.
- g) Capable to diagnose and debug problem in the FRTU. Course should familiarize the different error code of the FRTU and how to rectify them.

15.1.2 **Application Software Training**

Comprehensive application software course, covering all applications database Logic and display building etc. The training shall include minimum the following:

- a) Overview of the application software and data flows.
- b) Programming Standards and Interface conventions.
- c) Functional capabilities, design, and major algorithms. Associated maintenance and expansion techniques.
- d) Software development techniques and conventions for the preparation and integration of new software functions.
- e) Generation of application software

15.1.3 **FRTU Configuration/Engineering Training**

The database and logic building course shall cover how to configure the inputs & outputs signals of the FRTU, communications with IED, communication with Control Centre, build the configuration database, storing and retrieving of the configuration file, database administration to maintain and modify the database and its structures. Following minimum topics shall be covered:

- a) How to set up configuration database for FRTU, identifying different component for configuration
- b) How to configure I/Os
- c) How to configure IEDs
- d) How to configure Control Centre Communication

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- e) How to Configure Cyber Security features of FRTU
- f) How to Compile Configuration
- g) How to Import / Export configuration file
- h) How to download/upload configuration file
- i) How to maintain different configuration file

15.1.4 **FRTU System Administration**

System administration course shall cover the procedures necessary to operate the FRTU configuration software, managing users and their roles. At the end of this course, participants shall be able to:

- a) Start up the FRTU configuration Tools and its components
- a) Shut down the Software and its components
- b) Switch functions to backup equipment
- c) Take equipment out of service and its restoration
- d) Interpret and react to messages generated by error-monitoring functions
- e) Test field device and communication links
- f) Implement procedures for installing new devices
- g) Use procedures for altering and replacing the configurations
- h) Identify procedures for using diagnostics
- i) Describe the backup functions required for normal maintenance
- j) Upgradation of System Software, Patch Management and Firmware Upgradation of OS and Application Software etc.

15.1.5 **Simulator Training**

This course shall cover the operation of the Simulator, scenario building, and maintenance. Enable the Purchaser personnel to:

- a) Prepare training scenarios using the scenario building tools
- b) Simulate the communication over IEC 61850 protocol with devices
- c) Simulate the communication over IEC 60870-5-104/101/103 and Modbus protocol

Similarly, the bidder shall arrange training on Sub-vendor equipment supplied under this RFP.

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16.0 Spares

- a. Bidder needs to include competitive price for Mandatory Spare parts against the below specified list and schedules.
- b. Bidder shall include list of spares with quantities as recommended by him required for 10 years trouble free operation of equipment.
- c. The spares supplied shall be strictly interchangeable with parts for which they are intended for replacement.
- d. The spares shall be treated and packed for long storage (minimum 10 years) under the climatic conditions prevailing at the site.
- e. The start-up spares shall be delivered at the site well in time before the start-up and commissioning of the system.
- f. Bidder to note the environmental condition of locations, the proposed system is being planned to be installed and operational.

16.1 Start-Up Spares:

The start-up spares are those spares which will be required during start-up and commissioning of the equipment/systems, and until Final Take Over. It is the responsibility of the bidder to supply all the necessary spares as required until the equipment/systems are handed over to the Purchaser. An adequate stock of start-up spares shall be available at the site such that the start-up and commissioning of the equipment/systems, performance testing and handing over the equipment/systems to the Purchaser be carried out without hindrance and delay. All start-up spares which remain unused after the taking over the system shall remain the property of the Purchaser. The Bidder shall furnish the Schedule of Start-up Spares.

16.2 Mandatory Spares

Essential spares are those considered necessary by the owner for ten (10) years of normal Sub-Station Automation System operations. A list of such spares has been listed in the below mentioned table and the same shall be included in bidder's scope. When an item of spares is indicated as 'percentage', it shall be considered as percentage of total number of that item of spares of overall project, unless specified otherwise and the fraction shall be rounded-off to the next higher whole number. Whenever the item of spares has been indicated as 'set' the same shall mean the supply for a single equipment/system. One set of spares for the particular equipment shall mean the total quantities of that particular spares for a single equipment e.g., 'set' of RTU, SIC etc. The 'set' shall however include all components required to replace that

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item of spares. The Owner reserves the right to buy any of the essential spare parts as considered necessary.

In case during start-up and commissioning certain essential spares are used up, the same shall be replaced within one (1) month without any commercial implications.

Bidder shall furnish details for all essential spares as per the approved vendor document list.

Bidder to consider mandatory spares in the offer as per the BOM in Section E.

Note: Bidder to note that all above equipment shall be supplied along with Power supply, communication and specialized cables (if any)

Spares mentioned above shall be same as of installed system with necessary software key and licenses.

The table above indicate the minimum requirement of the owner, bidder to include 5% spares, which are not part of this table, but required for maintenance and upkeep of the system.

16.3 Recommended Spares

In addition to the spares mentioned above, the Bidder shall also furnish in his bid a list of recommended spares which may be required for ensuring the availability during the guaranteed availability period with unit prices. The final list of spares shall form part of scope of supply and accordingly the price thereof shall be quoted by the bidder and shall be considered in the evaluation of the bids. The Purchaser reserves the right to buy any of the recommended spare parts as considered necessary by him. The prices of recommended spares shall be consistent with those of start-up/essential spares. Purchase of these spare parts will be covered under this order / by a separate order / an amendment to the contract.

The Bidder shall provide a list of recommended spares for a period of Ten (10) years from the date of handover of the project to Purchaser. The shelf-life of these spares is such as to last for at least Ten (10) years from the date of handover of the project. Spare parts supplied by the bidder shall be made available to the bidder for usage subject to replenishment at the earliest (within a month). Thus, at the end of every quarter the inventory of spares with the Purchaser shall be fully replenished by the bidder. However, any additional spares required to meet the availability of the system (which are not a part of the spares supplied by the bidder) should be supplied immediately by the bidder free of cost to the Purchaser. The list shall include the following:

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Sl. No	Item Part Description	Recommended Quantity	Procurement Lead Time	Quantity of item held in Local office of Bidder	Quantity of item held in Head Office of Bidder as an emergency spare	Unit Price	Total Price

The Bidder shall provide the MTBF of various components, sub-assemblies, assemblies etc. (recommended as spares) and the relationship between MTBF and spare quantities recommended. The bidder is required to list the spares.

The Bidder shall submit the product life cycle details of all the hardware offered under this RFP.

17.0 Technical Specification for Feeder Remote Terminal Unit (FRTU)

FRTU is envisaged for data acquisition and integration with control centers to carry out remote monitoring and control of the RMUs. A state-of-art microprocessor based industrial FRTU designed for the electrical process environment in both decentralized and centralized manner shall be considered. The FRTU shall guarantee high availability and ensure safe and secure operations of all substation equipment.

The FRTU shall be multifunctional, designed in accordance with applicable International Electro-Technical Commission (IEC), Institute of Electrical and Electronics Engineer (IEEE), American National Standards Institute (ANSI), and National Equipment Manufacturers association (NEMA) standards, unless otherwise specified in this Technical specification. In all cases the provisions of the latest edition or revision of the applicable standards in effect shall apply.

FRTUs shall be a modular and reliable system for acquisition of required information from IEDs e.g. FRTUs, BCPUs, Numerical relays, Multifunction meters, , and other communicable devices as well as hardware signal through I/O cards.

All functional capability described herein shall be provided by the bidder even if a function is not initially implemented. As a minimum, the FRTU shall be capable of performing the following functions:

- 17.1 The proposed FRTU, I/O and Interfacing modules shall be of the same family of FRTU or Embedded, industrial grade system with high availability & reliability. FRTU hardware shall be easily scalable for expansion and to integrate IEDs/IOs in future on open protocols.

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- 17.2 The FRTU shall be non-redundant for the current application, however proposed FRTU shall support redundancy in hot standby mode with bump less Auto Changeover.
- 17.3 FRTU shall have vast protocol support capability, adaptable for customization and additional protocols and Multi master communication capability.
- 17.4 The FRTU shall support a wide range of Server/Client protocols including IEC61850 (ED1 & ED2 edition), IEC 60870-5-104 (Master/Slave), IEC 60870-5-103, Modbus - RTU, Modbus - TCP/IP (Master).
- 17.5 The FRTU shall have min 1,000 Physical I/O tags and shall support integration of at least 10 IEDs on IEC 61850 and at least 10 IEDs on serial protocols. Bidder to consider the hardware such as I/O peripheral, Serial Ports, Communication processors, Converters etc., in the FRTU accordingly.
- 17.6 The proposed FRTU shall communicate simultaneous with eight independent remote master (redundant) stations on IEC 60870-5-104 Protocol.
- 17.7 FRTU to the Purchaser's SCADA Systems shall allow scanning & control of all defined points (Physical/Pseudo points) within the field substation independently to each of the SCADA systems. Proposed system shall simultaneously respond to independent scans & commands from Purchaser's SCADA/ADMS Systems. Proposed system shall support the use of a different communication data exchange rate (bits per second), scanning cycle, and/or communication protocol for each remote-control center. Also, each control center's data scan and control commands may be different for different data points within the proposed system's database.
- 17.8 The FRTU shall be Din Rail Mounted.
- 17.9 Disturbance and fault record collection over IEC 60870-5-104 protocol
- 17.10 Shall support IEC 61131 based programming logic. The FRTU shall support programming language (Functional Block) with arithmetic & logical functions to incorporate Interlock Logic for SCADA Controls. Bidder to ensure supply of necessary hardware and software to achieve the functionality.
- 17.11 Web Server functionality to monitor and configure the FRTU along with Substation IEDs by authorized users (AAA functionality).

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- 17.12 Should provide latest Microsoft Windows based maintenance and configuration tools. The tools should have functionality of both remote and local access.
- 17.13 Time synchronization based on SNTP (Server/ Client) and Protocol specific synchronization (IEC 60870-5-104 etc.). The FRTU shall accept minimum two independent sources for time synchronization over SNTP/Protocol specific Synchronization. FRTU in turn shall synchronize the IEDs integrated on different protocols.
- 17.14 FRTU shall support SNMP protocol for device monitoring and management from Purchaser's Network Management System.
- 17.15 FRTU shall support configuration File Upload and Download from the Engineering Station (Configuration Laptop), functionality shall support both Local & Remote configuration.
- 17.16 FRTU shall be capable of acquiring 32-bit analog and accumulator data from Multi-function meters on MODBUS (RTU & TCP/IP)/IEC61850/IEC60870-5-104.
- 17.17 FRTU communication protocol shall be configured to report analog & Status changes by exception to master stations. However, FRTU shall support periodic reporting of analog data and periodicity shall be configurable from 1 sec to 1 hour. Digital status shall have higher priority than the analog data. In addition, analog values shall also be reported to Master station by exception on violation of a defined threshold limit.
- 17.18 The XML based Substation Configuration Description Language (SCL) of IEC 61850 configuration interfaces shall allow information to be shared between the various configuration tools, reducing the overall engineering time.
- 17.19 User friendly on-line health and data monitoring facility shall be provided to maintenance engineer for monitoring/analyzing the real time status of the process, program logic from the engineering station (Configuration tool – Laptop) from Local and Remote.
- 17.20 The Master Station user shall be able to perform a virtual connection through FRTU with any IED, provided by the communication protocol functionality, to support the information transfer to/from IEDs. e.g., the Master Station shall gather on-demand IED data; visualize IED configuration parameters. On the other hand, the Master Station shall be able to download to the IEDs configuration parameters, code changes, etc.
- 17.21 The system shall comprise of features namely failsafe control (i.e. check-before-execute, selection timeout etc.), Interlock & Sequential Logic Control system, Sequence of Event

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Recording (SER), Interfacing with third party IEDs (e.g. Multifunction Meters, Condition Monitoring & Protection system etc.), interfacing with third party computer system, Integration of data as per time base (e.g. 15 minutes energy integration), direct GPS clock connectivity, through SNTP server or through the Master (Main & Standby) for time synchronization.

- 17.22 In case of power supply failure, auto start-up and restoration of the FRTU shall be possible without manual intervention.
- 17.23 The FRTU should support features i.e. Logic Development, Auto-Change over of source functionality, Communication between FRTUs for automatic GRID management. These features shall be available by default without any additional hardware & Software.
- 17.24 All the cards/modules of the FRTU, Ethernet Switch etc. must have conformal coating for protection against harsh environments.
- 17.25 It shall be possible to increase the number of communication ports in the FRTU by addition of cards, if required in future. The FRTU shall support the use of a different communication data exchange rate and scanning cycle on each port and different database for each master station.
- 17.26 Internal battery backup to hold data in SOE buffer with time & date in case of failure of supply.
- 17.27 The proposed FRTU shall be KEMA Certified or by equivalent certification body like NABL /CPRI/International Accredited Lab.
- 17.28 It shall be capable to perform all functions as per the current RFP requirement including future requirements. Processor & RAM shall be selected in such a manner that during normal operation not more than 30% capacity of processing & memory are used.
- 17.29 FRTU shall communicate to MCC, BCC system over IEC60870-5-104 protocol.
- 17.30 Continuous self-supervision function with self-diagnostic feature shall be included.
- 17.31 **Communication**
- 17.32 **Ports**
- 2 Nos. Ethernet Ports / CPU, each port shall support IEC60870-5-104, IEC61850 (ED1, ED2) for simultaneous communication with Min Eight (8) independent redundant master's and IEDs (IEC61850 ED1, ED2).

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- 2 Nos. RS 485 electrical ports for communication with serial devices over serial protocols such as IEC60870-5-103, Modbus protocol in the FRTU. Bidder to mention all other protocol supported by the proposed FRTU in the technical offer as standard/default solution.
- In addition to above, Ports for internal communication, maintenance and configuration shall be considered.

17.33 Protocols

- The communication protocol for FRTU to Master Control Center must be IEC 60870-5-104.
- IEC 61850 ED.1 & 2, IEC 60870-5-104, IEC 60870-5-103, MODBUS (Serial and TCP/IP) shall be supported. The RTU shall meet the IEC 61850 standard in every respect and interoperability with other manufactures IEDs and tools shall be verified.
- Time synchronization over SNTP and Communication protocol from Master.
- Master and slave licenses shall be considered for all the above-mentioned protocols.
- Should generate XML file for integration/engineering with vendor Independent SCADA systems
- FRTU shall support RSTP.
- SNMP (v1, v2c and v3) for Health monitoring of the Hardware.

17.34 Input / Output Requirement

- a. Hot replacement of all I/O modules
- b. A complete set of process interface
- c. High disturbance immunity, meeting the requirements of the IEC directives 89/336/EEC and 73/23/EEC when placed in cabinets.
- d. Comprehensive self-diagnostics
- e. On-board processing capabilities such as time-tagging, event handling, filtering & gain control.
- f. Modularity, permitting step-by-step expansion
- g. Reliability and auto-diagnostics
- h. Easy to configure
- i. Quick fault finding with help of LEDs of each module and channel

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- j. The relative time error between events (DI signals) handled within one controller shall be <1 ms (interrupt driven). The relative time error between events handled within separate FRTU shall not be more than 2 ms.
- k. Input / Output Requirement for each Substation: Typical Input/Outputs requirement

I/O Requirement	Digital Inputs (DI)	Digital Output (DO)	Analog Input (AI)
IO Configuration (Current Requirement)	48	16	4
Expandable	80	32	8

The following Input / Output modules are envisaged to acquire the field information. Bidder to note that, the I/O requirement considered from hybrid architecture, i.e. Acquisition of I/O from IEDs and as well from proposed I/O modules.

- a. Analog input
- b. Digital inputs
- c. Digital outputs

17.35 Dummy breaker latching relay

The Contractor shall provide a latching relay to be used to simulate and test supervisory control from the Master station. The latching relay shall accept the control signals from the FRTU to open and close and shall provide the correct indication response through a single point status input.

17.36 Analog Input Sub System

- The entire analog, Telemetered, Non-Telemetered and calculated point values shall be stored in the database in engineering units
 - The system shall provide the capability to perform analog-to-digital conversion accuracy monitoring and raising an alarm should any such points exceed tolerance
- a. Analog Signal Conditioning
- Galvanic isolation of input and output signals
 - Input filtering and non-linear filtering for attenuation of noise-level
 - Amplification of low-level signals
 - Cold junction compensation

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b. Analog Signal Monitoring

- Power supply failure monitoring due to loose plug connection, short circuit, wire break and voltage interruption
- Transducer / Energy Meter monitoring for parity, wire break, live zero and end limit values
- Short circuit proof
- Monitoring of A/D conversion
- On-line simulation
- Cable monitoring for open circuit
- Fuse protection and fuse failure detection
- Communication monitoring
- Configurable Dead band

c. Design and Performance requirement of Analog Input modules

The Analog Input module shall be a solid-state type. The following features shall be provided:

- The decoding logic shall ensure that no two channels are selected simultaneously
- Cross-Talk attenuation between selected and unselected channel shall be more than 80 dB
- The Analog – to – digital converter (ADC) shall preferably be of successive approximation type, the following feature shall be provided:
 - Guarded input section to ensure large common mode noise rejection
 - Provisions for ADC overflow detection
 - Repeatability of +/- 0.025% of full scale
- The following design features shall be provided to offer protection to the analog input modules:
 - Protection for continuous overload up to 200% of all input ranges. Such overload on any analog input point shall not affect the accuracy of the next analog input in the same range.
 - Features to ensure that power line voltage variations up to +/-20% and line frequency variation up to +/- 10% do not affect the accuracy of the system
 - Connection of any point for indefinite time shall not damage the system

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- Provision for isolating failed channels and for ensuring that such partial failure does not affect remaining healthy channels
- Modular design to enable easy field expandability
- Provision for two high accuracy reference voltages to be used for checking the accuracy of the ADC for linearity, zero drift and gain. The reference voltage shall be set at equal intervals with respect to the ADC range. This check shall be made automatically at periodic intervals not exceed 6 secs and shall be alarmed if conversion is out of tolerance
- On-line replacement of individual modules in case of failures
- Surge withstands capability as per IEEE standards.
- Measurement range: +/- 2.5 V, +/- 5 V, +/- 10 V, 0-+/- 5 mA, 0-+/- 10 mA, 0-+/- 20 mA, 4-20mA
- Resolution: 14 bits + sign
- Type of input: Differential
- Input impedance (Voltage input) – 2 Megaohms
- Shunt resistance – 250 ohms
- Common Mode Voltage – 100 V
- Conversion time - < 100 millisecond
- Fusing of Transducer Supply – Individual
- Temperature drift with Gain=1 - 0.05%/10°C (Typical), 0.1%/10°C (Max)

17.37 Digital Input Sub System

Digital input with memory shall be considered in case when two items of information received simultaneously i.e. the current point state and flag indicating if the state has changed more than once since the last scan cycle. Number of changes shall be computed using the new state, the memory flag & the last state.

a. Digital Input Signal Conditioning

- Galvanic isolation of input signals
- Input filtering for noise-level

b. Digital Input Signal Monitoring

- Contact monitoring

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- Contact bounce protection
- Power Supply failure
- Fail safe condition on failure of card / channel
- On-line simulation / blocking
- Fuse protection and fuse failure detection
- Communication monitoring
- Cable monitoring

c. **Design and Performance requirement of Digital Input modules**

The digital input modules shall be provided for the periodic scanning of both low resolution and high-resolution digital inputs. The following design features shall be provided:

- Internal voltage source to convert contact state of potential free contacts, either changeover or ON-OFF into logic level signals. Possibility of surface film or contamination on the contacts shall be considered while selecting this source
- Voltage level sensing units, with non-zero values for the binary status output
- Differential input circuit to offer common mode isolation
- Choice of polarity and threshold range
- Buffer registers
- Filtering to protect against contact bounce or electrical noise on input lines
- Detection of card power supply failure
- Surge withstands capability as per IEEE standards
- Self-Checking features for detecting faulty operation
- Status indicating LEDs for each input
- On-line replacement of individual modules in case of failure
- Simulation facility
- Digital inputs with interrupt-controlled updating
- Provision for isolating failed channels and for ensuring that such partial failure does not affect remaining healthy channels

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- The digital input can be inverted so the value is 1 when the electrical signal is off, and 0 when it is on
- Rated Voltage – 24 V DC / 48 V DC
- Input Voltage Range “1” – 18 – 30 V / 36 – 72 V
- Input Voltage Range “0” – (-) 28 – 10V / (-)28 – 20 V
- Input Resolution – 1 mSec
- Time Stamping – at Card level
- Event Detection – Yes
- Current consumption (+5V) – 460 mA
- Number of channels per module / card – 16 (max)

17.38 Digital Output Sub System

a. Digital Output Signal Conditioning

- Galvanic isolation of output signals

b. Digital Output Signal Monitoring

- Contact monitoring
- Contact bounce protection
- Power Supply failure
- Fail safe condition on failure of card / channel
- On-line simulation / blocking
- Fuse protection and fuse failure detection
- Communication monitoring
- Cable monitoring

c. Design and Performance requirement of Digital Output modules

The digital output module shall provide contact closure outputs by driving relays. The features to be provided are as follows:

- On-line replacement of individual modules in case of failure
- Long life, bounce free, high-speed mercury wetted or dry reed relays

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- Surge withstands capability as per IEEE standards
- Type of Output – Opto isolated short circuit protected transistor output
- Number of channels per module / card – 32 (max)
- Voltage rating – 24 V DC /48V DC
- Load Supply – 19.2 V (minimum), 56 V (maximum) / 38.4 V (Min),112 V (Max)

17.39 Algorithm and Logic

- The FRTU shall be based on advanced and proven algorithms and an easy and efficient upgrade of the FRTU functionality shall be possible.
- The FRTU shall support IEC61131 for constructing the interlock logic functions.
- The FRTU shall facilitate user defined logic functions such as automatic control sequences by means of available logic elements. e.g., with one command perform a safe change of the connection of a selected line from one bus-bar to another bus-bar in double bus-bar switchgear.
- Command is always to be given in two stages: selection of the object and command for operation under all mode of operation. Final execution shall take place only when selection and command are actuated (Select-before-execute).
- It shall also be possible to interconnect and derive input and output signals, logic functions, using built-In functions, complex voltage and currents, additional logics (AND-gates, OR gates and timers).
- A delay/integrator shall allow the pick-up and reset of binary signals of IEDs to be delayed before being displayed or used to control other functions.

17.40 Self-Supervision

- The FRTU shall have extensive self-supervision including all functional module and communication channel.
- The FRTU shall have LEDs for healthiness / error indication
- FRTU shall have the facility to generate & download the log files for maintenance and troubleshooting.
- Command execution timer (configurable) must be available for each control point. If the control action is not completed within a specified time, the command should get cancelled

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(Run Time Command cancellation). The timer for time-out feature shall also be user configurable.

- e. In case of restoration of communication links, power supply after failure, the software along with hardware shall be capable of automatically synchronizing with the remaining system without any manual intervention.
- f. It shall be possible to re-boot the FRTU through the LAN/WAN from a remote location.

17.41 Event Recording pertaining to FRTU

- a. The FRTU shall support event recorder that can handle up to 1000 time tagged events. Events shall be stored in non-volatile memory. In case of failure of RTU or communication channel, the recorded events shall be communicated to the master as soon as communication is restored after failure.
- b. The FRTU shall have an internal clock with the stability of minimum 10 ppm or better. The FRTU time shall be set from time synchronization messages received from GPS clock or Master station. SOE time resolution shall be 1ms or better.
- c. The FRTU shall maintain a clock and shall time-stamp the digital status data. Any digital input data in the FRTU shall be assignable as an SOE point. Each time a SOE status indication point changes the state, the FRTU shall time-tag the change and store in SOE buffer within the FRTU. SOE shall be transferred to Master Station through FRTU as per IEC 60870-5-104 protocol.
- d. It shall be possible to retrieve the recorded event on the Purchaser's SCADA system.
- e. FRTU shall support Event storage capacity as follows

Measurement Events	10000
System Events	1000
Alarms & Events	5000

- f. FRTU shall support web-based monitoring from remote as well as local.

17.42 Power Supply

- a. The FRTU shall be powered from the 18-72 VDC (24/48 V DC) Power Supply. The FRTU shall accept power from the DC system with the following characteristics:
- b. Nominal Voltage of 24V DC/ 48V DC with operation between 18 - 72 VDC. The voltage may vary during normal operation between these limits with a duration not less than 1 msec.
- c. Reverse polarity protection.

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- d. The RTUs shall operate with grounded input power from purchaser
- e. The RTU shall have adequate protection against reversed polarity, over current and under voltage conditions.
- f. Each Input / Output Supply within the panel shall be through power supply distribution module with MCBs with NO contacts (for supply monitoring).

17.43 Time Synchronization

- a. FRTU time synchronization shall be over the Communication protocol from master (IEC 60870-5-104).
- b. FRTU in turn shall be capable of synchronizing all the slave IEDs
- c. Timing Accuracy: The FRTU shall time-tag event reports to an absolute accuracy of 1ms or better.
- d. FRTU shall generate an alarm if it gets drifted or loose the synchronization signal.
- e. FRTU shall have min 2 (two) source input for Time synchronization with priority provision
- f. Bidder to propose the solution for time synchronization of the FRTU, if the same drifts beyond specified limit (e.g. 30 minutes drift)
- g. With each power cycle the FRTU shall time synchronize with the available source.

17.44 Environment requirements, Reliability & Cooling

- a. The Unit shall have high reliability in operation and shall not use cooling fans. The unit shall have vermin proof enclosure and shall insulate electronics, internal components and electronics from external environment in order to avoid failures due to dust, humidity, fungus etc.
- b. The FRTU Panel hardware installed shall comply to IP54 or better enclosure.
- c. The FRTU panel shall be rugged, environment independent and can be installed in the harsh environment (Outdoor/Indoor) with no temperature or humidity control. FRTUs shall be capable of operating in ambient temperature from 0 to +65-degree C with rate of temperature change of 20-degree C/hour and relative humidity 95%, non-condensing.

17.45 Expansion in future

Offered system shall be suitable for extension in future for additional equipment & other IEDs. During such requirement, all the drawings and configurations shall be designed in such a manner that its extension shall be easily performed by the Purchaser. During such event,

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normal operation of the existing system shall be unaffected, and system shall not require a shutdown. The Bidder shall provide all necessary hardware and complete set of software tools along to perform addition of equipment/IEDs in future and complete integration with Purchaser's SCADA System. These hardware and software tools shall be able to configure IED, add additional analogue measurements, digital I/Os, modify interlocking logics etc. for additional IEDs/equipment which shall be added in future.

17.46 **Cybersecurity**

- a. Secure access- Level Wise enabling of settings with User Rights should be incorporated with Password protection in the FRTU. Each User shall have his/her own User Id & Passwords.
- b. User Credentials to access FRTU shall be authenticated through Purchaser's Active directory Server.
- c. All actions/modifications/deletions shall be logged in the FRTU. These logs shall be pushed to Purchaser's Central Asset Management system/SOC.
- d. It shall be possible to access the FRTU through a web browser (Https Support) anywhere from the LAN for configuration, diagnosis, monitoring, file upload & download, simulation and log retrieval by using appropriate user account management viz. Role based access control & password complexity
- e. The FRTU should also supports Authentication and Authorization of individual users, Security logging.
- f. FRTU shall be NERC-CIP/NIST 7628, IEC62351, IEC 62443 and IEEE 1686 compliant.
- g. FRTU shall be enabled with System hardening viz. disabling/removal of unused ports and services.
- h. FRTU Should support System Audit Logs, SYS logs etc.

17.47 **Reliability**

Reliability of the equipment's offered shall be better than 99.9999% per year availability for overall end equipment. FRTU reliability and availability calculation shall be provided with engineering document for approval.

17.48 **Configuration and Management Tool**

Bidder shall provide all the Configuration and Management software tools, which can be installed on Purchaser's existing Engineering Laptops. The proposed configuration and management software shall be compatible with Microsoft Windows version 10 and above.

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Bidder to consider software tools for FRTU configuration, diagnosis, simulation, Logic development.

A Software tool for user friendly engineering and disturbance handling shall be available for

- a. Configuration of all input and output logical, communication interfaces and other built-in functions and signals shall be possible both locally and remotely from the Master Station for configuration & maintenance activity.
- b. Configuration application shall have multilevel passwords to safeguard control, logic, and automation settings.
- c. Data collection, data modelling, configuration and parameter setting
- d. Engineering of process information for automation and control center systems
- e. Engineering of process information for automation of non-bidder systems and their individual parameters.
- f. User friendly on-line monitoring facility of real time data shall be provided to maintenance engineer for monitoring/analyzing the real time status of the process, program logic from the engineering station. The FRTU simulator shall be capable of emulating master and slave protocols for all the applicable open protocols. Bidder shall submit the details of the offered simulator packages along with the bid.
- g. Shall be used to monitor all communication traffic on a channel

18.0 Layer 2 Industrial Grade Managed Ethernet Switch

Technical specifications for the Managed Layer 2 Industrial grade, 61850-3 compliant Ethernet switch is given below:

- a. The switch shall be of industrial grade type designed for continuous operation.
- b. Switch shall have minimum 8 ports –
 - No. of CU Ports : 6 Ports (RJ45 - 10/100Mbps)
 - No. of FO Ports : 2 Ports (SM)

Speed of FO: 1000 MBPS, Type of Connector: LC Type – 1000 FX
- c. Switch shall be DIN Rail mounted with Power Socket and Ports
- d. LED indicators for link establishment and data transfer for each port
- e. Should support remote configuration

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- f. It should own separate maintenance/console port
- g. Latency shall not be more than 10 μ s.
- h. Should support SNMP Server v1.0/v2.0/v3.0
- i. Should be KEMA Certified or equivalent
- j. All the cards/modules of the Switch must have conformal coating for protection against harsh environments.
- k. Switch shall support IEEE802 series for VLAN, RSTP, MSTP and Suitable for ring configuration etc.
- l. Switch shall be IEC 61850 EMC and operating conditions for Power Substations environment.
- m. Switch shall be IEEE 1613 Environmental Standard for Electric Power Substations environment.
- n. Switch shall have design for minimum Heat generation and high MTBF (minimum time between failure)
- o. Switch shall Support Simple plug and play operation - automatic learning, negotiation, and crossover detection
- p. Switch shall Support Quality of Service (802.1p) for real-time traffic
- q. Switch shall Support SNTP time synchronization (client and server) for synchronization of networks
- r. Switch shall Support Industrial automation features (e.g. Modbus, Ethernet/IP and IEC61850 protocols for transparent data transmission)
- s. Switch shall be suitable for PRP/HSR configuration and devices.
- t. Switch shall Support Management Tools like:
 - Web-based, Telnet & Command Line Interface (CLI) for quickly configuring major managed functions
 - SNMP v1/v2c/v3 for different levels of network management
 - Remote Monitoring (RMON)
 - Rich set of diagnostics with logging and alarms
 - Bidder shall supply Console Cable along with each switch

18.1 LAYER 2 features

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- a. The Switch should support Layer 2 switch ports with Secure VTP or similar protocols to reduce administrative burden of configuring VLANs on multiple switches in turn eliminating the configuration errors & troubleshooting in secure manner.
- b. The Switch should support Rapid Spanning Tree Protocol & Multiple Spanning Tree Protocol.
- c. The Switch shall have IEEE compliance for 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol.
- d. The switch should have support for Port mirroring
- e. The Switch should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems or equivalent
- f. The Switch should support a mechanism to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes

18.2 Management features

- a. Switch Latency period: 7 Microsecond or better
- b. Transfer Rate of the Switch: 50.4 Gbit/sec
- c. The Switch should support SNMP v2, V3
- d. The Switch should support Configurable SNMP traps
- e. The Switch should support Logging to syslog with time stamp
- f. Java Run time version - Latest
- g. The Switch should support NTP, SNTP support.
- h. Full environmental monitoring of PSUs, Fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure

18.3 Power supply

- a. 18-72 V DC power supply module, with $\pm 15\%$ tolerance
- b. Separate MCB with appropriate rating shall be used to power up the Switch
- c. Provision for connecting redundant power supply option should be available.

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18.4 Environmental

- a. The switches should have IEEE 802.3az Energy efficient Ethernet and ROHS compliance
- b. Switch should be capable of operating under normal room temperature without the requirement of Air conditioning.
- c. Conformal Coating: Required
- d. Operating Temperature: -5° to +85°C.
- e.

IEC60068-2-1	-	Cold Temperature
IEC60068-2-2	-	Dry Heat
IEC60068-2-30	-	Humidity (Damp Heat, Cyclic)
IEC60068-21-1	-	Vibration
IEC60068-21-2	-	Shock, IEC61850-3- Environmental

18.5 Product Conformity

Product Conformity	Purchaser Requirement
IEEE 802.3-10BaseT	Yes
IEEE 802.3u-100BaseTX	Yes
IEEE 802.3u-100BaseFX	Yes
IEEE 802.3ab-1000BaseT	Yes
IEEE 802.3ad-Link Aggregation	Yes
IEEE 802.3x-Flow Control	Yes
IEEE 802.1d-MAC Bridges	Yes
IEEE 802.1d-STP	Yes
IEEE 802.1p-class of service	Yes
IEEE 802.1Q-VLAN tagging	Yes
IEEE 802.1Q-2005 (formerly IEEE 802.1s) MSTP	Yes
IEEE 802.1w-RRST	Yes
IEEE 802.1x-port based Network Access Control	Yes

19.0 Networking Accessories

19.1 Patch Panel

All structured Ethernet copper cabling shall be terminated on of Cat 6 E type patch panels on L2 switch side.

19.2 I/O Box

All the structured CAT6 cabling on the device side shall be terminated on I/O boxes.

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19.3 Ethernet Patch cords

All the terminations on the switches / devices shall be done using factory crimped, flexible Cat 6 E UTP Patch cords of suitable length.

20.0 FRTU Panel

20.1 Panel and other Accessories

- a. The panel shall be of IP 65/67 class and industrial grade along with CANOPY.
- b. Control panel shall be suitable for bottom cable entry.
- c. Interconnection between panels shall be by prefabricated cables.
- d. The Bidder shall submit the GA drawing considering the maintenance and aesthetic requirements and submit the drawings along with bill of material for purchaser's review.
- e. The bidder shall guarantee the satisfactory functioning of the system hardware mounted in the panels even in the event harsh environment.
- f. Proper size Cable trays shall be provided in the panel after reviewing the number of cables to be terminated in the panel.
- g. Enough space (for easy termination, for easy viewing of cable tags) shall be provided between the terminal channels and cable trays.
- h. Terminals shall be distributed functionally in the panel.
- i. Panel door locks shall have the common key.
- j. Acrylic glass sheet shall be provided, wherever the power cables & terminations are exposed and prone to be fatal.
- k. Electrostatic strap shall be fitted with each panel.

20.2 Sheet Metal Work

The panel frame shall be fabricated using suitable mild steel structural sections or pressed and shaped cold rolled sheet steel of thickness not less than 2.5 mm.

Frames shall be enclosed by cold rolled sheet steel of thickness not less than 2 mm, smoothly finished, leveled and free from flaws. Stiffeners shall be provided wherever necessary. The Panels shall be provided with MS Base Channel of 75 x 50 mm.

All panel edges and door edges shall be reinforced against distortion by rolling, bidding or by the addition of welded reinforcement member.

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Cut-Outs shall be true in shape and devoid of sharp edges.

The complete structure shall be rigid, self- supporting, free from vibration, twists and bends.

20.3 Galvanizing

All galvanizing shall be carried out by the hot dip process, in accordance with Specification ISO : 1460 or IS: 2629. However, high tensile steel nuts, bolts and spring washers shall be electro - galvanized to service condition four. The zinc coating shall be smooth, continuous and uniform. It shall be free from acid spots and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath, which could have a detrimental effect on the durability of the zinc coating.

Before pickling, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paint, varnish. Oil, welding slag and other foreign matters completely removed. All protuberances that would affect the life of galvanizing shall also be removed.

The weight of zinc deposited shall be in accordance with BS 729 and shall not be less than 0.61 kg/m² with a minimum thickness of 86 microns for items of thickness more than 5 mm, 0.46 kg/m² (64 microns) for items of thickness between 2 mm and 5 mm and 0.33 kg/m² (47 microns) for items less than 2 mm thick.

Parts shall not be galvanized if their shapes are such that the pickling solution cannot be removed with certainty or if galvanizing would be unsatisfactory or if their mechanical strength would be reduced.

In the event of damage to the galvanizing the method used for repair shall be subject to the approval of the Project Manager or that of his representative. Repair of galvanizing on site will generally not be permitted.

The threads of all galvanized bolts and screwed rods shall be cleared of shelter by spinning or brushing. A die shall not be used for cleaning the threads unless specifically approved by the Project Manager. All nuts shall be galvanized. The threads of nuts shall be cleaned with a tap and the threads oiled. Partial immersion of the work shall not be permitted, and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion.

After galvanizing no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing.

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To avoid the formation of white rust, galvanized material shall be stacked during transport and stored in such a manner as to permit adequate ventilation. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

The galvanized steel shall be subjected to tests as per IS-2633 and BS : 729

20.4 Constructional Features

SAS cabinet shall be outdoor type, floor mounted, with suitable to accommodate all electronics, auxiliary relays, ethernet switch, modem, battery and battery charger with front side opening.

As these FRTU are for outdoor application, proper concrete plinth to be established for erection of the FRTU panels to protect it from high wind speed of more than 150 Km/ hr and water logging.

The panel shall be -

- a. Panel shall be of the metal, floor mounted
- b. Panel shall be of reputed vendor
- c. Made up of the requisite vertical sections of dust, moisture and vermin proof construction.
- d. It shall have lifting i-bolts for hooks of good capacity and even distributed lifting. Test certificates shall be available for the lifting bolts.
- e. Suitable to provide a degree of protection of not less than IP 55/IP65/IP67 as per IS: 2147.
- f. It is the responsibility of the bidder to ensure that the equipment specified, and such unspecified complementary equipment required for completeness of the SAS design shall be properly accommodated in the panel, in such a way that the maintenance, identification, isolation of any component or circuit shall be easy. Equipment shall be mounted such that removal and replacement can be carried out individually without affecting the services of the adjacent devices. No price increase at a later date on this account shall be allowed.
- g. Self-cooled design with adequate louvers on sides. The louvers shall have screens and filters on inner side of panel. The screens shall be of fine wire mesh made of brass or GI wire.
- h. Shall have maintenance access to the hardware and wiring through lockable full height doors.
- i. Shall have the provisions for bottom cable entry.
- j. The safety ground shall be isolated from the signal ground and shall be connected to the ground network each ground shall be a copper bus bar. The grounding of the panels to the owner's grounding network shall be done by the contractor.

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- k. All panels shall be supplied with 230 V AC, 50 Hz, single-phase switch and socket arrangement for maintenance.
- l. FRTU panel shall be with 1 No. internal maintenance lamps (CFL) and space heaters and gaskets.
- m. All panels shall be outdoor, dust-proof with rodent protection, and meet IP55/IP65/IP67 class of protection.
- n. There shall be no sharp corners or edges. All edges shall be rounded to prevent injury.
- o. Document Holder shall be provided inside the cabinet to keep test report, drawing, maintenance register etc.
- p. Provided with labels on the front and rear indicating the panel designation.
- q. Proper provision must be provided for the entry of FO cables and Ethernet cables at the bottom along with AC & DC power supply cable.
- r. Provided with neoprene gaskets all-round the perimeter of covers, gland plates, removable covers and doors.
- s. All sheet steel work shall be degreased, pickled, phosphate and then applied with two coats of zinc chromate primer and two coats of finishing synthetic enamel paint, both inside and outside. The paint shade shall be Siemens Grey (RAL 7032). The final finished thickness of paint film on steel shall not be less than 100 microns and shall not be more than 150 microns.
- t. For every distribution of AC and DC circuits MCB's must be provided. These MCB's must be rated according to the load on the distributed circuit.
- u. Each FRTU panel shall be provided with 20% spare terminals.
- v. Terminal blocks shall be having provision for isolation, with full-depth insulating barriers made from moulded self-extinguishing material. Terminal blocks shall be appropriately sized and rated for the electrical capacity of the circuit and wire used. No more than two wires shall be connected to any terminal. Required number of TBs shall be provided for common shield termination for each cable.
- w. All materials used in the enclosures including cable insulation or sheathing, wire troughs, terminal blocks, and enclosure trim shall be made up of flame-retardant material and shall not produce toxic gasses under fire conditions
- x. Space heater with thermostat shall be provided in the panel to maintain the required temperature.

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- y. Disconnecting type terminal blocks shall be used for CT, PT and for all Digital Outputs.
- z. Enough space (for easy termination, for easy viewing of cable tags) shall be provided between the terminal channels and cable trays.
- aa. Terminals shall be distributed functionally in the panel.
- bb. Horizontal and vertical Grounding bus shall be provided in the panel. Green coloured wires shall be used for grounding purpose. Cable gland plate fitted on the bottom of the panel shall be connected to earthing of the Panel/Station through a flexible braided copper conductor rigidly.

d. **FRTU supplied alongside RMU Panel**

If a single vendor is supplying both the RMU and FRTU, then the FRTU panel should not be standalone & separate from the RMU Panel. The FRTU should be an extended part of the RMU panel by housing it in separate compartment of RMU panel and the mounting method is to be same as per specification of mounting the RMU panel. No cables including the power cables, instrumentation cables, CT/PT cables should be laid outside from RMU compartments to FRTU compartments and proper cable entry should be provided from side entry.

The FRTU compartment should be designed to house all the equipment including the LIU box and should have the provision of space for expansion of the I/Os as per the tender document. There should be provision of FO cabling through gland plate in the base.

The FRTU panel should have indication for AC Power, DC Power, Local & Remote at the front side of the panel. The FRTU front panel must have marking "TPCODL FRTU PANEL" with white color printed on black color acrylic sheet. The FRTU panel compartment shall be designed to be tamper proof and separate battery charger & battery to be considered for FRTU compartment as per the GTP provided in Section-E.

Earthing of the FRTU compartment should be considered along with the RMU compartments as it is integrated Panel housing both. However, it is to be ensured that the earthing resistance should be less than 2 ohms for FRTU applications.

The metal sheet work/ panel paint/IP class should be same as RMU specifications. However, the FRTU internal wiring, earthing terminals, terminal blocks etc. should be as per the specification mentioned at point no 1.45.6 to 9.

20.5 **Wiring /Cable Requirements**

The FRTU panels shall gather all signals from and to the devices located in RMU. Pre-wired and prefabricated cabling may be used. All wires that carry low-level signals shall be

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adequately protected and separated as far as possible from power wiring. All wires shall be identified either by using ferrules or by colour coding. In addition, cables shall be provided with cable numbers at both ends, attached to the cable itself at the floor plate where it enters the cubicles. The cable distance shall be site surveyed by the bidder. The distance between FRTU panels and RMU panels at site is maximum 6 mtrs. These cable lengths mentioned are for indicative purpose only. The bidders are required to quote as per their site survey.

All the external Cabling between the FRTU and RMU panels shall use armored cables. The external cables (except communication cables) shall have the following characteristics:

- a. All cables shall have stranded copper conductor
- b. Minimum core cross-section of (3/20) 2.5 mm² for Control outputs and 0.5 mm² for Status inputs
- c. Minimum core cross-section of (3/20) 2.5 mm² for PT cables and for CT cables.
- d. Rated voltage Vo/V of 0.6 / 1.1kV
- e. External sheathing of cable shall have oxygen index not less than 29 & temperature index not less than 250. Cable sheath shall meet fire resistance test as per IS 1554 Part- I.
- f. Shielding, longitudinally laid with overlap.
- g. Dielectric withstand 2.5 kV at 50 Hz for 5 minutes
- h. External marking with manufacture's name, type, core quantity, cross-section, and year of manufacture.
- i. The Communication cable shall be of shielded, twisted pairs and of 0.22sq mm² size with dielectric withstand of 1 kV at 50 Hz for 1 minute.

FRTU cabinet shall be wired with all the DC distribution wiring and AC wiring for the Illumination and fans. Following sizes of wires shall be used

Colour Codes

DC wiring	1.5 sq.mm	Red/Black
AC wiring	1.5 sq.mm	Red/ Black

Engraved identification ferrules marked to correspond with the wiring diagram shall be fitted at both ends of each wire. These ferrules shall fit tightly on the wires and should not fall off when the wire is removed. The wires should be terminated on terminal blocks using soldering crimping type of tinned copper lugs. Insulated sleeves shall be neatly punched and cleaned without affecting access to equipment mounted within the cabinet. Wiring troughs shall be provided for cable routing inside the cabinet. One piece molded, 650 V grade terminal blocks

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complete with insulated barriers, screws, identification strips shall be used. Terminals links shall be of Elmex or Connectwell make. Terminals for power connections shall be adequately rated for the circuit current and the rating of other terminal blocks for central indication etc. shall not be less than 15 amps. At least twenty percent spare terminal blocks shall be provided. All the terminal blocks should be provided with proper identification strips. Terminal blocks shall be provided with transparent acrylic covers.

All internal wiring shall be securely supported, neatly arranged, readily accessible and connected to equipment terminals and terminal blocks. Cable ways & troughs shall be used for this purpose.

Wire termination shall be made with solderless crimping type and tinned copper lugs, which firmly grip the conductor. Insulated sleeves shall be provided at all the wire terminations. Engraved core identification plastic ferrules marked to correspond with panel wiring diagram shall be fitted at both ends of each wire. Ferrules shall fit tightly on the wire and shall not fall off when the wire is disconnected from terminal blocks.

20.6 **Labels**

All equipment shall be provided with individual labels with equipment designation engraved. Also, the control cabinet shall be provided on the front with a label engraved with designation of the cabinet as furnished by PURCHASER. Labels shall be made up of non-rusting metal or 3 ply lamicaid. Labels shall have white letters on black or dark blue background. Sizes of labels and lettering are subject to PURCHASER's approval.

Manufacturer's label should be provided at the side wall, which should mention the project ref, substation, P.O ref, circuit details, drawing ref.

20.7 **Earthing Terminals**

Control cabinet shall be provided with two separate earthing terminals suitable to receive PURCHASER's earthing conductors of size specified.

Positive connection between all the frames of equipment mounted in the switchboard and earth bus bar shall be provided by using insulated copper wire/bars bus bars of cross section equal to that of the bus bar or equal to half the size of circuit load current carrying conductor, whichever is smaller.

All equipment shall be connected to the earth busbar using 1100V grade PVC insulated 2.5 sq.mm stranded tinned copper earthing conductor.

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All hinged doors shall be positively connected to the earthing bus terminals, with the help of braided copper conductors of adequate size.

An electrostatic discharge arrangement shall be provided in each panel so as to discharge human body before he handles the equipment inside the panels

20.8 Terminal Blocks

Terminal blocks shall be having provision for disconnection (isolation), with full-depth insulating barriers made from mounded self-extinguishing material. Terminal blocks shall be appropriately sized and rated for the electrical capacity of the circuit and wire used. No more than two wires shall be connected to any terminal. Each analog input signal, digital status input and digital output signals shall require two terminals per point plus a common shield termination for each cable. All terminal blocks shall be suitably arranged for easy identification of its usages such as CT circuits, PT circuits, analog inputs, status inputs, control outputs, auxiliary power supply circuits, communication signals etc.

20.9 FRTU Test

The contractor shall supply type tested FRTU. The bidder shall submit FRTU type test reports along with the bid and model of FRTU. The type test reports minimum shall include the tests indicated in Table 1. Type test reports as per other equivalent standards are also accepted provided, they meet or exceed minimum requirements specified in this specification. In case the FRTU type test report do not meet specification requirements, the relevant type tests shall be performed without extra cost to TPCODL. The vendor should submit proof of FRTU certificate (As conforming to IEC 61850, IEC 60870-5-104) BY KEMA.

Routine test to be performed in the factory and the field test to be performed in the site on the FRTU are indicated in Table – 1.

Test No.	DESCRIPTION OF THE TEST	Type test	Routine test	Field test
1.0	Functional Tests for FRTU			
1.1	Check for BOQ, Technical details, Construction & Wiring as per FRTU drawings		√	√
1.2	Check for FRTU database & configuration settings		√	√
1.3	Check the operation of all Analog inputs, Status input & Control output points of FRTU		√	√
1.4	Check operation of all communication ports of FRTU		√	√
1.5	Check for communication with multiple master stations using partitioned databases		√	√

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1.6	Check for auto restoration of FRTU on DC power recovery after its failure		√	√
1.7	Test for FRTU self-diagnostic feature		√	√
1.8	Test for FRTU time synchronization from Master		√	√
1.9	Test for FRTU SOE feature		√	√
1.10	Test for downloading/uploading of FRTU data base from master station		√	√
1.11	End to end test (between FRTU & Master station) for all I/O points			√
1.12	FRTU Analog accuracy test for Analog inputs		√	
1.13	Test for FRTU operation with DC power supply voltage variation		√	
1.14	Test for FRTU internal Clock stability		√	
1.15	Test for FRTU Noise level measurement		√	
1.16	Test for IEC 60870-5 -104 & IEC 61850 protocol implemented and matching with protocol profile		√	
1.17	Test for Control Security and Safety for Control outputs		√	√
1.18	Other functional tests as per technical specification requirements		√	
1.19	Test for FRTU as Data concentrator for IEC 60870-5-104 and MODBUS, IEC60870-5-103 protocol		√	√
1.20	Test for operation of CPU and Power supply unit		√	√
1.21	Test for Modems		√	√
2.0	EMI/EMC Immunity Tests for FRTU			
2.1	Surge Immunity Test as per IEC 60870-2-1	√		
2.2	Electrical Fast Transient Burst Test as per IEC-60870-2-1	√		
2.3	Damped Oscillatory Wave Test as per IEC 60870-2-1	√		
2.4	Electrostatic Discharge test as per IEC 60870-2-1	√		
2.5	Radiated Electromagnetic Field Test as per IEC 60870-2-1	√		
2.6	Damped Oscillatory magnetic Field Test as per IEC-60870-2-1	√		
2.7	Power Frequency magnetic Field Test as per IEC-60870-2-1	√		
3.0	Insulation Test for FRTU			
3.1	Power frequency voltage withstand Test as per IEC 60870-2-1	√		
3.2	1.2/50 μs Impulse voltage withstand Test as per IEC 60870-2-1	√		
3.3	Insulation resistance test	√		
4.0	Environmental Test for FRTU			
4.1	Dry heat test as per IEC60068-2-2	√		
4.2	Exposure to cold as per IEC 60068-2-1	√		
4.3	Damp heat test as per IEC60068-2-3	√		
4.4	Exposure to damp heat as per IEC 60068-2-78	√		
4.5	Cyclic damp heat test as per IEC 60068-2-30	√		
4.6	Temperature variation as per IEC 60068-2-14	√		
4.7	Salt spray test as per IEC 60068-2-52	√		
5.0	Mechanical tests	√		
5.1	Vibrations as per IEC 60255-21-1	√		
5.2	Shock test as per IEC 60255-21-2	√		

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5.3	Seismic test as per IEC 60255-21-3	√		
5.4	Packaging impact protection as per IEC 60068-2-32	√		
5.5	Enclosure protection as per IEC 60529 & IEC 62262	√		

21.0 Technical Specification for Multi-Function Meter (MFM)

Bidder to consider Multifunction meter for each Breaker panels of RMUs, which shall be mounted on the RMU panel. These meters shall be integrated to FRTU on MODBUS in daisy chain loop. Necessary cutout to be made to flash mount these MFMs in the RMU panels.

Sl. No.	Description	Functionality Expected
1	Sampling rate	128 samples per cycle for true RMS measurement
2	Voltage Input	0 to 690VAC
3	Voltage Burden	< 0.15VA
4	Current Input	1 A or 5A Site selectable
5	CT Burden	0.1VA
6	CT range	0.1% to 200%
7	Current over range	Three times continuously, eighty times for one sec
8	Accuracy kW / kWh	0.5S as per IEC62053:22
9	Real time & average parameters	Required
10	Four quadrant measurement	Required
11	LED Load Bar Indication	Optional
12	Self Diagnostic LED	Required
13	Real time clock	Required
14	Min./Max of parameters	Required
15	THD	Required
16	Individual Harmonics upto 39th	Required
17	Real time waveform monitoring	Standard software to monitor real-time waveform
18	RS485 communication	Min 1 port
19	Isolation	Galvanic
20	Communication protocols	MODBUS RTU, ASCII, selectable at site
21	User defined registers	Optional

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Sl. No.	Description	Functionality Expected
22	Energy pulse LED for calibration test	Required
23	Relay output	Optional
24	Aux. power supply	18-72 V DC
25	Ambient operating temperature	-20 to 60 °C
26	Mounting Panel cutout	96 x 96 mm

22.0 Technical Specification for Modem cum Router

1	The Modem should be in the active phase of the product life cycle and Bidder to submit the details in this regard.	
2	Radio Interface	
2.1	Radio Interface	5G Fall back to 4G/3G/2G
2.2	Data interface	Cat 5 , Download and Upload 1000 Mbps
2.1	Supported frequency band	1. Modem should support multiband connectivity with FDD 5G & TDD 5G. 2. It should support Band 1,3,5,8,40 and Band 48. 3. The offered cellular modem should support and compatible to the data & radio interface of the network of public mobile service provider in Odisha City.
2.4	Radio Transmitter Power	Vendor to provide details of radio transmitter power
2.5	Receiver Sensitivity	Vendor to provide details of receiver channel sensitivity
2.6	Cellular Module / Chip	Vendor shall give details of cellular chip /Module used along with datasheet
3	Operating Condition	
3.1	Operating Temperature	-20 C to 70 C
3.2	Operating Humidity	5 % to 100 % (non -condensing)
3.1	Power Consumption	Vendor to provide power consumption for idle and max during data transmission
3.4	Storage /transport temperature	-40 °C to 85 °C
3.5	MTBF	Vendor to provide details of MTBF
3.6	Protection from pollution	Vendor shall provide design details such as protective paint /conformal coating on MCB ,high grade electronic components uses to protect from environmental pollution .
4	System Characteristics	

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4.1	CPU	1. Vendor to provide make & technical details of CPU used. 2. Vendor should also attached technical data sheet of CPU . 3. CPU usage should not crossed 40 % in typical operating & maintenance condition
4.2	RAM	1. Vendor to provide details of memory type, Speed & Size. 2. Usage of memory should not crossed 60 % in typical operating & maintenance condition
4.3	Flash Storage	Vendor to provide details of flash storage Memory Provision to store system logs, event logs ,configuration file
5	Mechanical Construction	
5.1	Dimension (W X H X D)	Vendor to provide details of Dimension (W X H X D)
5.2	Weight in Kg	Vendor to provide details of Weight in KG
5.3	Housing	Metal Preferred Aluminum alloy having better heat dissipation & ruggedness
5.4	Mounting	DIN rail Mounting
5.5	Degree of Protection	IP30
6	Interface/Port Type	
6.1	Ethernet	1. Minimum 2 X RJ45 Port ethernet, Speed 10/100 Mbps auto negotiable having status LED indication. 2. Port should be configurable as LAN /WAN as required.
6.2	Cellular interface	1. Cellular modem should have dual SIM provision . 2. Dual SIM for network redundancy /backup. 3. Dual SIM operation ensures that the cellular connection is always available. 4. It will automatically disconnect the 1st SIM card's low/weak cellular connection and will reconnect to establish a stronger connection using the 2nd SIM card.
6.3	Ethernet Cable (CAT 4)	Vendor to provide Ethernet Cable (CAT 6) minimum 1.5 M
7	Software Features / Supported protocols	
7.1	Network Protocols	TCP/IP ,UDP/IP, HTTP, ARP,DHCP, ICMP, SNMP, V1/V2 &V1, NTP, SSL/TLS
7.2	Routing	Astatic Routing, RIP 1 &2 ,OSPF V2 &V1
7.3	VPN	Open VPN , IP Sec, L2TP, PPTP, GRE
7.4	Alarm Message	Device shall have alarm notification on SNMP trap
7.5	Management /Monitoring	1. Cellular modem should shall support Local /Remote management through web HTMLS ,SSH & Telnet 4. 2. It shall support monitoring through system logs & SNMP version V1/V2 & V3. 3. Notification & command shall be possible over SMS. 4. Firmware upgradation through Web, backup & restore of configuration shall be possible.
7.6	Operating System	Vendor to give the details of operating system & its Version
7.7	Application	Vendor to give the details of application & package installed in modem

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7.8	AT Command Support	YES /NO
7.9	Scheduled rebooting	Device should be capable to program auto rebooting as per configured / scheduled configured scheduled time.
7.1	Watch dog feature	modem Shall have feature of tracking data connectivity status by periodic ping test and switchover on backup.
7.11	Factory Reset	Provision of Resetting the device for factory configuration.
7.12	Diagnosis Feature	Device Shall support real time diagnostic such as active connection, traffic on interfaces
7.13	SCADA Protocols	1. Transparent Mode: The modem should be capable for communicating with multiple protocol FRTUs in Transparent Mode 2. DLMS Master Mode: The modem should be capable to reading multiple DLMS meters connected to it 3. Modbus Master Mode: The modem should be capable of reading Multiple Modbus Meters connected to it 4. Data Segregation Mode: modem should segregate the collected data as per Instantaneous Parameters, Billing, Load Profile and Tamper parameters in separate files per Meter 5. IEC 104 – 104 Master – Multi Slave Mode: The modem should be capable to reading FRTUs in IEC60870-5-104 protocol and communicate with SCADA system on IEC 60870-5-104 protocol upto 8 masters. Adequate data interlock mechanisms should be implemented to avoid data loss. 6. IEC 104 Slave mode Multi Master support 7. DNP3 Slave mode with Integrity poll, Static, Event data, Class 0,1,2,3 support 8. Other Data Sending Modes: modem should support TCP, UDP, HTTPS, MQTT data sending formats 9. Simultaneous Operations of multiple protocols. Ex modem should be capable of sending Modbus Data over 104 and MQTT simultaneously
8	Security	
8.1	Security	HTTPs, SSH, Authentication with RADIUS or TACACS + , activate cellular interface with SMS ,Ethernet 802 .1X(EAP-PEAP/MsCHPv2 or EAP -TLS
8.2	Authentication	User Management (local, RADIUS, TACACS + , Mixed)
8.3	State inspection firewall	Static firewall IPv4 / IPv4 with incoming and forwarding ruleset, DoS protection ,IP /Port/Protocol filtering ,NAT
9	Antenna	
9.1	No Of Antenna	The 5G Cellular modem Should have two antenna connection (MIMO). One is primary cellular antenna & second is diversity antenna (MIMO)

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9.2	Cable Length	Cable should have Low loss RF Cable with minimum 5M
9.3	Type of Antenna	Antenna Should be Omni directional with high gain (High gain ≥ 5)
9.4	Construction of antenna	It should be Steady, good quality material, water/ weatherproof having adequate gold plate connector compatible with cellular modem antenna. Port. It should be suitable mounting arrangement to installed indoor
9.5	Frequency Band, impedance & Polarization	Vendor Shall provide the details of frequency Band. Antenna should be compatible with offered device & network service provide with frequency band, port impedance & radio signal polarization
9.6	VSWR	Vendor Shall provide details of VSWR
9.7	Gain of antenna	Vendor Shall provide Gain details of primary & secondary antenna
10	Power Supply	
10.1	Power Supply	18V to 72 V dc
10.2	Connector Type	modem Should have preferable screw type firm connection. It should have reverse polarity protection & surge protection
11	Status & diagnostics indicator	
11.1	LED indicator	Vendor to provide details of status & diagnostics indicator. (Power- ON & OFF, ERR- Error Red, Signal, network, SIM status)
12	Certification:- IEC Specified as below or equivalent to international Standard	
12.1	Electrostatic discharge immunity test	IEC EN 61000-4-2
12.2	Radiated, radiofrequency, electromagnetic field immunity test	IEC EN 61000-4-1
12.3	Electrical fast transient/burst immunity test	IEC EN 61000-4-4
12.4	Surge immunity test	IEC EN 61000-4-5
12.5	Immunity to conducted disturbances, induced by radio-frequency fields	IEC EN 61000-4-4
12.6	Information technology equipment –Safety	IEC 60950
12.7	Environmental testing-Vibration (sinusoidal)	IEC 60048-2-4
12.8	Environmental testing-Shock	IEC 60048-2-27
12.9	Environmental testing-Free Fall (withdrawn)	IEC 60048-2-12
12.1	Proof of check	vendor should give one number of modem along with Technical offer for performance & application compatibility check for period of minimum 15 days

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12.11	Country of manufacturing	Vendor to provide Country of manufacturing details
12.12	Service Centre in India	Vendor to provide details of Service Centre in India
12.13	Regulatory compliance	Vendor shall confirm that offered product is complied & certified by all Indian government bodies related to telecommunication/ wireless communication (WPC, DOT) to operate & user this product in country . Vendor to share compliance certificate of the same
12.14	Surge protection /electrical isolation	It should be available on all Ethernet communication port & power supply input. vendor shall share certification
12.15	Environmental Condition	Cyclonic environment with wind velocity up to 250kmph. 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 electronic equipment. Some places are in heavily industrial polluted areas. Therefore, all supplied material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.

23.0 Technical Specification for Battery & Battery Charger

- 23.1 VDC SMPS battery charger 230VAC input, 10 Amps Output.
- 23.2 FRTU should be capable to monitor Battery and battery charger healthiness. It is more preferable if the battery charger have inbuilt feature of Battery health monitoring
- 23.3 Battery and battery charger should be capable for all FRTU required operation and Aux. supply to Modem & MFM etc.
- 23.4 Battery Rating: 24 V DC, 50AH, SMF-VRLA with chargers suitable for indoor as well as outdoor applications.
- 23.5 The batteries are intended to operate the isolators of 11kV/22kV/33kV RMU. The rating of closing coil is in the range from 90 watts to 120 watts.
- 23.6 The battery & its charger must withstand average operations of 10nos for max 30 seconds.
- 23.7 Power supply package shall meet the power supply requirement for the MFM and modem as well.

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- 23.8 Suitable provision in FRTU shall be present to supervise/monitor and prevent accidental serious discharge of battery.
- 23.9 Battery and battery charger plays very important role in remote operation while restoration of power supply to the customer. Hence to monitor healthiness of battery continuously in services condition, routine tests for battery condition monitoring shall be ensured.
- 23.10 FRTU must be able to perform the battery discharge test at a manual set period or period can be pre-defined for auto discharge test.
- 23.11 Battery Health Monitoring Unit must be of standard make.
- 23.12 Ambient Temperature Operation: -5deg C to +60degC
- 23.13 Ambient temperature Storage: -20deg C to +65 deg C.
- 23.14 Humidity: 100% RH, non –condensing
- 23.15 Adhere to Standards IEC60927-1, IEC61000 with ingress protection of IP20.
- 23.16 Monitoring The power supply shall deliver the following status to the SCADA
- d. End of life detection
 - e. Battery disconnected
 - f. Absence of power input
 - g. Voltage output faults
 - h. Battery fault
 - i. Any other data should be available through a serial link communication.
- 23.17 Type 3 Pluggable Surge Protection Device in accordance with IEC 61643 with KEMA & UL approval must be installed at the incoming power supply of FRTU. DIN Rail Mounted Suitable Surge Protection must be installed on all communication lines (Ethernet/RS 485)

Sr. No.	Technical requirement	TPCODL Requirement
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1	Scope	The battery & battery charger are intended for operating 33kV/22kV/11KV RMU isolators. The rating of closing & opening coils is from 90-120 watts. Operating time 50ms Max. The battery should be capable of withstanding normal load of FRTU & operational load of RMU isolators
2	Average Number of Operations	Minimum 10 nos. for 30 sec
3	Standards	IS 1885/IEC 600504, IS -15549/2005
4	Climate	Must be able to operate efficiently considering hot & humid climate of Mumbai, India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg. C and in locations where the relative humidity between 30% to 100%
5.1	Voltage	24 VDC specified at 27 deg. C.
5.2	Battery Type	SMF, VRLA with chargers of conventional type
5.3	Voltage/cell	2 volts
5.4	Capacity of Batteries	65 AH,10Amps
5.5	Connecting cables	Cable size selection should provide the lowest voltage Drop possible between battery system and operating Equipment.
5.6	Method of charging	Constant voltage method and current limit (variable Current)
5.7	Efficiency	Not less than 90% at full rated load
6.1	Battery Charger type	Constant Voltage and Current limiting charger. Charger with inbuilt battery health monitoring is highly preferable.
6.2	Charger Input Voltage	Single phase (2 wire) voltage 250V AC +30% to -20% Frequency 50Hz $\pm$ 5%.
6.3.1	Regulation	$\pm$ 1%
6.3.2	Charger current	10 Ampere
6.3.3	Efficiency	Not less than 85% at full rated load
6.3.4	Current limit	110% of rated load
6.3.5	Insulation	Not less than 5 mega Ohms. i. between DC output terminals and AC input terminals. ii. Between AC input terminals and earth
6.3.6	Indication	The charger shall have suitable indicators to visually know its mode of operation. Charger indication as below must be available: Mains on (Red LED), Charger on (Yellow), Boost on (Yellow LED), Float on (Green LED) and Battery reverse polarity (Red LED), O/p DC fuse blown (Red LED) LED lamp indication. (LED

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		colors can be changed)
6.3.7	Protection	Input single pole MCB's for AC & DC of 10 Amperes separate for battery & charger.
		The battery charger must include protections like:
		i) AC input MCCB & ELBS with input ON/OFF switch and fuses/contactor.
		ii) DC output MCCB with output ON/OFF switch and fuses.
		iii) Current limit protection, soft start feature, surge suppressor.
		iv) Fast semiconductor fuses for rectifier bridge.
6.3.9	Battery & charger Alarms	v) Charger overload / short circuit vi) Battery polarity reverse, Battery Over/Under voltage, Charger rectifier fail, etc.
		Potential free contacts must be available to integrate with SCADA for abnormality if any. Most preferred alarms are like: AC supply fail, DC supply fail, Battery Low, Battery Fail, Battery Charger fail, Battery polarity reverse. Serial Communication is preferred.
6.3.8	Cooling	External exhaust fan (Optional)
6.4	Climate	Must be able to operate efficiently considering hot & humid climate of Mumbai, India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg. C and in locations where the relative humidity between 30% to 100%
6.5	Wiring	The internal wiring of the charger shall be carried out with PVC insulated
6.6	Accessibility	650V grade standard copper conductor. The control wiring shall be carried out with 2.5 Sq.mm copper conductors.
		All the important components of the charger must be easily accessible for maintenance, repair, replacement in case of trouble without giving interruption to total D.C. supply as far as possible.
6.7.1	ACCEPTANCE AND ROUTINE TESTS	All acceptance and routine tests as stipulated in the relevant standards shall be carried out by the bidder. The test certificates are to be furnished for approval.
6.7.2	Acceptance test for battery charger with batteries	1. Marking
		2. Verification of dimensions.
		3. Regulation test.
		4. Ripple test
		5. Megger values and HV Test.

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		6. Test for battery discharge capacity.
6.7.3	Type Tests	Following shall constitute type tests in respect of chargers and batteries.
		1. Insulation resistance
		2. High voltage test at 1.5KV for 1 minute
		3. Regulation (Load & Line)
		4. Dry heat test at 55°C for 16 hrs with full load on as per IS: 9000 part3/Sec5/1977.
		5. Damp heat test at 55°C and at 95% RH for two cycles as per IS: 9000 part5/Sec1/1981
		6. Cold test at -10°C for 4 hrs as per IS: 9000 part 2/Sec4/1977
7	Drawings	Detailed drawings, circuit details and technical literature of batteries shall be enclosed to the offer. Tenders not accompanied by the above are liable for rejections.
		Trouble shooting charts shall be supplied with each unit to trace faults in the charger with voltage and Resistances to be measured at various test joints.
8	Painting	The box shall be painted with powder coating with siemens grey colour.

24.0 Technical Specification for Control Cables

24.1 SCOPE

This part of the specification covers the technical requirements of design, Engineering, manufacture, stage testing, inspection and testing before dispatch, packing, forwarding, delivery at site the PVC, armoured, copper control cables for installation in substations

The material offered shall have been successfully type tested during last five years on the date of bid opening. The front page of type test report showing the evidence of successful type test of the items asked for in this Specification shall be uploaded with the signature of bidder. The full text of the type test report is to be submitted along with the technical proposal.

The control cables shall conform in all respects to highest standards of engineering, design, workmanship in accordance to this specification and the latest revisions of relevant standards, mentioned below.

24.2 STANDARDS IEC / ISO Indian Standard Title

Except where modified by this specification, the control cables shall be designed, manufactured and tested in accordance with the latest editions of the following standards.

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Sl. No.	Standard Code		Brief Description of the Codes
1	IEC 811	IS-18-10810:1982	Testing cables
2	IEC 502	IS - 1554:1988 (Part 1)	PVC Cables 1100V
3	IEC 227	IS - 5819:1970	Short circuit ratings for PVC cables
4	IEC 228	IS-8130:1984	Conductors for insulated cables
5	IEC 287		Calculation of the continuous current rating of cables.
6	IEC 540	IS - 5831: 1984	Test Methods for insulation and sheaths of electric cables and cords IEC 287
7		IS - 3975: 1979	Mild steel wires, strips and tapes for armouring of cables

The Bidder may propose alternative standards, provided it is demonstrated that they give a degree of quality and performance equivalent to or better than the referenced standards. Acceptability of any alternative standard is at the discretion of the TPCODL. The Bidder shall furnish a copy of the alternative standard proposed along with technical proposal. If the alternative standard is in a language other than English, an English translation shall be submitted with the standard.

In the case of conflict, the order of precedence shall be

- a. Indian Standards
- b. IEC

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

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24.3 Technical Details

24.3.1 1.1 kV POLYVINYL CHLORIDE (PVC) INSULATED CABLES All control cables to be used shall be armored PVC type. The outer sheath of control cable shall be Polyvinyl chloride (PVC) type ST-2 of IS 5831.

24.3.2 Rated Voltage and Temperature Control and Panel Wiring Cables (PVC Insulated)

The conductor shall be of round stranded plain copper wires complying with IS - 8130:1984/ IEC 228.

N.B. - Conductor screening not required in this case.

24.3.3 Insulation

The insulation shall be of Polyvinyl Chloride (PVC) compound. 'Heat Resisting' Type C for the Control and Panel Wiring cables. Both shall conform to the requirements of IS - 5831: 1984.

Type of Insulation	Normal Continuous Operation	Short Circuit Operation
General Purpose	70 ⁰ C	160 ⁰ C
Heat Resisting	85°C	160°C

The PVC insulation shall be applied by extrusion and the average thickness of insulation as specified in IS – 1554 (part 1): 1988.

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

Insulation Screening not required.

Core Identification and Laying up of Cores.

In multi-core cables, the cores shall be laid up together with a suitable lay as recommended in IS - 1554 (Part 1): 1988. The layers shall have successive right- and left-hand lays with the outermost layer having a right hand lay.

24.3.4 Inner Sheath

The laid-up cables shall be covered with an inner sheath made of thermoplastic material (PVC) applied by extrusion. The thickness of the sheath shall conform to IEC 502/IS - 1554: 1988. Single core cables shall have no inner sheath.

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The outer serving shall incorporate an effective anti-termite barrier and shall be capable of withstanding a 10 kV DC test voltage for five minutes after installation and annually thereafter.

Current ratings shall be calculated in accordance with IEC 287 "Calculation of the continuous current rating of cables with 100% load factor".

24.3.5 Conductor Sizes

The following shall be used for Control and Panel Wiring:

The no. of Cores & Sizes of the Control Cable with flexible Copper Wires shall be 4 Core, 7 Core, 10 Core, 12 Core and 19 Core, 24 Core etc. There shall be one single core copper cable of 16 sq. mm size for earth wire. All panel wiring shall be done by 0.5 mm² for digital inputs, 1.5 mm² digital outputs, 1.0 mm² for Analog Inputs, 2.5 mm² for CT, 4 mm² for PT, CVT, AC & DC Supply connection.

4P X 0.36 mm² armoured, pair shielded, Overall shielded multistrand serial communication cable for Multi-Function Meters and Other Condition monitoring devices.

Bidder shall consider the cable size, number of conductors as per the site requirement and as mentioned in the indicative BOM.

24.3.6 Cable Drum Length

The cable shall be supplied in 500 meter lengths or more but with prior approval for the owner.

24.3.7 Cable Identification

The manufacturer's and Owner's name or trademark, the voltage grade, cable designation and year of manufacture shall be indented or embossed along the whole length of the cable. The indentation or embossing shall only do on the outer sheath. The alphanumerical character size shall be not less than 20% of the circumference of the cable and be legible.

24.4 Sampling of Cables

24.4.1 Lot

In any consignment the cables of the same size manufactured under essentially similar conditions of production shall be grouped together to constitute a lot.

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24.4.2 Scale of Sampling

Samples shall be taken and tested from each lot to ascertain the conformity of the lot to specification.

24.4.3 Sampling Rates

The number of samples to be selected shall be as follows:

Number of Drums to be taken as samples	Number of Drums to be taken as samples
Up to 25	3
26 to 50	5
51 to 100	8
101 to 300	13
301 and above	20

The samples shall be taken at random. In order to achieve random selection, the procedure for selection detailed in IS - 4905: 1968 shall be followed.

24.4.4 Number of Tests and Criterion for Conformity

Suitable lengths of test samples shall be taken from each of the selected drums. These samples shall be subjected to each of the acceptance tests. A test sample shall be classed as defective if it fails any of the acceptance tests. If the number of defective samples is less than or equal to the corresponding number given in the lot shall be declared as conforming to the requirements of acceptance test.

24.5 TESTS ON 1.1 KV PVC INSULATED Armored Control Cable

24.5.1 Type Tests

Certification of type tests already completed by independent test laboratories shall be presented with the bid for each cable type. These tests shall be carried out in accordance with the requirements of IS -8130: 1984/IEC 502, IS - 5831:1984/IEC 540 and IEC 811 unless otherwise specified. Type testing of 1.1 kV cables shall include the following:

Test Requirement Reference Test Method as a Part of IS-10810/IEC 811

- | | |
|--|-----------------------|
| (a) Tests on conductor Annealing test (copper) | IS-8130: 1984/IEC 502 |
| (b) Resistance test | IS-8130: 1984/IEC 502 |

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(c)	Tests for thickness of insulation and sheath	IS-5831:1984/IEC 540
(d)	Physical tests of Insulation Tensile strength & elongation at break	IS-5831:1984/IEC 540
	Ageing in air oven	IS-5831:1984/IEC 540
	Hot test	IS-5831:1984/IEC 540
	Shrinkage test	IS-5831:1984/IEC 540
	Water absorption (Gravimetric)	IS-5831:1984/IEC 540
(e)	Physical tests for outer sheath	
(f)	Tensile strength and elongation at break	IS-5831: 1984/IEC 540
(g)	Ageing in air oven	IS-5 831: 1984/IEC 540
(h)	Shrinkage test	IS-5831: 1984/IEC 540
(i)	Hot deformation	IS-5831: 1984/IEC 540
(j)	Loss of mass in air oven	IS-5831: 1984/IEC540
(k)	Heat shock	IS-5831: 1984/IEC540
(l)	Thermal stability	IS-5831: 1984/IEC540
		IS-5831: 1984
(m)	Insulation resistance test	IS-8130:1984/IEC502
(n)	Volume resistivity	As per IS / IEC
(o)	High voltage test	As per IS / IEC
(p)	Flammability test	As per IS / IEC

24.5.2 Acceptance Tests

The following shall constitute acceptance tests:

- Tensile test (Aluminum)
- Annealing test (copper)
- Wrapping test
- Conductor resistance test
- Test for thickness of insulation and sheath
- Hot set test for insulation*

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- Tensile strength and elongation at break test for insulation and outer sheath High voltage test
 - Insulation resistance (volume resistivity) test
 - PVC insulation only
- ** Test to be completed on full drum of cable

24.5.3 Routine Tests

Routine tests shall be carried out on all the cable on a particular order. These tests shall be carried out in accordance with the requirements of IS - 8130: 1984/IEC 502 and IS - 5831:1984/IEC 540 unless otherwise specified.

The following shall constitute routine tests.

- a. Conductor resistance test
- b. High voltage test
- c. Test to be completed on full drum of cable

24.6 DETAILS OF TESTS

General

Unless otherwise stated, the tests shall be carried out in accordance with the appropriate part of IS -10810/IEC 502: 1994 and the additional requirements as detailed in this specification.

24.6.1 Bending Test

The diameter of the test cylinder shall be $20 (d + D) \pm 5\%$ for single core cables and $15 (d+D) \pm 5\%$ for multicores, where D is the overall diameter of the completed cable in millimeters and d is the diameter of the conductor.

After completing the bending operations, the test samples shall be subjected to partial discharge measurements in accordance with the requirements of this specification.

24.6.2 Dielectric Power Factor Test

Tan δ as a Function of Voltage

For cables of rated voltage 1.1 kV and above the measured value of tan δ at up shall not exceed 0.004 and the increment of tan δ between 0.5 up and 2 up shall not be more than 0.002.

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24.7 High Voltage Test

24.7.1 For Type/ Acceptance Test

The cable shall withstand, without breakdown, at ambient temperature, an ac voltage equal to $3U_0$, when applied to the sample between the conductor and screen/ armour (and between conductors in the case of unscreened cable). The voltage shall be gradually increased to the specified value and maintained for a period of 4 hours. If while testing, interruption occurs during the 4 hour period the test shall be prolonged by the same extent. If the interruption period exceeds 30 minutes the test shall be repeated.

24.7.2 Routine Test

For Routine Test Single core screened cables, shall withstand, without any failure, the test voltages given in this specification for a period of five minutes between the conductor and metallic screen.

Single core unscreened cables shall be immersed in water at room temperature for one hour and the test voltage then applied for 5 minutes between the conductor and water.

Multicore cables with individually screened cores, the test voltage shall be applied for 5 minutes between each conductor and the metallic screen or covering.

Multicore cables without individually screened cores, the test voltage shall be applied for 5 minutes in succession between each insulated conductor and all the other conductors and metallic coverings, if any. When a DC voltage is used, the applied voltage shall be 2.4 times the power frequency test voltage.

In all instances no breakdown of the insulation shall occur.

24.7.3 Flammability Test

The period for which the cable shall burn after the removal of the flame shall not exceed 60 seconds and the unaffected portion (uncharged) from the lower edge of the top clamp shall be at least 50mm.

24.8 Control / LV Wiring Accessories

24.8.1 Terminations

Control wire terminations shall be made with solder less crimping type and tinned copper lugs which firmly grip the conductor. Insulated sleeves shall be provided at all the wire termination. Engraved core identification plastic ferrules marked to correspond with panel

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wiring diagram shall be fitted at both ends of each wire. Ferrules shall fit tightly on the wire and shall not fall off when the wire is disconnected from terminal blocks. All wires directly connected to trip circuit breaker or device shall be distinguished by the addition of red coloured unlettered ferrule. Numbers 6 and 9 shall not be included for ferrules purposes except where underlined and identified as 6 and 9.

Control cable terminals shall be provided with adequate size crimp type lugs. The lugs shall be applied with the correct tool, which shall be regularly checked for correct calibration. Bi-metallic joints between the terminals and lugs shall be provided where necessary. Terminals shall be marked with the phase colour in a clear and permanent manner. A removable gland plate shall be provided by the contractor at every cable entry to mechanism boxes, cabinets and kiosks. The Contractor shall be responsible for drilling the cable gland plate to the required size.

24.9 General Particulars and Guarantees

24.9.1 Compliance with Specification

The control cables shall comply in all respects with the requirements of this specification. However, any departure from the provisions of the specification shall be disclosed at the time of bidding in the Deviation Schedule in this document.

24.9.2 Compliance with Regulations

All the equipment shall comply in all respects with the Indian Regulations and Acts in force.

The equipment and connections shall be designed and arranged to minimize the risk of fire and any damage which might be caused in the event of fire.

24.9.3 Non-Conforming Product

The Project Manager shall retain responsibility for decisions regarding acceptance, modification or rejection of non-conforming items.

24.10 Inspection and Testing

The equipment shall successfully pass all the type tests, acceptance tests and routine tests referred to in the section on Tests and those listed in the most recent edition of the standards given in this specification.

TPCODL the right to reject an item of equipment if the test results do not comply with the values specified or with the data given in the technical data schedule.

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Type tests shall be carried out at an independent testing laboratory or be witnessed by a representative of such laboratory or some other representative acceptable to the Project Manager. Routine and acceptance tests shall be carried out by the Bidder at no extra charge at the manufacturer's works.

Type Test certificates shall be submitted with the bid for evaluation. The requirement for additional type tests will be at the discretion of the TPCODL.

All costs in connection with the testing, including any necessary re-testing, shall be borne by the Bidder, who shall provide the TPCODL with all the test facilities which the latter may require, free of charge.

24.11 Guarantee

The Bidder shall guarantee the following:

- a. Quality and strength of materials used;
- b. Satisfactory operation during the guarantee period of one year from the date of commissioning, or 18 months from the date of acceptance of the equipment by the Project Manager following delivery, whichever is the earlier.
- c. Performance figures as supplied by the Bidder in the schedule of guaranteed particulars.

24.12 Packing and Shipping

24.12.1 Packing

The cable shall be wound on strong drums or reels capable of withstanding all normal transportation and handling. Each length of cable shall be durably sealed before shipment to prevent ingress of moisture. The drums, reels or coils shall be lagged or covered with suitable material to provide physical protection for the cable during transit and during storage and handling operations. In the case of steel drums adequate precautions shall be taken to prevent damage being caused by direct contact between the cable sheath and the steel. These precautions shall be subject to the approval of the Project Manager.

If wooden drums are used, then the wood shall be treated to prevent deterioration from attack by termites and fungi.

Each drum or reel shall carry or be marked with the following information:

- a. Individual serial number
- b. Owner's name
- c. Destination

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- d. Contract Number
- e. Manufacturer's Name
- f. Year of Manufacture
- g. Cable Size and Type
- h. Length of Conductor (meters)
- i. Net and Gross Mass of Conductor (kg)
- j. All necessary slinging and stacking instructions.
- k. Destination:
 - i. Contractor's name
 - ii. Name and address of Contractor's agent in Orissa
 - iii. Country of origin

The direction of rolling as indicated by an arrow shall be marked on a flange.

24.13 **Storage**

The site selected for the storage of cable drums shall be well drained and preferably have a concrete/firm surface which will prevent the drums sinking into the ground or being subjected to excess water thus causing flange rot.

All drums shall be stood on battens, in the upright position, and in such a manner to allow enough space between them for adequate air circulation. During storage the drums shall be rotated 90° every three months. In no instances shall the drums be stored "flat" on their flanges or one on top of each other.

24.14 **Hazardous substances**

The Bidder shall submit safety data sheets in a form to be agreed for all hazardous substances used with the equipment. The Bidder shall give an assurance that there are no other substances classified as hazardous in the equipment supplied. The Bidder shall accept responsibility for the disposal of such hazardous substances, should any be found. The Bidder shall be responsible for any injuries resulting from hazardous substances due to noncompliance with these requirements.

24.15 **Spare Parts and Special Tools**

The Bidder shall provide prices for spare conductor, joints and termination equipment. The TPCODL may order all or any of the spare parts listed at the time of contract award and the spare parts so ordered shall be supplied as part of the definite works.

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A spare parts catalogue with price list shall be provided for the various cables, joints and termination equipment and this shall form part of the drawings and literature to be supplied. Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract.

They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the equipment and must be suitably marked and numbered for identification. Spare parts shall be delivered suitably packed and treated for long periods in storage. Each pack shall be clearly and indelibly marked with its contents, including a designation number corresponding to the spare parts list in the installation and maintenance instructions.

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25.0 Schedules

C1- PROJECT TIME SCHEDULE

Seal of the Company

Signature

Designation

Note: The bidder shall indicate schedule of milestones and attach/furnish a detailed bar chart identifying Purchaser's inputs.

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C2- SCHEDULE OF MANDATORY SPARES

As part of the proposal, the BIDDER shall indicate below the list of recommended spares for Ten Years (10 years) of trouble free operation of the equipment/system offered.

Sr. No.	Equipment Tag No.	HSN Code	Description of Spare	Material of Construction	Part No.	Quantity recommended per unit of equipment	Unit Price	Total Price	Delivery period from date of LOI	Remarks

Seal of the Company

Signature

Designation

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C3 - SCHEDULE OF SPECIAL ERECTION/MAINTENANCE TOOLS & TACKLES

As part of the proposal, the BIDDER shall indicate below, the list of erection/maintenance tools & tackles offered by him.

Sr. No.	Description of Spare	Quantity recommended per unit of equipment	Unit Price	Total Price	Delivery period from Date of LOI	Remarks

Seal of the Company

Signature

Designation

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C4- SCHEDULE OF RECOMMENDED SPARES

As part of the proposal, the BIDDER shall indicate below the list of recommended spares for Ten Years (10 Years) of trouble free operation of the equipment/system offered by him.

Sr. No.	Equipment Tag no.	Description of Spare	Material of Construction	Part No.	HSN Code	Quantity recommended per unit of equipment	Unit Price	Total Price	Delivery period from date of LOI	Remarks

Seal of the Company

Signature

Designation

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C5 – Manufacturer's Authorization**(To be obtained from all OEMs)**

Date: _____

Bid Reference No.: _____

To: _____

WHEREAS _____ who are official manufacturers of _____ having factories at _____ do hereby authorize _____ 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 relevant Clauses mentioned in the Bid document (**GCC, Section-A** of Technical Specification), with respect to the Goods offered by the above firm in reply to this invitation for Bids.

Name: _____

In the Capacity of: _____

Signed: _____

Duly Authorized to sign the Authorization for and behalf of _____

Date: _____

Note: The bidder shall submit duly filled Manufacturer's Authorization letter from the respective OEMs for the Supply and Services rendered to meet the required functionalities mentioned in the RFP.

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C6 – Undertaking for Presence in India

I hereby declare that <Name of the Bidder>, has Design/Engineering/Testing/Support and Service facility in India as on _____ (i.e., release date of Bid).

The address of the facilities is provided hereunder

Signature of Authorized Signatory :

Full Name :

Address :

Phone Number :

Email Id :

Note: Necessary proof of incorporation/registration shall be submitted along with the Bid.

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26.0 Drawings and Documents

26.1 Mandatory documents required along with the Bid

- 26.1.1 Duly signed copy of TENDER as an acceptance to all terms and conditions as mentioned in this tender.
- 26.1.2 Bidder should depict complete understanding of the as-is system of the Utility based on the information provided in the Bid Document. It should also require listing down all the deliverables that has been planned as a part of the overall project with timelines.
- 26.1.3 Submission of documents as mentioned in Pre-Qualification Requirement
- 26.1.4 Technical Literature / GTP / Type Test Reports etc.
- 26.1.5 Details of all databases proposed and its relationship with application. Data flow diagram with entity relationship shall be submitted for all applications. Bidder shall clearly mention the list of application which are required to build data models manually.
- 26.1.6 GTP to be furnished about computing, network and integration interface infrastructure.
- 26.1.7 Submit details of methodology followed by the bidder and its sub-vendors in successfully implementing similar projects.
- 26.1.8 Schedule of Deviations if any from specification strictly following the prescribed format.
- 26.1.9 Commercial specification details as per attached sheet.
- 26.1.10 Proper authorization letter to sign the tender on behalf of bidder shall accompany the bid.
- 26.1.11 Compliance to the approved vendor list.
- 26.1.12 List of major relevant experiences of the Principal, Bidder, Sub-Vendors and the Product respectively.
- 26.1.13 Technical support facilities including qualified man-power, testing tools & instruments and integration facilities available within India.
- 26.1.14 Technical data sheet of all equipment including Sub-vendors systems, product brochure, white papers and case studies.

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26.1.15 System Architecture drawings.

26.1.16 Detailed Bill of Material, covering all aspects of proposed System Architecture and functionality required by Purchaser as per the RFP.

26.1.17 Compliance to data sheets covered in the specification.

26.1.18 Product life cycle document of all equipment of Bidder's own and of Sub-Vendors.

26.1.19 Quality Assurance Plan (QAP), Manufacturing Quality Plan (MQP), Field Quality Plan (FQP).

26.1.20 Testing facilities in India

26.1.21 Confirmation on lifetime, spares, manufacturing, onsite & Offsite technical support of the supplied equipment for the period of 10 years.

26.1.22 Project Team Structure

Furnish the detail of the team that would be deployed by bidder to execute the project. Please provide details of the team structure in the following format:

Name of Staff	Position Assigned	International or Domestic	Firm	Employment status with the firm (Full time/ Associate)	Education (Degree, Year, Institution)	Area of Expertise and no. of years of relevant experience	Task Assigned
A. Professional Staff							
B. Support Staff							

Table # 2: Proposed Project Team Structure

Similarly, bidder shall arrange the team details of the Sub-vendors, that would be deployed to execute the project

26.1.23 Team details (CVs)

Use the following format for key personnel who would be involved in the project. Please include details of team members proposed to implement the project, install or manage hardware, install and manage Substation/Field Automation System, LAN/WAN etc., please ensure that the CV covers all the required field and details.

1.	Proposed Position			
2.	Name of Firm and Role			
3.	Name of Staff			
4.	Date of Birth		Nationality	

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5.	Education			
	Year	Degree/Examination	Institute/Board	
6.	Membership of Professional Associations			
7.	Other Training			
8.	Countries of Work Experience			
9.	Languages			
	Language	Speaking	Reading	Writing
10.	Employment Record			
	From	To	Employer	Positions Held
11.	Detailed Tasks Assigned		12.	Work Undertaken that best illustrates capability to handle the tasks assigned:
13.	Certification			
I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.				
Signature of authorized representative of the staff			Date:	
Full name of authorized representative:				

Table # 3: Format for CV Submission

Similarly, Bidder to submit the key personnel details of the Sub-Vendors, who would be involved in the project. Please include details of team members proposed to implement the project, install or manage hardware, install and manage Substation Automation System, LAN/WAN etc.

26.2 Definitions

For the purposes of this project, the following definitions shall be used:

- a. **Documents or Documentation** – Textural and graphical information describing the offered equipment, systems, and other items peripheral for Substation Automation System, whether embodied in hardcopy or electronic form such as common word processor files. Documents may also be referred to as manuals, guides, books, drawings, transmittals, and specifications. Documents are further divided into standard, OEM, and custom documents.

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- b. **Standard documents** – Documents produced by the Bidder and used prior to the award of this contract that are applicable to all users of the equipment and software, including Purchaser. It is expected that the Bidder will use a formal revision control scheme to maintain its standard documents. Documents not maintained under such a scheme shall be considered custom documents.
- c. **OEM documents** – OEM (Original Equipment Manufacturer) documents are those standard documents produced by Vendor, Sub-vendors. Documents produced by Vendor, Sub-vendors for customized elements of the System shall be deemed custom documents.
- d. **Custom documents** – All documents not categorized as standard or OEM documents including the Bidder's standard documents that are modified to meet Purchaser's specific requirements.
- e. **Project Documents** – Project documents are those documents produced for the conduct of the project, but which do not directly describe the Sub-Station Automation System. Examples of project documents include meeting minutes, action item lists, test plans and procedures, and transmittal and document lists.

26.3 Project Planning Documentation

26.3.1 Documentation Plan

Bidder to note that after the order acceptance, the project kick off meeting will be arranged by the Purchaser, in which MDL will also be finalized, Bidder shall furnish the schedule for submission of documents for the documents mentioned in the MDL and accordingly arrange submit the documents for Purchaser's Review and Approval.

It is expected that certain major documents, such as the detailed hardware and software design documentation, will consist of a series of submittals made over a period. The documentation plan shall address this by including a detailed list of all individual documentation submittals for the project.

Documents shall be submitted in a sequence as per the MDL, that allows Purchaser to have all the information necessary for reviewing or approving a document at the time of its submittal. The documentation plan shall be subject to Purchaser approval.

26.3.2 Project Progress Reports

A project progress report shall be prepared by the Bidder and sent to Purchaser every two weeks through the start of the warranty period. The report shall be submitted to Purchaser's

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Project Manager no later than the 10th calendar day of each month. The report shall cover the project from the start of the contract through the last working day of the month.

The progress report shall include a general assessment of the progress on the project. This assessment shall reference the latest implementation schedule, which shall be included in the report. The schedule shall show the baseline and the current schedule, progress on individual tasks, and the forecasted completion dates for upcoming tasks and the entire project. Updated training and documentation plans shall be included.

The report shall include an explanation of existing and forecast schedule variances, the cause or source of the variance, alternatives considered, solutions adopted or recommended, and the outcome achieved or anticipated. In particular, the report shall note the needed delivery date of Purchaser furnished information. The Bidder shall be responsible for any schedule delays due to insufficient notification to Purchaser of the need for such information.

The report shall identify unresolved contract issues. This shall include a description of the item and the current due date, the consequences of any delay in resolution, and any recommendations pertinent to the decision process. The report shall also include the following items:

- a. A list of action items, including the following information:
 - i. Action item number
 - ii. Date the item was opened
 - iii. References to the originating transmittal and any reference documents
 - iv. Action item status (Open, Closed)
 - v. Resolution due Date
 - vi. Responsible Organization or Person
 - vii. A description of the action required
 - viii. The date of action completion (when each item is closed)
 - ix. References to transmittals or other documents recording the resolution.
- b. Correspondence logs, one for transmittals to Purchaser from the Bidder and one for transmittals to the Bidder from Purchaser. Each log shall have the following information for each transmittal:
 - i. The transmittal numbers
 - ii. The date of transmission (not the date written)

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- iii. The date received
- iv. The subject of the transmittal
- v. Identification of any action items addressed by the transmittal
- vi. A list of any documents attached to the transmittal.

26.3.3 Project Meetings, Agendas, and Minutes

Project meetings shall be held to review project progress, to ensure correct interpretation of the contract, to review technical and commercial issues, and to maintain co-ordination between Purchaser and Bidder. Meetings shall be scheduled at appropriate times. Purchaser prefer to schedule meeting every month on average. The meetings shall be divided between Purchaser's and Bidder's offices. The Bidder's project manager shall prepare a meeting agenda in time for review by Purchaser before the meeting.

The Bidder shall prepare minutes of each meeting. Both Purchaser and the Bidder shall review and approve the minutes. The approved minutes shall be considered binding agreements, subject to concordance with the contract. Where the approved minutes conflict with the contract, either the minutes shall be revised or a change order to the contract shall be generated. Where the minutes of a meeting conflict with the approved minutes of a previous meeting, the conflict shall be documented in the later minutes and those approved minutes shall have precedence.

26.3.4 Project Correspondence

All requests and transfers of information between the parties shall be made in writing and shall be documented with letters of transmittal. All correspondence from each party shall be dated (with the date of transmittal, not the date of writing) and uniquely numbered. Except for the meeting minutes, each letter or other project correspondence shall be limited to a single topic to simplify correspondence management. Correspondence transmitted via mail shall be considered as binding if a printed copy of the correspondence is delivered within four weeks of the mail transmission.

Correspondence may be exchanged by electronic mail. Such correspondence shall not be considered a substitute for formal correspondence, however. Agreements established through e-mail transmittals must be recorded as formal correspondence before they become binding. A printed copy of e-mail attached to a transmittal cover sheet shall be considered a formal transmittal.

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All project management documentation, such as, correspondence, memos, meeting minutes, and monthly progress reports, shall be maintained. A mutually agreeable file numbering scheme shall be developed and used to minimize file storage and retrieval efforts.

- a. System disassembly, delivery, and installation
- b. Final system and user documentation
- c. Training
- d. Submittal dates, review cycles, and acceptance dates for the hardware, software, and interface requirements documents.

The training and documentation schedules may be maintained outside the implementation schedule. However, the implementation schedule shall include all the dependencies of tasks contingent on documentation and training tasks.

The Bidder shall use a commercially available project management application (for example, Microsoft Project) to maintain the project schedule. This project management application shall be used to track the progress of the project from start through completion. Schedule monitoring shall be based on a comparison of completed tasks versus scheduled tasks and estimation of the required effort to complete the remaining tasks. The schedule presented to Purchaser shall be that used by the Bidder to manage their internal resources.

26.4 Document Format

Deliverable Documentation

Two soft copy and three hard copies shall be provided for review and approval. Two soft copy and five hard copies shall be provided for all the final documentation for each site.

Document	Delivery Date
Basic hardware documents	As per MDL
i. List of deliverables, configuration diagram	
ii. Network configuration, interconnection lists	
iii. Site installation drawings and procedures	
Equipment manuals	With each hardware delivery
Hardware maintenance manual	With each hardware delivery
Software list of deliverables	As per MDL
Software development standards	As per MDL

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Database definition	i. For standard software – As per MDL ii. For other software – with the software functional description
Interface Requirements Document	With the software functional description
Software functional description	As per the project schedule
Installation images and source code	With the System delivery
Detailed design document	As per the project schedule
System maintenance manual	With the System delivery

26.5 Document Standards

The Bidder shall provide a document defining the standards used to create and maintain all documentation supplied by the Bidder. The standards shall define:

- a. The word processing or document production software used to create the documents
- b. Templates for each document type
- c. Definitions of the contents for each document type
- d. Drawing standards to be followed
- e. The approval process to be followed for document releases.

26.6 Hardware Documentation

The following documentation shall be provided for all hardware provided pursuant to this contract:

- a. List of deliverable hardware
- b. Equipment configuration diagram
- c. Network configuration diagram
- d. Interconnection list
- e. Site installation drawings and procedures.

The other hardware documentation to be supplied shall be commensurate with the hardware maintenance philosophy to be employed by Purchaser.

Equipment manuals shall be provided for all hardware to be maintained by the Bidder or a third-party maintenance Bidder. Equipment manuals and hardware maintenance manuals shall be provided for all hardware to be maintained by Purchaser.

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26.6.1 List of Deliverable Hardware

The list shall itemize each hardware item and include equipment configuration information. The configuration information shall be enough so that Purchaser can procure an identical item from the manufacturer. The list shall also include network names and addresses (or these shall be included in the network configuration diagram) and shall include a space for Purchaser to enter equipment identification for their own purpose.

26.6.2 Equipment Configuration Diagram

The equipment configuration diagram shall depict the logical interconnection of all the Bidder- supplied equipment and its connection to Purchaser supplied equipment. The configuration diagram shall use the same terminology as the list of deliverable hardware so that the correspondence between the two can be readily determined.

26.6.3 Network Configuration Diagram

This document shall show the design of the local and wide area networks supplied by the Bidder as well as the communications network supplied by Purchaser. Both logical and physical depictions shall be provided for the network supplied by the Bidder. Only a logical depiction is required for the network supplied by Purchaser.

26.6.4 Interconnection List

The physical interconnections among the components, other than those shown on the network configuration diagram, shall be depicted. Each cable shall be identified, along with its terminations.

26.6.5 Site Installation Drawings and Procedures

The site drawings shall depict the physical arrangement of the components. References to the appropriate equipment manuals are acceptable. The drawings and procedures shall include:

- a. Equipment physical drawings showing dimensions, cabinet internal arrangements, and the size and weight of each enclosure
- b. Unpacking, moving, handling, and other installation details
- c. The location of external connections including types and sizes of connectors
- d. Input power and grounding requirements
- e. Environmental requirements

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26.6.6 Equipment Manuals

Equipment manuals shall contain the following:

- a. A description of the function of the equipment
- b. Installation, setup, and operating instructions
- c. A block diagram showing the logical and physical interconnections among the major components
- d. Expansion and upgrade capabilities and instructions
- e. Preventative maintenance instructions
- f. Detailed functional, logical, electrical, and mechanical characteristics of all interfaces to the device, including protocol descriptions
- g. Troubleshooting and repair guides including a description and instructions for the diagnostics furnished.

26.6.7 Hardware Maintenance Manuals

The hardware maintenance manual shall describe the preventive maintenance and restorative procedures required to maintain the equipment in good operating condition. The information in the manuals shall include:

- a. Operating details – This information shall include a detailed description of how the equipment operates and a block diagram illustrating each major assembly in the equipment. Descriptions of external data transfers with other equipment, including data patterns, security check-codes, and transfer sequences shall be included. The operational sequence of major assemblies within the equipment shall be described and illustrated by functional block diagrams and timing diagrams. Detailed logic diagrams shall also be provided as necessary for troubleshooting analysis and field repair actions.
- b. Preventive maintenance instructions – These instructions shall include all applicable visual examinations, hardware testing and diagnostic routines, and the adjustments necessary for periodic preventive maintenance of the equipment. Instructions on how to load and use any test and diagnostic program and any special or standard test equipment shall be an integral part of these procedures.
- c. Corrective maintenance instructions – These instructions shall include procedures for locating malfunctions down to the field-replaceable module level. These guides shall include adequate details for quickly and efficiently locating the source of an equipment malfunction. The instructions shall also include explanations for the adjustment or replacement of all

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items, including printed circuit cards. Schematic diagrams of electrical, mechanical, and electronic circuits, parts-location illustrations, photographs, cable routing diagrams, and sectional views giving details of mechanical assemblies shall be provided as necessary to replace faulty equipment. For mechanical items requiring field repair, information on tolerances, clearances, wear limits, and maximum bolt-down torque shall be supplied. Information on the loading and use of special off-line diagnostic programs, tools, and test equipment, as well as any cautions or warnings that must be observed to protect personnel and equipment shall be included.

- d. Parts information – This information shall include the identification of each replaceable or field- repairable module. All other parts shall also be identified. The identification shall be of a level of detail enough for procuring any repairable or replaceable part. Cross-references between the Bidder's part numbers, and the manufacturer's part numbers shall be provided.

26.6.8 Bidder shall submit equipment warranty details of all the supplied system/equipment with detailed inventory list with make, model, Serial number, Software versions.

26.7 Software Documentation

The following documents shall be provided for all software:

- a. List of Deliverable Software
- b. Software development standards

The Bidder or Sub-vendors shall provide the following documents for all software that has been produced for the offered solution. This shall include all the required OS and application software for the systems mentioned in the specification:

- a. Database definition and data flow, along with an explanation of stored procedures
- b. Interface Requirements Document
- c. Software functional description
- d. Installation images and source code
- e. Source code version control and revision control documentation.
- f. Software release / Patch details as consolidated document to be submitted by Bidder.
- g. Recommended update frequency of all the software should be submitted as consolidated document by bidder.

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The following documents shall be produced for all software produced specifically for this contract:

- a. Software Requirements Matrix
- b. Detailed design documents

26.7.1 List of Deliverable Software

The list shall itemize each software item and include version and license information. The distribution media for each software item shall be identified. The list shall also indicate for each item whether source code is supplied.

26.7.2 Software Development Standards

The Bidder shall document the development standards used to develop the Substation Automation System and other systems software. Purchaser reserves the right to reject software that does not conform to the development standards. The standards shall define:

- a. Program design disciplines
- b. Cyber Security measures
- c. Resources under which the program must operate
- d. Basic services
- e. Interface definitions
- f. Linkage conventions
- g. Input and output specifications
- h. Database naming and access conventions
- i. Storage rules
- j. Quality assurance procedures
- k. Configuration design review methods
- l. Software configuration control schemes.

26.7.3 Database Definition

The database definition shall identify the characteristics of all systems databases. It shall include, but shall not be limited to, the following:

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- a. The name or identification of the database
- b. A description of the intended use of the database. If the database is specific to a single application, the application shall be identified
- c. A description of the organization of the database (the database schema or model)
- d. A description of each field of each data item
- e. Instructions for generating and populating the database
- f. Details of programming interfaces. This shall encompass access methods, address schemes, and read, write, and modify actions
- g. Initialization description – How or by what software is the data initialized & to what value(s)
- h. Details of maintenance actions.

Purchaser encourages the use of "self-documenting" database technology, where the database definition is developed and stored with the data. The resulting documentation should be printable.

26.7.4 Interface Requirements Document

The Interface Requirements Document shall describe in detail the interfaces between the offered systems and Purchaser provided/existing systems and networks. The Interface Requirements Document will be used by both the Bidder and Purchaser as the definition of the interface between the Substation Automation System, SCADA/ADMS and all other systems, so that each system can be designed or modified to meet its requirements. Purchaser will provide all required information to the Bidder so that it can prepare the document accordingly.

As a minimum, the Interface Requirements Document shall cover the following aspects:

- a. Description of the hardware interface
- b. Description of the communication protocols and the options and parameters selected
- c. Data exchange requirements including timing, priority, volume, and security requirements. A specific list of data to be exchanged during factory and site testing shall also be included.
- d. Description of the performance requirements
- e. Exception (for example, error) processing
- f. Failover/Backup processing
- g. Alarm conditions

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- h. Archiving requirements.

26.7.5 Software Functional Description

The intent of the software functional description shall be to describe the functions to be performed by each software module from the standpoint of a user. (Software functional descriptions are also referred to as user guides.) The functional operation of the Substation Automation System and other systems shall be clearly described so that it can be understood without understanding the detailed operation of each software module.

Software functional descriptions shall also be used as the first step in the design of a custom (for example, new functionality). Thus, it shall have enough information for Purchaser to determine that the new functionality will meet the requirements of the contract.

The software functional description shall include the following minimum content:

- a. Functional description – A narrative description of each program. Where appropriate, solution algorithms shall be described
- b. Performance requirements – The execution periodicity, processing capacity, and tuning and execution parameters that control or limit the capabilities of the software
- c. Resource requirement – The expected minimum requirements for main memory, auxiliary memory, processor capacity, and other resources required by the software
- d. User interface – A description of the interface used to control the software, including all user inputs and program responses
- e. Software interface requirements – A description of the logic interfaces with other programs
- f. Data requirements – A description of all data and databases accessed by the software, including execution parameters
- g. Error messages – A concise description of all error messages and possible corrective actions
- h. Diagnostic messages – Where the software generates a record of its internal operations, the messages shall be described
- i. Maintenance and expansion procedures – A description of either maintenance procedures or expansion procedures that is relevant to maintenance of the program or expansion of the program.

It is Purchaser's strong preference that software functional descriptions are provided as on-line documentation.

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26.8 Operations Manual

- a. Factory Acceptance Tests
- b. Site Acceptance Tests.

.Operating Manual

The Bidder shall submit, for review and approval, operating manuals for all Substation Automation functions. The operating instructions associated with all features shall be incorporated into these manuals. Context sensitivity shall be used to go directly to the appropriate place in the manual.

The manuals shall be organized for quick access to each detailed description of the user procedures that are used to interact with the Substation Automation functions. The manuals shall present in a clear and concise manner all information that a user needs to know to understand and operate satisfactorily. The manuals shall make abundant use of screen snapshots to illustrate the various procedures.

26.9 System Administration Documentation

The Bidder shall submit, for review and approval, all system administration manuals. The system administration instructions associated with all features shall be incorporated into these manuals. Context sensitivity shall be used to go directly to the appropriate place in the manual.

26.10 Database Editor's Manual

The Database Editor's Manual shall describe the procedures to define, build, edit, archive, and expand all the databases of the delivered systems. It shall contain information describing how a user may define and add new attributes to an existing database entity. It shall also describe how to restore any database to a previously saved version if the database had been corrupted.

26.11 Acceptance Test Procedures

Acceptance test procedures (FAT & SAT) designed to test the specified requirements shall be provided. The procedures will comprise step-by-step instructions to verify that:

- a. The system hardware and software are fully present and fully integrated, and its documentation is complete.
- b. All the functional and performance requirements of the contract are met.

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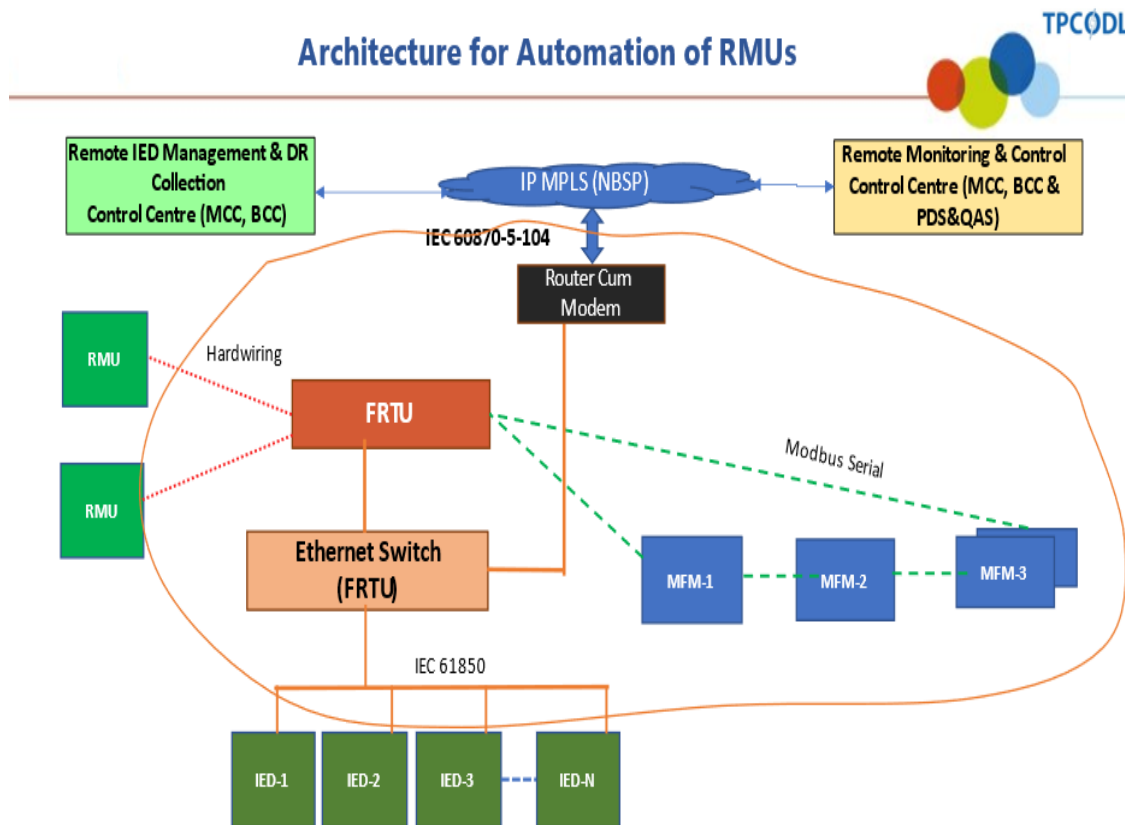
The test procedures shall be organized in the order that they are to be performed. Tests that require collection of data under controlled conditions shall be carefully planned with data collection procedures scheduled, as needed, before the tests themselves.

The test procedure shall be prepared in the format of step-by-step guides. Test descriptions, initial conditions, functions to be tested, expected responses, and recording areas are contained in the acceptance test procedures. The steps to achieve these functions may be provided as references to the user manuals or maintenance manuals. An attempt shall be made to cover all normal and abnormal circumstances in the procedures. The goal is to be able to rigorously test the system by strictly following carefully pre-planned procedures with minimum reliance on unstructured testing.

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Annexure – 1 : Proposed Secondary Distribution Automation System Architecture
(Indicative Architecture for Bid Purpose only)



Note for Bidder:

Bidder shall give more emphasis on the following aspects in the proposed architecture

- Reliability Centric
- High Availability
- Cyber Security Resilience

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FRTU based Automation of RMUs



Legends

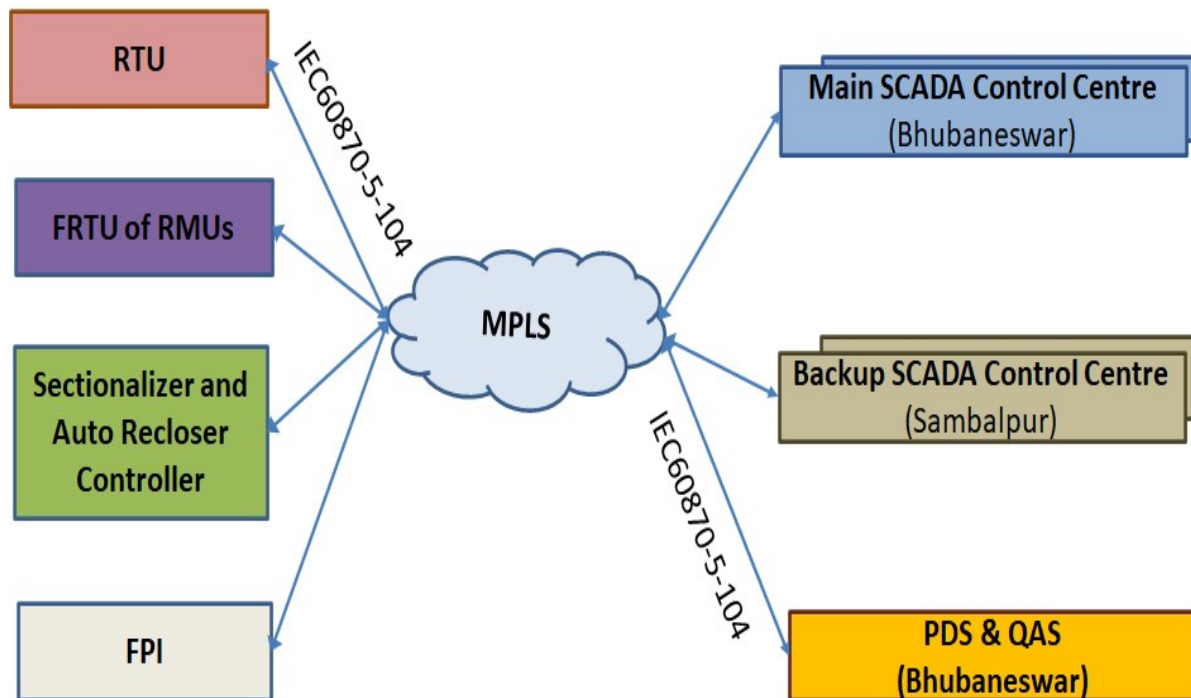
	CAT6 UTP Armoured / Unarmoured Cable
	4P X 0.36 mm2 Individual and Overall Shielded Communication Cable Armoured / Unarmoured Cable
	Bidder's Scope
IED	Intelligent Electronic Device – Numerical Relay (Feeder – One Number, TRF – 2 Nos.)
MFM	Multi Function Meter 0.2S with Ring CT
RMU	Ring Main Unit
FRTU	Feeder Remote Terminal Unit
IPMPLS	IP MultiProtocolLabelSwitching
MCC	Main Control Centre- TPCODL Bhubaneswar, Redundant System
BCC	Backup Control Centre- TPCODL Sambalpur, Redundant System
PDS & QAS	Program & Development & Quality Assurance System at TPCODL MCC Bhubaneswar, Redundant System

Bidder to note that the above proposed architecture may change as per the site requirement.

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Annexure – 2: Communication Architecture with Field Devices and Control Centre



Note for Bidder:

Bidder shall give more emphasis on the following aspects in the proposed architecture

- Reliability Centric
- High Availability
- Cyber Security Resilience

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Annexure – 3: Indicative Signal List

BAY	INDICATIONS	TPCODL IEC T104 SPI/DPI/DO	DI count	DO count	Measurement
FRTU-1	AC Fail	SPI	1		
	DC Fail	SPI	1		
	Local/Remote	SPI	1		
	Door OPEN	SPI	1		
	DMY BKR OPEN	SPI	1		
	DMY BKR CLOSE	SPI	1		
4WAY RMU -1	DC Fail	SPI	1		
	SF6 Gas Low	SPI	1		
	Door OPEN	SPI	1		
P1:LBS-1:	LBS OPEN	DPI	1		
	LBS CLOSE		1		
	ES OPEN	DPI	1		
	ES CLOSE		1		
	FPI ON	SPI	1		
	Local/Remote	SPI	1		
	VPIS	SPI	1		
	Motor Enabled	SPI	1		
P2:CB-1:	CB OPEN	DPI	1		
	CB CLOSE		1		
	ES OPEN	DPI	1		
	ES CLOSE		1		
	DISCNTR OFF	DPI	1		
	DISCNTR ON		1		
	PTR RLY OPERATED	SPI	1		
	Local/Remote	SPI	1		
	VPIS	SPI	1		
	Motor Enabled	SPI	1		
P3:LBS-3:	LBS OPEN	DPI	1		
	LBS CLOSE		1		
	ES OPEN	DPI	1		
	ES CLOSE		1		
	FPI ON	SPI	1		
	Local/Remote	SPI	1		
	VPIS	SPI	1		

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BAY	INDICATIONS	TPCODL IEC	DI	DO	Measurement
	Motor Enabled	SPI	1		
P4:CB-1:	CB OPEN	DPI	1		
	CB CLOSE		1		
	ES OPEN	DPI	1		
	ES CLOSE		1		
	DISCNTR OFF	DPI	1		
	DISCNTR ON		1		
	PTR RLY OPERATED	SPI	1		
	Local/Remote	SPI	1		
	VPIS	SPI	1		
	Motor Enabled	SPI	1		
Dummy Breaker	OPEN	DPC		1	
	CLOSE			1	
P1:LBS-1:	LBS OPEN	DPC		1	
	LBS CLOSE			1	
	FPI Reset	SPC		1	
P3:CB-1:	CB OPEN	DPC		1	
	CB CLOSE			1	
	Relay Reset	SPC		1	
P2:LBS-2:	LBS OPEN	DPC		1	
	LBS CLOSE			1	
	FPI Reset	SPC		1	
P4:CB-2:	CB OPEN	DPC		1	
	CB CLOSE			1	
	Relay Reset	SPC		1	

BAY	INDICATIONS	TPCODL IEC T104 SPI/DPI/DO	DI count	DO count	Measurement
4WAY RMU -1	Current R Phase	Measurement			1
	Current Y Phase	Measurement			1
	Current B Phase	Measurement			1
	Current N Phase	Measurement			1
	Fault L1 Value	Measurement			1
	Fault L2 Value	Measurement			1
	Fault L3 Value	Measurement			1
	Fault IN Value	Measurement			1
	Fault duration	Measurement			1
	Trip Flag	DI	1		

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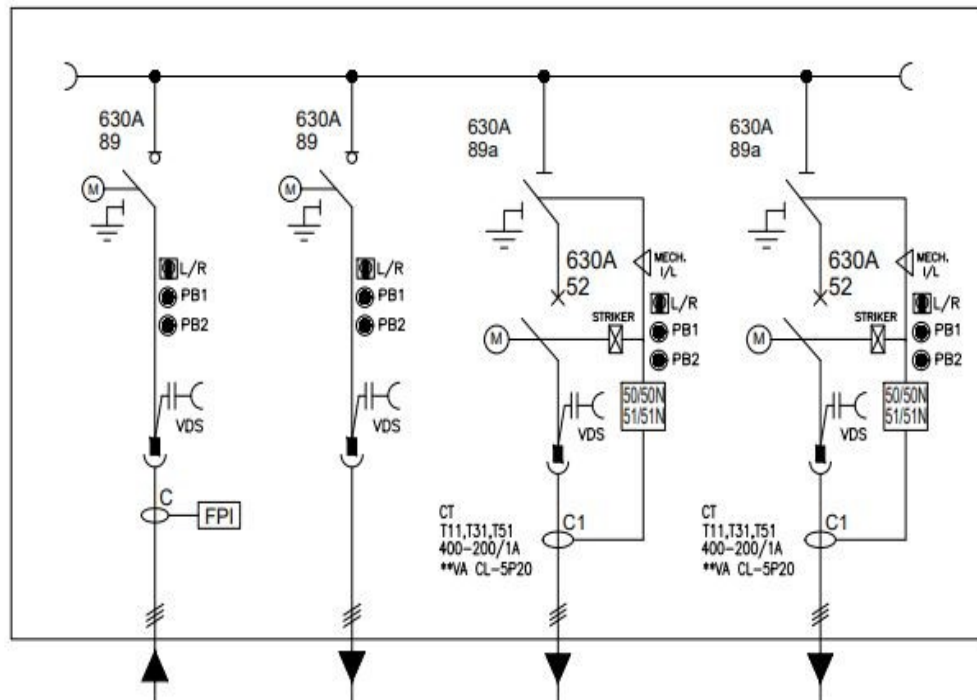
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	General Trip	DI	1		
	General pick up	DI	1		
	Fault Trip	DI	1		
	SOFT RESET	DO		1	

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Annexure – 4: Typical Single Line Diagram

SINGLE LINE DIAGRAM (2LBS+2VCB) EXT. OUTDOOR RMU



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Annexure – 5: Guaranteed Technical Parameters

Data Sheet : FRTU			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER'S RESPONSE
1	Feeder Remote Terminal Units (FRTU)	Din Rail Mounted	
		It shall have capability to be part of a larger RTU family for T&D function	
2	Make & Model Proposed	Make	
		Model	
3	RTU Redundancy	Optional (CPU, Power, Communication & Memory)	
4	Digital Inputs (Physical)	As per RFP / RMU type and Indicative Signal List	
5	Digital Outputs (Physical)	As per RFP / RMU type and Indicative Signal List	
	Close / Open	Required	
	Raise / Lower	Required	
6	Analog Inputs (Physical)	As specified in the I/O Requirement	
7	Energy Meters / Numerical Relays Integration	Facility to interface Multifunction Meters and Numerical Relays	
7.1	Accumulator Data from Multi-Function Meter	Capable of Acquiring 32 bit Analog and Accumulator Data from Multifunction Meters	
8	Distributed I/O modules	Required	
9	Ports Requirement and Type	All ports shall be galvanically isolated	
		2 Nos. RS 485 electrical ports for communication with Serial Devices over IEC60870-5-103, Modbus protocol	
		2 Nos. Ethernet Ports / FRTU (Both the ports should support IEC 104, IEC 61850 & other standard protocols for Communication with Control Center and Field IEDs)	
	For Structuring (Configuration) System (Separate Port)	A galvanically isolated USB port for local engineering through laptop	
10	Protocol Support	IEC61850 (Ed1 & Ed2), IEC60870-5-103, IEC60870-5-104 (Master & Slave), MODBUS (Serial & TCP/IP), SNTp & SNMP with Server and Client licenses	

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Data Sheet : FRTU			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER's RESPONSE
11	Time synchronization between FRTU, I/O modules, IEDs	Required on SNTP and direct pulse (1 PPS, 1 PPM). FRTU shall have capability for Time Synchronization from Minimum 2 Server with priority selection	
	Real time stamping at FRTU level, I/O level	Required, Mandatory	
12	Response Time		
	Digital Input	1 msec or better	
	Analog Measurement	1 sec or better	
	Digital Output	<1 sec or better	
13	I/O handling Capacity	Min 1000 Physical Tags / RTU	
14	Pseudo Points (Digital, Analog)	Required	
15	Calculated Points (Digital, Analog)	Required	
16	SOE List storage	Min 1000 (shall be user configurable)	
	SOE list Retention Period	1 Month	
	Measurement Events	10000	
17	Fault Disturbance Recorder	1000 events	
	FDR Retention Period	1 Month	
18	Development of Interlock logic	Required, Mandatory	
19	Support of mathematical function - Arithmetic, Logical, Trigonometric functions, Differential and Integration functions, Timer, Counter etc.	Required, Mandatory	
20	Logic and Calculation functionality	Required, Mandatory	
21	Check-Before-Execute Scheme for Control	Required (Bidder shall submit their Check-before-Execute scheme)	
22	Auxiliary Relays for Digital Outputs	Required, Auxiliary relays with Min 10 Ampere rating with 2 NO contacts for each digital output	
23	Status LEDs on all module – for fault indication and Inputs / Outputs	Required	

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Data Sheet : FRTU			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER's RESPONSE
24	Module replacement in RTU	Hot-Swappable module	
25	Software – All diagnostic tools, simulator tool, maintenance tools, configuration application for database and process control program development, documentation, and maintenance	Required Licensed FRTU configuration software minimum 5 numbers	
26	Engineering Functions	a) Configuration shall be possible both locally and remotely	
		b) FRTU shall have multilevel passwords	
		c) On-line monitoring facility of real time data for monitoring/analyzing the real time status of the process, program logic from the engineering station	
		d) Allow configuration of the FRTU with different versions of the Configuration Tool	
		e) ICD file generation shall be possible from the proposed Configuration Tool	
		f) FRTU must have the provision to configure IP of the redundant SCADA Systems (Socket IP)	
27	Cyber Security	Bidder to confirm Cyber security measures as indicated in the Specification	
28	Battery Backup / Flash-PROM backup	Required	
29	Auxiliary Power Supply	Auxiliary Power Supply of FRTU shall be 18-72 V DC (24V DC) Supply. The FRTU shall have adequate protection against reversed polarity, over current and under voltage conditions, to prevent the internal logic from being damaged and becoming unstable causing mal operation.	
29.1	Auto-Startup and Restoration	In case of Power Supply Failure, Auto-Startup and Restoration of the FRTU required	

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Data Sheet : FRTU			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER's RESPONSE
30	RTU health monitoring contacts (CPU, Communication, I/O modules, Power Supply)	Required both Physical and Soft, Mandatory	
31	Environment Requirement, Reliability & Cooling	FRTU with accessories will be installed in the Relay/Control room with no temperature or humidity control. The RTU shall be capable of operating in ambient temperature from 0 to +65 degree C with rate of temperature change of 20 degree C/hour and relative humidity of 95%, non-condensing All the modules shall be with conformal coating	
32	Number of Multi Master Reporting possible with same ASDU	8 Nos.	
33	Web Based Monitoring	Required, Mandatory	
34	FRTU's Digital Input/Output Capacity	Capacity of I/O should be sufficient for Two 4 way RMU automation (Minimum 80 DIs and 32 DOs & 16 AI hardwired capacity).	
35	CPRI report for the product offered as per the GoI order no. 25-17/6/2018-PG dated 2nd July 2020 and subsequent order No. 12/34/2020-T&R dated 8th June 2021	Mandatory, Bidder to submit the CPRI report along with Bid Document	

Data Sheet : Managed Layer - 2 Ethernet Switch			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
1	Make		
2	Model		
3	Type of Switch	Industrial Grade Managed Switch	
4	No. of Ports per switch	Minimum 8	
4.1	No. of Copper ports (10/100 mbps)	Minimum 6 ports	

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Data Sheet : Managed Layer - 2 Ethernet Switch			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
4.2	No. of Fiber Ports (100/1000 mbps)	Minimum 2 Ports (Single Mode)	
5	Compliance		
5.1	Shall support 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol and also suitable for Ring Configuration	Required	
5.2	IEEE 1613 compliance	Mandatory	
5.3	IEC 61850 Compliance	Mandatory	
5.4	QAS (802.1p)	Mandatory	
6	Time Synchronization	SNTP, IEEE1588 V2	
7	Suitable for PRP/HSR architecture	Optional	
8	Other Required Features	Automatic Learning, Negotiation, and Crossover Detection	
		Support Industrial Automation Protocols i.e. IEC61850, MODBUS, Ethernet/IP etc.	
		Shall support Layer 2 switch ports with Secure VTP or similar protocols to reduce administrative burden for VLANs Configuration	
		Shall support both Rapid Spanning Tree Protocol (RSTP) & Multiple Spanning Tree Protocol (MSTP)	
		Port Mirroring	
		Discover the neighboring device, giving the details about the platform, IP Address, Link connected through etc.	
		Shall support to prevent edge devices not in the network administrator's control from becoming STP root nodes	
		Shall support configurable SNMP traps	

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Data Sheet : Managed Layer - 2 Ethernet Switch			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
9	Management Tools support	Web-based, Telnet & Command Line Interface (CLI) for quickly configuring major managed functions	
		SNMPv1/v2c/v3 for different levels of network management	
		Remote Monitoring (RMON)	
		Rich set of diagnostics with logging and alarms	
10	Auxiliary Power Supply	Auxiliary Power supply shall be 18-72V DC. The Switch shall have in-built adequate protection against reversed polarity, over current and under voltage conditions, to prevent the internal logic from being damaged and becoming unstable causing mal-operation	
11	Health Monitoring of Hardware such as Ethernet ports, Power supply cards & Communication links and internal voltages through SNMP/IEC61850 to SCADA System/Purchaser's NMS	Protocol shall be SNMP	
12	Environment Requirement, Reliability & Cooling	Switch with accessories will be installed in the Relay Panel/Switchgear with no temperature or humidity control. The Switch shall be capable of operating in ambient temperature from 0 to +65 degree C with rate of temperature change of 20 degree C/hour and relative humidity of 95%, non-condensing	
		All the modules shall be with conformal coating	

Data Sheet : Interposing Relay (Digital Output)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE

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Data Sheet : Interposing Relay (Digital Output)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
1	Make		
2	Model		
3	Type	Magnetic Blow out	
4	Contact Configuration	2 NO with LED Indicator + Free wheeling	
5	Contact Material	AgNi	
6	Contact make and carry	30A for 3 sec. & 5A continuously at 660V	
7	Contact mechanism	Self-Reset	
8	Coil Voltage	24VDC	
9	Input impedance	more than 50 Kilo ohms	
10	Operating time	Less than 15 m secs (DC)	
11	Mechanical durability	100000 cycle	
12	Ambient Temperature	-40 deg C to + 55 deg C	
13	Type of Mounting	Din Rail Mounting	
14	Socket	S8LD SOCKET	
15	Standard applicable	IEC 60255-5	
16	Other Accessories	Necessary TB, Din rail channel and other accessories to mount in SIC/RTU/CRP Panel	

Data Sheet : Contact Multiplying Relay (Digital Inputs)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
1	Make		
2	Model		
3	Type	CMR	
4	Contact Configuration	1 NO + 1 NC with LED Indicator + Free wheeling	
5	Contact Material	Silver alloy	
6	Contact make and carry	5 Amps @ 24VDC / 48V DC	
7	Coil voltage	24VDC / 48V DC	
8	Contact Resistance	50 M ohms	
9	Die Electric Strength		
9.a	Between open contacts	500V RMS	
9.b	Between contact and coil	2500 VAC	

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Data Sheet : Contact Multiplying Relay (Digital Inputs)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
10	Insulation Resistance	500 M Ohms @ 500VDC	
11	Operate time at Nominal voltage	20 milli secs	
12	Release time at Nominal voltage	10 milli secs	
13	Ambient temperature	-40 deg C to + 55 deg C	
14	Life Expectancy		
14.a	Mechanical Operations	20 million DC Relay	
14.b	Electrical Operations	> 100,000 operations	
15	Coil Resistance at nominal voltage (DC)	30,000 ohms + 10% @ 20 C	
16	Type of Contact Multiplier	1 NO + 1 NC with LED Indicator + Free wheeling	
17	Type of mounting	DIN RAIL MOUNTING WITH SOCKET	
18	Standard applicable	IEC 60255-5	
19	Other Accessories:	Necessary TB, Din rail channel and other accessories to mount in SIC/RTU/CRP Panel	

Data Sheet :: Multi- Function Meter (MFM)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
1	Make		
2	Model		
3	Accuracy Class	Class 0.2S (IEC62053-11 and IEC62053-22)	
4	Sampling rate	128 Samples/Cycle for true RMS measurement	
5	Voltage Input	0 to 690 V L-L, 400 V L-N	
	Voltage Burden	< 0.15 VA	
	PT Ratio	1.0 - 6500	
	Primary Value of PT	Shall be programmable	
	Range of Reading	1 - 999000 V	
6	CT Type- Ring CT	Optional	
	Current Input	1 A / 5A selectable from the front display	
	CT Burden	< 0.1 VA per phase	
	CT range	0.1% to 200%	
	Current over range	5A CT = 15A RMS continuous, 250A for 1 Sec 1A CT = 3A RMS continuous, 50A for 1 Sec	
	Range of Reading	0-60000 Amp	

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Data Sheet :: Multi- Function Meter (MFM)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
	Primary Value of CT	Shall be programmable	
7	Power Factor	0.5 (lag) to 1.0 (unity) and 1.0 (unity) to 0.5 (lead)	
8	Accuracy kW / kWH	0.5 S as per IEC62053:22	
9	Real time & Average parameters	Required	
10	Four Quadrant measurement	Required	
11	LED Load Bar Indication	Optional	
12	Self-Diagnostic LED	Required	
13	Real time clock	Required	
14	Min./Max of parameters	Required	
15	THD	Required	
16	Individual Harmonics up to 39th	Required	
17	Real time waveform monitoring	Standard software to monitor real-time waveform	
18	Communication Port	Min 1 No. RS 485 port	
19	Isolation	Galvanic	
20	Communication protocols	MODBUS RTU, ASCII, selectable at site	
21	User defined registers	Optional	
22	Energy pulse LED for calibration test	Required	
23	Relay output	Optional	
24	Auxiliary Power Supply	Power Supply 18-72V (24V & 48V as per site requirement) The MFM shall have in-built adequate protection against reversed polarity, over current and under voltage conditions, to prevent the internal logic from being damaged and becoming unstable causing mal-operation	
25	Environment	MFM will be installed on the RMU Panel with no temperature or humidity control. The MFM shall be capable of operating in ambient temperature from 0 to +65 degree C with rate of temperature change of 20 degree C/hour and relative humidity of 95%, non-condensing	

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Data Sheet :: Multi- Function Meter (MFM)			
SL. NO.	TECHNICAL PARTICULARS	TPCODL REQUIREMENT	BIDDER RESPONSE
26	Mounting Panel cutout	92 mm x 92 mm, flush mounting	
27	Programming features	Unit should be fully programmable in the field and also remote configuration including PT/CT ratios and should have adequate protection for authorization for changes.	
28	Parameters to be monitored and reported	Volt, Amp, Cos (Phi), kWatt, kvar, kVA, HZ, MWH Import & Export, MVARH Import & Export.	

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
1	Product Description		
1.1	Make & Model	Bidder to provide Make & Model of proposed Cellular Modem. Also provide life cycle details	
2	Radio Interface		
2.1	Radio Interface	5G Fall back to 4G/3G/2G	
2.2	Data interface	Cat 5, Download and Upload 1000 Mbps	
2.1	Supported frequency band	1. Modem should support multiband connectivity with FDD 5G & TDD 5G. 2. It should support Band 1,3,5,8,40 and Band 48. 3. The offered cellular modem should support and compatible to the data & radio interface of the network of public mobile service provider in Odisha City.	
2.4	Radio Transmitter Power	Bidder to provide details of radio transmitter power	
2.5	Receiver Sensitivity	Bidder to provide details of receiver channel sensitivity	
2.6	Cellular Module / Chip	Bidder shall give details of cellular chip /Module used along with datasheet	
3	Operating Condition		
3.1	Operating Temperature	-20° C to 70° C	
3.2	Operating Humidity	5 % to 100 % (non -condensing)	
3.1	Power Consumption	Bidder to provide power consumption for idle and max during data transmission	
3.4	Storage /transport temperature	-40 °C to 85 °C	
3.5	MTBF	Bidder to provide details of MTBF	
3.6	Protection from pollution	Bidder shall provide design details such as protective paint /conformal coating on MCB, high grade electronic components uses to protect from environmental pollution.	
4	System Characteristics		
4.1	CPU	1. Bidder to provide make & technical details of CPU used. 2. Bidder should also attach technical data sheet of CPU. 3. CPU usage should not cross 40 % in typical operating & maintenance condition	

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
4.2	RAM	1. Bidder to provide details of memory type, Speed & Size. 2. Usage of memory should not cross 60 % in typical operating & maintenance condition	
4.3	Flash Storage	Bidder to provide details of flash storage Memory Provision to store system logs, event logs ,configuration file	
5	Mechanical Construction		
5.1	Dimension (W X H X D)	Bidder to provide details of Dimension (W X H X D)	
5.2	Weight in Kg	Bidder to provide details of Weight in KG	
5.3	Housing	Metal Preferred Aluminum alloy having better heat dissipation & ruggedness	
5.4	Mounting	DIN rail Mounting	
5.5	Degree of Protection	IP30	
6	Interface/Port Type		
6.1	Ethernet	1. Minimum 2 X RJ45 Port ethernet, Speed 10/100 Mbps auto negotiable having status LED indication. 2. Port should be configurable as LAN /WAN as required.	
6.2	Cellular interface	1. Cellular modem should have dual SIM provision . 2. Dual SIM for network redundancy /backup. 3. Dual SIM operation ensures that the cellular connection is always available. 4. It will automatically disconnect the 1st SIM card's low/weak cellular connection and will reconnect to establish a stronger connection using the 2nd SIM card.	
6.3	Ethernet Cable (CAT 4)	Bidder to provide Ethernet Cable (CAT 6) minimum 1.5 M	
7	Software Features / Supported protocols		
7.1	Network Protocols	TCP/IP, UDP/IP, HTTP, ARP, DHCP, ICMP, SNMP, V1/V2 & V1, NTP, SSL/TLS	
7.2	Routing	Astatic Routing, RIP 1 & 2, OSPF V2 & V1	
7.3	VPN	Open VPN, IP Sec, L2TP, PPTP, GRE	
7.4	Alarm Message	Device shall have alarm notification on SNMP trap	

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
7.5	Management /Monitoring	1. Cellular modem shall support Local/Remote management through web HTMLS, SSHP & Telnet 4. 2. It shall support monitoring through system logs & SNMP version V1/V2 & V3. 3. Notification & command shall be possible over SMS. 4. Firmware upgradation through Web, backup & restore of configuration shall be possible.	
7.6	Operating System	Bidder to give the details of operating system & its Version	
7.7	Application	Bidder to give the details of application & package installed in modem	
7.8	AT Command Support	YES /NO	
7.9	Scheduled rebooting	Device should be capable to program auto rebooting as per configured / scheduled configured scheduled time.	
7.1	Watch dog feature	modem Shall have feature of tracking data connectivity status by periodic ping test and switchover on backup.	
7.11	Factory Reset	Provision of Resetting the device for factory configuration.	
7.12	Diagnosis Feature	Device Shall support real time diagnostic such as active connection, traffic on interfaces	

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
7.13	SCADA Protocols	1. Transparent Mode: The modem should be capable for communicating with multiple protocols of FRTUs in Transparent Mode 2. DLMS Master Mode: The modem should be capable to reading multiple DLMS meters connected to it 3. Modbus Master Mode: The modem should be capable of eading Multiple Modbus Meters connected to it 4. Data Segregation Mode: modem should segregate the collected data as per Instantaneous Parameters, Billing, Load Profile and Tamper parameters in separate files per Meter 5. IEC 104 – 104 Master – Multi Slave Mode: The modem should be capable to reading RTUs in IEC60870-5-104 protocol and communicate with SCADA system on IEC 60870-5-104 protocol upto 8 masters. Adequate data interlock mechanisms should be implemented to avoid data loss. 6. IEC 104 Slave mode Multi Master support 7. DNP3 Slave mode with Integrity poll, Static, Event data, Class 0,1,2,3 support 8. Other Data Sending Modes: modem should support TCP, UDP, HTTPS, MQTT data sending formats 9. Simultaneous Operations of multiple protocols. Ex modem should be capable of sending Modbus Data over 104 and MQTT simultaneously	
8	Security		
8.1	Security	HTTPS, SSH, Authentication with RADIUS or TACACS + , activate cellular interface with SMS ,Ethernet 802 .1X(EAP-PEAP/MsCHPv2 or EAP -TLS	
8.2	Authentication	User Management (local, RADIUS, TACACS + , Mixed)	
8.3	State inspection firewall	Static firewall IPv4 / IPv4 with incoming and forwarding ruleset, DoS protection, IP /Port/Protocol filtering, NAT	
9	Antenna		

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
9.1	No Of Antenna	The 5G Cellular modem Should have two antenna connection (MIMO).One is primary cellular antenna & second is diversity antenna(MIMO)	
9.2	Cable Length	Cable should have Low loss RF Cable with minimum 5M	
9.3	Type of Antenna	Antenna Should be Omni directional with high gain (High gain ≥ 5)	
9.4	Construction of antenna	It should be Steady ,good quality material ,water/ weather proof having adequate gold plate connector compatible with cellular modem antenna. Port. It should be suitable mounting arrangement to installed indoor	
9.5	Frequency Band, impedance & Polarization	Bidder Shall provide the details of frequency Band .Antenna should be compatible with offered device & network service provide with frequency band ,port impedance & radio signal polarization	
9.6	VSWR	Bidder Shall provide details of VSWR	
9.7	Gain of antenna	Bidder Shall provide Gain details of primary & secondary antenna	
10	Power Supply		
10.1	Power Supply	18V to 72 V dc	
10.2	Connector Type	modem Should have preferable screw type firm connection. It should have reverse polarity protection & surge protection	
11	Status & diagnostics indicator		
11.1	LED indicator	Bidder to provide details of status & diagnostics indicator. (Power- ON & OFF ,ERR- Error Red, Signal, network, SIM status)	
12	Certification:- IEC Specified as below or equivalent to international Standard		
12.1	Electrostatic discharge immunity test	IEC EN 61000-4-2	
12.2	Radiated, radio-frequency, electromagnetic field immunity test	IEC EN 61000-4-1	
12.3	Electrical fast transient/burst immunity test	IEC EN 61000-4-4	
12.4	Surge immunity test	IEC EN 61000-4-5	
12.5	Immunity to conducted disturbances, induced by radio-	IEC EN 61000-4-4	

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Data Sheet :: Dual SIM 5G/4G Modem cum Router			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
	frequency fields		
12.6	Information technology equipment –Safety	IEC 60950	
12.7	Environmental testing-Vibration (sinusoidal)	IEC 60048-2-4	
12.8	Environmental testing-Shock	IEC 60048-2-27	
12.9	Environmental testing-Free Fall (withdrawn)	IEC 60048-2-12	
12.1	Proof of check	Bidder should give one number of modem along with Technical offer for performance & application compatibility check for period of minimum 15 days	
12.11	Country of manufacturing	Bidder to provide Country of manufacturing details	
12.12	Service Centre in India	Bidder to provide details of Service Centre in India	
12.13	Regulatory compliance	Bidder shall confirm that offered product is complied & certified by all Indian government bodies related to telecommunication/ wireless communication (WPC ,DOT) to operate &user this product in country . Bidder to share compliance certificate of the same	
12.14	Surge protection /electrical isolation	It should be available on all Ethernet communication port & power supply input .Bidder shall share certification	
12.15	Environmental Condition	Cyclonic environment with wind velocity up to 250kmph. 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 electronic equipment. Some places are in heavily industrial polluted areas. Therefore, all supplied material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere.	

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Data Sheet :: Battery & Battery Charger			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
A.1	Make of Battery Charger		
A.2	Model of Battery Charger		
B.1	Make of Battery		
B.2	Model of Battery		
1	Scope	The battery & battery charger are intended for operating 33kV/22kV/11KV RMU isolators. The rating of closing & opening coils is from 90-120 watts. Operating time 50ms Max. The battery should capable of withstanding normal load of FRTU & operational load of RMU isolators	
2	Average Number of Operations	Minimum 10 nos. for 30 sec	
3	Standards	IS 1885/IEC 600504, IS -15549/2005	
4	Climate	Must able to operate efficiently considering hot & humid climate of Bhubaneswar India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg.C and in locations where the relative humidity between 30% to 100%	
5	Battery Ratings		
5.1	Voltage	24 VDC specified at 27 deg.C.	
5.2	Battery Type	SMF, VRLA with chargers of conventional type	
5.3	Voltage/cell	2 volts	
5.4	Capacity of Batteries	42 AH,10Amps	
5.5	Connecting cables	Cable size selection should provide the lowest voltage Drop possible between battery system and operating Equipment.	
5.6	Method of charging	Constant voltage method and current limit (variable Current)	
5.7	Efficiency	Not less than 90% at full rated load	
6	Battery Charger Rating		
6.1	Battery Charger type	Constant Voltage and Current limiting charger. Charger with inbuilt battery health monitoring is highly preferable.	

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Data Sheet :: Battery & Battery Charger			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
6.2	Charger Input Voltage	Single phase (2 wire) voltage 250V AC, +30% to -20% Frequency 50Hz $\pm$ 5%.	
6.3	Charger Output		
6.3.1	Regulation	$\pm$ 1%	
6.3.2	Charger current	10 Ampere	
6.3.3	Efficiency	Not less than 85% at full rated load	
6.3.4	Current limit	110% of rated load	
6.3.5	Insulation	Not less than 5 mega Ohms.	
		i. between DC output terminals and AC input terminals.	
		ii. Between AC input terminals and earth	
6.3.6	Indication	The charger shall have suitable indicators to visually know its mode of operation. Charger indication as below must be available:	
		Mains on (Red LED), Charger on (Yellow), Boost on (Yellow LED), Float on (Green LED) and Battery reverse polarity (Red LED), O/p DC fuse blown (Red LED) LED lamp indication. (LED colors can be changed)	
6.3.7	Protection	Input single pole MCB's for AC & DC of 10 Amperes separate for battery & charger.	
		The battery charger must include protections like:	
		i) AC input MCCB & ELBS with input ON/OFF switch and fuses/ contactor.	
		ii) DC output MCCB with output ON/OFF switch and fuses.	
		iii) Current limit protection, soft start feature, surge suppressor.	
		iv) Fast semiconductor fuses for rectifier bridge.	
6.3.9	Battery & charger Alarms	v) Charger overload / short circuit vi) Battery polarity reverse, Battery Over/Under voltage, Charger rectifier fail, etc.	
		Potential free contacts must be available to integrate with SCADA for abnormality if any. Most preferred alarms are like: AC supply fail, DC supply fail, Battery Low, Battery Fail, Battery Charger fail, Battery polarity reverse. Serial	

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Data Sheet :: Battery & Battery Charger			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
		Communication is preferred.	
6.3.8	Cooling	External exhaust fan (Optional)	
6.4	Climate	Must be able to operate efficiently considering hot & humid climate of Mumbai, India region. The battery shall be capable of operating satisfactorily in outdoor applications when it is housed in a Cubicle between 10 deg. C and 65 deg. C and in locations where the relative humidity between 30% to 100%	
6.5	Wiring	The internal wiring of the charger shall be carried out with PVC insulated	
6.6	Accessibility	650V grade standard copper conductor. The control wiring shall be carried out with 2.5 Sq.mm copper conductors.	
		All the important components of the charger must be easily accessible for maintenance, repair, replacement in case of trouble without giving interruption to total D.C. supply as far as possible.	
6.7	Test		
6.7.1	ACCEPTANCE AND ROUTINE TESTS	All acceptance and routine tests as stipulated in the relevant standards shall be carried out by the bidder. The test certificates are to be furnished for approval.	
6.7.2	Acceptance test for battery charger with batteries	1. Marking	
		2. Verification of dimensions.	
		3. Regulation test.	
		4. Ripple test,	
		5. Megger values and HV Test.	
		6. Test for battery discharge capacity.	
6.7.3	Type Tests:	Following shall constitute type tests in respect of chargers and batteries.	
		1. Insulation resistance	
		2. High voltage test at 1.5KV for 1 minute	
		3. Regulation (Load & Line)	
		4. Dry heat test at 55°C for 16 hrs with full load on as per	

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Data Sheet :: Battery & Battery Charger			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
		IS: 9000 part	
		3/Sec5/1977.	
		5. Damp heat test at 55°C and at 95% RH for two cycles as per IS: 9000 part	
		5/Sec1/1981	
		6. Cold test at -10°C for 4 hrs as per IS:	
		9000 part 2/Sec4/1977	
7	Drawings	Detailed drawings, circuit details and technical literature of batteries shall be enclosed to the offer. Tenders not accompanied by the above are liable for rejections.	
		Trouble shooting charts shall be supplied with each unit to trace faults in the charger with voltage and Resistances to be measured at various test joints.	
8	Painting	The box shall be painted with powder coating with siemens grey colour.	

Data Sheet : INSTRUMENTATION, COMMUNICATION & POWER CABLES				
Sr. No.	Technical requirement	TPCODL Requirement		Product Specification
1	Cable Name			
	Make			
	Cable Code			
	Applicable Standards			
2	Voltage grade			
3	Temperature Rating			
4	Construction of cable			
5	No. of Pairs (Cores & Sizes)			
6	Conductor:-			
	Area of Conductor	Sq.mm		
	No. of Strands / Strand Diameter (minimum) - for finished cable	No./ mm		
	Material		Annealed, Bare, Copper conductor	

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Data Sheet : INSTRUMENTATION, COMMUNICATION & POWER CABLES				
Sr. No.	Technical requirement	TPCODL Requirement		Product Specification
	Grade / Standard		Electrolytic grade as per standard IS 8130	
7	Insulation :-			
	Material			
	Type and Standard			
	Thickness (Minimum/Nominal/Maximum)			
	Method of application			
	Pair Identification			
	Volume Resistivity (Minimum)	Ohm-cm		
	At 27 Deg.C		ohm-cm	
	At 70 Deg.C		ohm-cm	
8	Lay for pairing (minimum)	Twist per metre	20	
9	Direction of lay (for pairing)		Right Hand	
10	No. of pairs for making a bundle	Pair		
11	Lay for laid up pairs			
12	Lay for laid up Bundle			
13	Binding Material :-			
	Binding		Single layer of binder tape shall be provided on each pair	
	Type of Material		Polyester tape	
	Thickness (minimum)	mm		
	Coverage	%		
	Overlap (minimum)	%		
14	Filler Material (wherever applicable)			
15	Shielding:-			
	Type of Material			
	Thickness (minimum)	mm		
	Coverage	%		
	Overlap (minimum)	%		
16	Drain wire for Shielding :-			
	Material			

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Data Sheet : INSTRUMENTATION, COMMUNICATION & POWER CABLES				
Sr. No.	Technical requirement	TPCODL Requirement		Product Specification
	No. of strands / Diameter of strand	No./mm		
	Area of cross section	sq.mm		
	Resistance of Drain wire @ 20°C (maximum)	Ω/km		
17	Outer Sheath:-			
	Material			
	Type and Standard			
	Thickness (Minimum/Nominal)	mm		
	Method of application			
	Colour			
18	Cable Marking on Outer sheath		Manufacturer's Name, Insulation material, Conductor size, Number of pairs, Voltage rating, Type of cable, Year of manufacture @ 625 mm Interval. Printing/Embossing shall be legible and indelible.	
19	Sequential marking on Outer sheath		Every 1 Metre for Progressive Length by printing. Every 5 Metre to read 'FRLS' by Embossing	
20	Tolerance on Outer diameter	mm		
21	Tolerance on Outer diameter for entire length	mm		
22	Ovality	mm		
23	Bending Radius (Minimum)		12 Times the OD of the Cable	
24	Standard Packing Length	metre	1000	
25	Tolerance on standard packing length	%	± 5	
26	Non-standard Length			
27	Safe pulling force when pulled by pulling			
28	Electrical Parameters at 20 degree C :-			
	DC Resistance (maximum)	Ω/km		

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Data Sheet : INSTRUMENTATION, COMMUNICATION & POWER CABLES				
Sr. No.	Technical requirement	TPCODL Requirement		Product Specification
	Short circuit rating of conductor for 1 second	KA		
	Insulation Resistance (minimum)	MΩ/km		
	Mutual Capacitance (maximum) @ 0.8 KHz	nF/km		
	Attenuation (maximum) @ 1 KHz	dB/km		
	Cross talk (minimum) @ 0.8 KHz	db		
	Characteristic Impedance (maximum) @ 1KHz	Ω		
	Test Voltage - Between Conductor- Conductor (minimum)	KV(rms)/minute		
	Test Voltage - Between Conductor - Shield (minimum)	V(rms)/minute		
29	FRLS Properties of Outer Sheath :-			
	Oxygen Index @ ambient temp. As per ASTM-D2863	%	Not Less than 29%	
	Temperature Index @ oxygen index 21, As per ASTM-D-2863	degree C	Not Less than 250	
	Smoke density rating As per ASTM-D-2843	%		
	Acid gas generation As per IEC 60754	%		
	Flammability Tests As per IEC 332, IEEE-383, SS-4241475, ClauseF3			
	Anti-Rodent and Termite test			
30	Armouring			
	Material			
	Type of armouring			
	Nominal size of armour (mm)			
	Tolerance on armour			

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Data Sheet : INSTRUMENTATION, COMMUNICATION & POWER CABLES				
Sr. No.	Technical requirement	TPCODL Requirement		Product Specification
	dimensions			
31	Standard Drum length			
	Approx net weight of the Cable			
32	Cable drums			
	Type			
	Construction			
	Tolerance on packing length			
	Tolerance on overall quantity of order			

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GTP FOR CAT- 6 UTP/SFTP LAN CABLES		
Sr.No	Technical Description	Specification
1	Manufacturer's Name	
	Cable Type	
	Product Code	
	Size	
	Operating Voltage	
	Applicable Standards	
	CAT 6 UTP Application	
	Construction	
2	Conductor	
	Conductor Diameter (mm)	
3	Insulation Material	
	Insulation Thickness (mm) (Nom)	
	Insulation Diameter (mm) (Nom)	
4	Armouring	
	Material (Galvanised Steel Armour as per IS 3975)	
	Type of armouring (Round Wire)	
	Nominal size of armour (0.9mm)	
	Tolerance on armour dimensions ('+/-2 mm")	
5	Pairing	
	Pair 1 2	
	Pair 3 6	
	Pair 4 5	
	Pair 7 8	
6	Rip Chord	
7	Electrical Parameters (at 20 Deg.cent)	
	Nominal mutual capacitance at 1KHZ	
	Maximum Conductor DCR @ 20 °C	
	Resistance Unbalance(%)	
	Capacitance Unbalance	
	Delay Skew (For 100M)	
	Propagation Delay Skew (For 100M)	
	Current Rating	
	Dielectric Strength	
8	Mechanical Properties	

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GTP FOR CAT- 6 UTP/SFTP LAN CABLES		
Sr.No	Technical Description	Specification
	Bending radius	
	Pulling force	
9	General and Environmental Characteristics	
	Operating Temp Range	
	Insulation Temp Range	
	Minimum bending radius- operation	
	Pulling Force	
	Jacket	
	Jacket Colour	
10	Flame Rating	
	Anti-Rodent and Termite test	
11	Standard Packing	
	Packing& Length	
	Standards	

Data Sheet : Fibre Optics CABLES			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
1	Cable type	Stranded loose tube	
2	Construction type	Un-Armored	
3	Subunit type	Gel-filled (Thixotropic gel)	
4	Moisture barrier	Flooding gel (Thixotropic gel)	
5	Core wrapping	Polyester tape	
6	Outer sheath	(≥18 mm)High density polyethylene anti -termite, anti -rodent suitable for laying through PLB HDPE duct.	
7	Number of fibers/ loose tube	Minimum 4 and maximum 6	
8	Fiber Strength	Fiber Reinforced plastic (FRP)rod	
9	Fiber Type	Single mode Fiber	
10	Core Diameter	9 ±0.4 μm	
11	Cladding Diameter	125 ±1μm	
12	Coating Diameter	250 ±10 μm	
13	Effective Group index of Refraction	1.468 at 1310 nm; 1.468 at 1550 nm	
14	Fiber cut off wavelength	≤1260 nm	
15	Overall diameter	≥11mm and ≤ 16 mm (±0.5mm)	

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Data Sheet : Fibre Optics CABLES			
Sr. No.	Technical requirement	TPCODL Requirement	BIDDER RESPONSE
16	Minimum Bend radius	20 X Outer Diameter	
17	Tensile Strength	≥2500N	
18	Crush resistance	≥2000N/10cm	
19	Weight	≥ 120 (±10%) kg/km	
20	Refractive Index Difference	0.36%	
21	Polarization mode dispersion co-Efficient	<0.5ps/sqkm @1310 nm & 1510 nm	
22	Core clad Concentricity	≤ 0.5 μm	
23	Coating / Cladding non-circularity	≤ 12 μm	
24	Min Proof Strength	≥ 0.70 (Kpsi) Gpa	
25	Numerical Aperture	0.14	
26	Strain	< 1%	
27	Fiber Curl	≥ 4 meter radius of curvature	
28	Zero Dispersion Wavelength	1313 nm	
29	Zero Dispersion Slope	≤ 0.086 ps/sqnm-km	
30	Max (chromatic) dispersion	<5.3 ps/nm-km @1270-1340 nm	
		<3.5 ps/nm-km @1285-1330 nm	
		<185 ps/nm-km @1550 nm	
31	Attenuation		
	At 1310 nm,	≤ 0.39 dB/Km	
	At 1550 nm,	≤0.25 dB/Km	
32	Environmental specifications		
	Operating Temperature	-20 °C to +70 °C	

Data Sheet : LIU			
Sl. No.	TPCODL Requirement		BIDDER RESPONSE
1	Item	LIU	
2	Make and Model		
3	Dimension(W*H*D)	L-44,inch,W-29,inch,H-5,CM	
4	Capacity	24 fiber	
5	Type of System	Fixed	
6	Access	Front	

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Data Sheet : LIU			
Sl. No.	TPCODL Requirement		BIDDER RESPONSE
7	Material	Cold Rolled carbon (CRC) with thickness varying from 1.2mm to 2.0mm	
8	Cable Mounting	TRAY	
9	Mounting	Front/Rear	
10	Cable entry	2	
11	Adapter Mounting	Front	
12	Patch code outlet	Front	
13	Adapter and Pigtails type	sc/upc	
14	SPLIC TRAY:		
15	Material	plastic	
16	Color	white/black	
17	Dimension(T*H*L)	10/100/300 MM	
18	Type	Fixed plate	

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Annexure – 6: Preferred/Approved Make of Equipment/System

Sl. No.	Item Description	Preferred Make / Model
1	FRTU	ABB / SIEMENS / SCHNEIDER / GE / Synergy/ Reputed Make for T&D function
2	4G Modem cum Router	Lantronix / Teltronics /XNet /Schneider/ Equivalent
3	Industrial Grade FRTU Panels	Rittal /Siemens/Pyrotech/Equivalent
4	Layer 2 Managed Ethernet Switch	Ruggedcom / Hirschman / MOXA/CISCO/ Equivalent
5	I/O Boxes	Systemax/Tyco/CommScope/ Equivalent
6	Armored SFTP CAT6 Cable	Systemax/Tyco/CommScope/Finolex/Polycab/Digisol/Any reputed OEM
7	Unarmored SFTP Cable	Systemax/Tyco/CommScope/Finolex/Polycab/Digisol/ Any reputed OEM
8	Patch Panel (RJ45) with Connectors, I/O boxes	Systemax/Tyco/CommScope/ Equivalent
9	CAT6 UTP Patch Chords	Systemax/Tyco/CommScope/ Equivalent
10	4P X 0.36 Sq.mm. Armored Communication Cable (Multistrand, individual pair and overall shielded)	Belden/LAPP/SATYAM/KEC/Digisol/Polycab/Parashield/ Equivalent
11	4P X 0.36 Sq.mm. Unarmored Communication Cable (Multistrand, individual pair & overall shielded)	Belden/LAPP/SATYAM/KEC/Digisol/Polycab/Parashield/ Equivalent
12	RS 232 / RS 485 converter	MOXA / Advantech/ Equivalent
13	Battery Charger	Delta/Amara raja/Mass tech/Chloride /Schneider/Go Gate/ Equivalent
14	Diode-Oring Unit	Paramount / Phoenix/ Equivalent
15	Droppable type Terminal Block for Digital Output, CT & PT	Connect well – CBT4U or equivalent
16	Disconnecting type (Knife edge) Terminal Block for Digital Input	Connect well – CKT4U or equivalent
17	Battery	Amaron, HBL, Coslight, Exide or equivalent
19	Multifunction Meter	SATEC/ Secure / Rishav / Accord /Equivalent
20	Auxiliary Relays	OMRON / ABB / Sulzer / OEN / Paramount/ Equivalent
21	Control Cable	CCI / FORT GLOSTER / FINOLEX / HAVELLS / Indian aluminum Cables / Universal Cables / Incab / Asian Cable

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Sl. No.	Item Description	Preferred Make / Model
		/ KEI / Polycab / Ruchika/ Any reputed OEM
22	MCB	Siemens / Schneider / Anchor / Havells/ Any reputed OEM

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Annexure – 7: Requirements for BA Cell Registration at TPCODL

1. On boarding certificate with BA-Cell
2. License / Registration to be taken under BOCW Act and necessary cess @1% of your RA Bill value will be submitted with the Govt.
3. Application for FORM V with BA Cell for taking the Labour License if applicable (under FORM IV)
4. Statutory documents submission as per our HR Monthly compliance sheet by 20th of every month
5. Indemnity Bond
6. Workmen Compression Policy.
7. Form A, B, C, D submission monthly
8. PF & ESIC Challans & ECR Copies
9. Bank Statement for Labour payment done within 7th of the preceding month.
10. Issuance of Wages slip to all BA Employee's every month and adherence to Min wages Act and Rates prescribed by the Govt
11. Submission of GPA Policy – towards coverage of associates in case of any eventuality to the tune of RS 15,00,000/-
12. Issuance of ID Card through TPCODL as per application format attached. Get the same also approved by Engineer In-Charge of your project
13. Monthly submission of statutory compliance by 20th of the month
14. Wages payment to BA Employees have to be ensured by 7th of the month.

End of Section-B

The Tata Power Company Ltd		<i>Business Associate's Safety Code of Conduct</i>
<i>Document no TPSMS/GSP/CSM/015/REV 08</i>		<i>Date of Issue: 01/04/2024</i>

Business Associate's Safety Code of Conduct

Reason for Change	Date of Last Revision	Prepared By	Reviewed By	Approved by 
CSCC is termed as BASCC. CSCC is internal Process and Safety terms, and condition is binding documents for Business associates. Addition of Definition. Defining responsibility, Procedure added, Appendix 13 to 15 added.	<u>11-May-2015-R1</u> <u>01 August-2023-R7</u>	CFT members from all cluster	Corporate Safety Team.	Suresh H Khetwani (Chief safety and Environment)

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1.0 Objective

- The Tata Power engages Business Associate workforce to execute, run and maintain various operating sites and facilities across locations for various business verticals including Generation, Transmission, Distribution and Renewable must perform work in a manner consistent with Tata Power Policies, Principle, values, working standard applied to activities range from project execution, operation, and maintenance to facilities management.
- The management of Business Associate safety represents a significant challenge for management. Tata Power has a responsibility to ensure that Business Associate s are provided with enough information and support to enable them to conduct their roles safely and without endangering health and safety of their own workforce or that of our staff.

2.0 Scope

- This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like Electric Vehicle charging, Home Automation, Micro grid, Roof top solar etc. This Code of Conduct also applies to all operating and project sites of four Odisha Discom and New business based on mutually agreed timeline for implementation.
- This document is applicable to Odisha Discom also. Odisha Discom are a joint venture between Tata Power and the Government of Odisha with the majority stake being held by Tata Power Company (51%). ODISHA DISCOMS is a state electricity distribution utility with sole rights to distribution of electricity in the Odisha covering the distribution companies such as TPNODL, TPCODL, TPSODL and TPWODL. In accordance with the Electricity Act. ODISHA DISCOMS engages Business Associate workforce to execute, run and maintain various operating sites and facilities across locations the activities range from project execution, operation & maintenance of facilities.

3.0 Definitions

- 3.1. **Contract:** A written agreement between The Tata Power and its Business Associate(s) to supply manpower, services, and/or materials or to carry out the whole or part of any work required by Tata Power (R8).
- 3.2. **Contract Administrator (CA):** An officer from Tata Power, accountable for managing contract related activities for implementation of the entire BASCOC (R8).
- 3.3. **Order Manager/Engineer in charge:** Order Manager/Engineer in charge is the Tata Power-Division /DISCOM representative, who has the ownership of the given job.
- 3.4. **Site Safety Management Plan:** It is the safety plan agreed between Business Associate and Tata Power-Division/DISCOM. It will contain the entire job specific safety requirement and will be signed by the Business Associate.
- 3.5. **Business Associate /Vendor (BA):** An individual or a company that provides services to Tata Power-Division/DISCOM under a signed contract.
- 3.6. **Business Associate's Supervisor:** The link between The Tata Power and the Business Associates employees. He coordinates the work of his company's employee on site and is responsible & accountable for the safety of contract workforce. He will collaborate with site safety supervisor (SSS) (R8).

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- 3.7. BA Employee(s):** Any person(s) employed by a Business Associate having gate pass of BA to carry out the contracted work, but not employed directly by Tata Power (R8).
- 3.8. Sub-Vendor:** Any entity or person engaged & registered as per Tata Power Sub-vendor norms, by a main/prime Vendor to assist in execution of the job.(R8)
- 3.9. Emergency:** It is a serious, unexpected, or dangerous situation requiring immediate action, which may result in loss of life, loss of revenue/property, business discontinuity. In case of Emergency, services may be procured by selecting the qualified vendor based on the vendor category without the safety bid evaluation and approved by adequate authority of MB level or above.
- 3.10. Expert Service jobs:** Jobs which needs expert services of Business Associate which does not involve direct exposure to the potential risk or work which involves only supervisory work such as expert for AI-ML, expert for transmission and distribution network, expert for civil works, expert on transformers, expert for PSCC, expert for equipment overhaul etc.
- 3.11. CEO/Chief/Head of division/Unit/Utility:** Business in charge who is overall custodian of the Tata Power-Division/DISCOM.
- 3.12. Category A: Business Associate/ Vendor:** Vendor eligible to carry out Very High & High risk (as per Tata Power-Division Hazard Identification and Risk Analysis Procedure) and /or Long-Term Contract related to operation and maintenance (O&M) of plant. Vendors must fulfil the requirement specified for Category A in Appendix 4-CSMF-4 of this document.
- 3.13. Category B: Business Associate/ Vendor:** Vendors eligible to carry out technical jobs, that are classified under Medium / ~~low~~ risk. Vendors must fulfil the requirement specified for Category B in Appendix 4-CSMF-4 of this document.
- 3.14. Category C: Business Associate/ Vendor:** Vendors eligible for to carry out low or very low risk administrative and office jobs. For this he must fulfil the requirement specified for Category C in Appendix 4-CSMF-4 of this document.
- 3.15. Category D: Business Associate/ Vendor:** All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises (e.g., motor rewinding at vendor's shop floor, equipment sent for repair to vendor's works etc.) are classified as Category D Vendor.
- 3.16. High Risk Jobs:** A Job or its activities are considered as Very High or High Risk when Order manager apply the "Tata Power Hazard Identification and Risk Analysis" procedure and found safety risk associated with are under Very High or High category. Indicative lists of jobs are given in appendix 13(R8) of this document.
- 3.17. Medium Risk Jobs:** Jobs or its activities are considered as medium risk when Order manager apply "Tata Power Hazard Identification and Risk Analysis" procedure and found the same as Medium Risk.
- 3.18. Low Risk Jobs:** Any job or its activities are considered as Low or Very low risk while Order manager calculated it by applying "Tata Power Hazard Identification and Risk Analysis" procedure and found it under Low or Very Low category.
- 3.19. Long Duration Jobs:** When the duration of job is more than 12 months, it is considered as long duration job.

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3.20. High Value Jobs: When the value of the job contract is Rs. One Crore or more, it is considered as High value job.

3.21. Strategic Business Unit-SBU/Division/Discom: A strategic business unit is a **fully functional, independently operational setup of a particular business and** an important part of the Tata power company.

4.0 Responsibilities

4.1 Contract Administrator (CA): Contract Administrator is Tata Power-Division /DISCOM representative, who is responsible for ensuring the overall management and implementation of the BASCC standard and process, right from the registration to periodic evaluation of the BA (R8).

4.2 Order Manager/Engineer in Charge: Order Manager is Tata Power-Division /DISCOM representative , who is responsible for:

- 4.2.1 Assessment of Safety Potential of new vendor before registration along with SCG.
- 4.2.2 Safety Evaluation of the bids along with SCG.
- 4.2.3 Finalizing the Site Safety Management Plan along with Business Associate, Safety Concurrences Group, Divisional Safety Head and Expert (External or Internal) if required.
- 4.2.4 Ensuring that potential safety hazards are identified and controlled before any contracted work starts. Hazard identification should be conducted using multi-disciplinary teams which includes members from competent safety professional/execution team/competent BA supervisor & workforce to understand and identify project-specific safety hazards (R8).
- 4.2.5 Ensuring that Pre-work meeting/TBT & Mass meeting are being held either under his/project owner's supervision and/or under the BA's qualified and designated representatives (R8).
- 4.2.6 Ensure 100% safety capability building SHE L1, L2, L3 for Business Associate work force and supervisor before start of Job.
- 4.2.7 Ensure Business Associate SHE L1 safety revalidation test for all work force quarterly or Half yearly for new business such as Odisha Discom.
- 4.2.8 Conduct competency assessment of all critical work force working on High-Risk Jobs based on Experience, Technical skill and Safety capability through Business Associate representative along with division/Discom safety representative.
- 4.2.9 Supervise and ensure work is carried out as per the Site Safety Management Plan including agreed Risk Assessment (HIRA/JSA) and Method Statement.
- 4.2.10 Conduct audit and evaluate Safety Performance of Business Associate including Star rating of Business Associates within specified period as per guidelines and ensure all High-risk & Medium -risk jobs are performed by competent vendors 4-Star&above and 3-star& above respectively.
- 4.2.11 Monthly auditing BA activities to determine compliance with the Safety terms and conditions of the Contract. All violations shall be brought to the attention of the BA'

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proprietor and supervisor(s). If an unsafe act or a condition creates an imminent danger of injury/incident, Order Manager should initiate immediate steps to stop the work and Penalty against violation to be impose on BA as per CSM F12 - Safety Violation Penalty Criteria. Also Feedback on Safety performance and facilitating in safety improvement activities with BA proprietor every month (R8).

- 4.2.12 Ensure Business Associate's adhere to all statutory provisions.
- 4.2.13 In case any Exception needed in agreed safety management plan or in BASCC process for execution of job, document control procedure- **TPSMS/GSP/DC/014** Clouse 6.3 will be applicable, and approval may be obtained by the Order Manager from adequate authority of Chief of Division/CEO of Discom/Chief Corporate Safety.
- 4.2.14 Order Manager for all High Risk shall be HOD/Division Head of Discom and above.(R8)

4.3 Business Associate / Vendor (BA): The person, entity or organisation who is executing the job for Tata Power-Division /Odisha Discom under a contractual agreement and will be responsible for the following.

- 4.3.1 To follow all Tata Power-Division /DISCOM Critical Safety Procedure, Rules and guidelines given in **CSM F2 Safety Terms and Conditions**.
- 4.3.2 Undertake job as per **CSM F9 Site Safety Management Plan** and method statements agreed with the Tata Power-Division /DISCOM.
- 4.3.3 Ensure 100% safety capability building L1, L2, L3 for Business Associate work force and supervisor before start of Job
- 4.3.4 Ensure Business Associate safety revalidation test for all workforce quarterly or Half yearly for new business such as Odisha Discom up to three years.
- 4.3.5 Ensure competency assessment of all critical work force working on High-Risk Jobs based on Experience, Technical skill and Safety capability through Order manager or Engineer in charge representative along with division/Discom safety representative.
- 4.3.6 Raise any concerns about their work and its safety with the Order Manager.
- 4.3.7 Report all injuries, near misses, unsafe acts/conditions, and occurrences to the Order Manager immediately.
- 4.3.8 Ensure that all sub-Business Associate s follow the Tata Power Safety Procedure and agreed **CSM F9 Site Safety Management Plan**. If Business Associate sub vendor detail is not available at stage of Bid evaluation, then this can be agreed with Order manager or Engineer in charge before deployment. Ensure that all sub-Business Associate s follow the Tata Power Safety Procedure and agreed CSM F9 Site Safety Management Plan.
- 4.3.9 To follow all statutory requirements as per the laws of the land.
- 4.3.10 All vendors applying for category "A "jobs or submitting quote for high-risk jobs shall obtain certificates of ISO:9001, ISO:14001 and ISO:45001 before submitting quote for high-risk Jobs or otherwise mention plan to get the certification.
- 4.3.11 The BA shall not sublet/sub-contract, transfer, or assign the Contract or any part thereof without the written permission of the CA/ HOD approved by Chief Procurement officer/ Chief Commercial. In the event a contractor violates this condition, the Procurement division in consultation with the CA shall be entitled to place the Contract elsewhere on

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the BA's account and at the latter's sole risk; in addition, the contractor shall be liable for any loss or damage which the CA may sustain arising out of such placing of the Contract.

4.3.12 For engaging any sub-Vendor, the Prime Vendor as well as the sub-Vendor should be individually registered with Tata Power. Sub-contracting or hiring of others, by the BA to perform the services is subjected to specific, prior approval by the CA/OM. Such approval shall depend upon compliance with the following minimum requirements(R8)-

- i. Sub-vendors identified by the Prime vendor will be subject to the same Safety Potential Evaluation Criteria as the Prime vendor for all Medium-risk/High-risk job where supervision will be done by the sub- vendors. In such cases, vendors must have a Star-rating of 4 or above, for becoming a sub- vendor.
- ii. The SCG team shall evaluate the Safety and technical competency of the sub-contractors for High risk job.
- iii. The Departmental Head will have the authority to approve any sub-contracting process based on requirement as submitted by the Prime Vendor (See CSM F-14 Sub-Vendor Engagement Request Form).
- iv. No Safety potential evaluation shall be conducted for sub-letting of Low risk work.
- v. The Prime vendor shall be fully liable and responsible to Tata Power for the acts, errors, and omissions of its sub-vendors and shall be relieved neither of any obligation to Tata Power under the contract, nor of any other legal requirements.
- vi. The Prime vendor shall use only sub-vendors of demonstrated experience and reliability regarding the services to be provided.
- vii. The Sub-vendor shall agree in writing to be bound by all obligations of the Prime vendor set forth in the Contract.
- viii. Safety performance evaluation shall be done for both prime vendor & sub-vendor.

Types of Sub-contracts and Associated Requirements (R8):

- I. Sub - Vendor working with his own supervision:- Sub-vendors must achieve a minimum Star-rating of 3 for performing High risk jobs under Tata Power supervision or under the Principal/Main Vendor (Prime Vendor).
- II. Sub-vendor working under Prime vendor's supervision (as supplier of manpower):- Manpower-supply contracts have to be supervised by the Prime vendor and the Prime vendor's Star- rating has to be taken into consideration. Vendors supplying manpower need not qualify in the Star-rating assessment.
- III. Only one level of sub-contracting is allowed, and the use of any sub-vendors must be authorised by Tata Power before any contract is finalised. Sub-vendors shall be subject to the same registration and selection/screening processes, as well as the same Safety performance requirements as those required of all Tata Power vendor's. Sub- vendor details are to be attached to the main contract during the RFQ stage. The process of sub-contracting is to be approved by the Chief / Head of the department (Appendix#14).

4.4 BA's Supervisor(R8): The BA's supervisor is the link between Tata Power Management and the BA (including his employees).(R8)

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- 4.4.1 He coordinates the work of his company's employee on site and is responsible & accountable for the safety of BA workforce. He will collaborate with site safety supervisor (SSS). BA's supervisor shall review the Safety requirements with his employees prior to the beginning of each job. Documentation of this review shall be forwarded by him to the Order Manager.(R8)
- 4.4.2 Assigning jobs to his workers, inspection of tools, equipment & PPEs , reporting of incidents & near-misses, housekeeping of work area and carrying out Safety Audits.(R8)
- 4.4.3 Deployment of all applicable Safety standards & procedure as mention in Safety Term& Condition CSMF2 during execution of the jobs.
- 4.4.4 Ensuring job specific training prior to execution of the job.
- 4.4.5 Conducting Tool - box meeting and compliance of SOP & statutory requirements at work place, correction of all unsafe conditions and acts.(R8)
- 4.4.6 BA'S Supervisor will deeply involve in making JSA through participation of work force.(R8)
- 4.4.7 BA's Supervisor will invite all BA employees for participation & engagement daily ensuring 100% in either observation reporting, TBT, Mass Meeting and discussion for Risk Assessment & implementation of control measure.(R8)

4.5 BA's Site Safety Supervisor(SSS)(R8):

- 4.5.1 SSS will carry out daily safety audit and inspections of tools, tackles, equipment and PPEs. They will identify and help in correcting the unsafe acts and unsafe conditions created while executing job t site with the help of BA's supervisors (R8).
- 4.5.2 SSS will ensure his participations in TBT and Mass Meetings regularly. They will also ensure reporting of all incidents & near-misses and participate in incident investigation (R8).
- 4.5.3 SSS will help in risk assessment of activities while developing SOP for the job (R8).
- 4.5.4 SSS will deeply involve in making JSA through participation of work force.
- 4.5.5 SSS will assist for participation & engagement of 100% BA employees daily in either observation reporting, TBT, Mass Meeting and discussion for Risk Assessment & implementation of control measure.(R8)

4.6 Safety Concurrence Group (SCG): It is Cross Functional Team constituted by Contract department with active support from Safety Team of the Tata Power Division/Discom safety team having representatives from Execution Department, Operation Department, Contract Department, and any other department as deemed fit. SCG will be responsible for the following:

- 4.6.1 **Assessment of Safety Potential of new vendor before registration using CSM F1 Process Flowchart for Vendor Registration, CSM F3 Safety Category Qualification Form and CSM F4 Safety Potential Evaluation Criteria along with Star Rating(R8).**
- 4.6.2 **Safety Evaluation of the bids as per evaluation format CSM F7 Safety Bid Evaluation Criteria**
- 4.6.3 **Finalization of the CSM F9 Site Safety Management Plan submitted by the Business Associate.**
- 4.6.4 **During Safety Bid Evaluation for following types of jobs are evaluated:**
 - 4.6.4.1 **High-Risk jobs, Medium Risk job, Major Shutdowns and Outages.**

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4.6.4.2 Capex jobs of High-Risk Category.

- 4.6.5 Site safety supervisor deployment for any specific & specialized work will be decided by SCG.(R8)

4.7 HR Department(R8):

- 4.7.1 Ensuring Health (Medical, Drinking water facility & sanitation support) & welfare (canteen services, rest room & sitting facility, first Aid) for BA employees as per social accountability guidelines stipulated in factory rules for all clusters (R8).
- 4.7.2 Ensuring protection of their legal rights, wages, insurance, provident fund etc. through awareness programs and through regular interaction with the contract employees (R8).
- 4.7.3 Enhancing capability competency and skill of BA employees, arranging Safety training for BA employees (R8).

5.0 Procedure

The BASCC specifies systematic requirements to manage safety related to BA' activities. All Tata Power employees shall comply with the provisions of this procedure (R8)

This is guided by a six-step process as enlisted in the Table below: -(R8)

SI No.	Name	Explanation	Key Elements
1	Registration of BA	Pre-Qualification for Registration	Identify BA who comply with Tata Power's Safety principles and standards. 1) <u>CSM F1 - Process Flow Chart for Vendor Registration</u> to be use for vendor registration. 2) <u>CSM F2 Safety Terms and Conditions (R8)</u>: The document CSM F2 Safety Terms and Conditions provides the information about Tata Power-Division /Odisha Discom safety System to the Business Associate. 3) Evaluation of BA's safety category as per <u>CSM F3 - Safety Category Qualification form</u> 4) Evaluation of BA's Safety potential & Star rating as per <u>CSM F4 - Safety Potential Evaluation Criteria</u> before registration.
2	Contract Preparation	Scope of Work, specific Safety clauses based on Safety Hazards Assessment and control measures	Develop Contract orders using <u>CSM F2 - Safety Term & Conditions</u> & specific Safety clauses in the documents to clarify Health and Safety expectations and Sub Vendor engagement as per <u>CSM F14: Sub-vendor Engagement</u>

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			Request Form (R8)
3	Contract Award	Awarding the contract to qualified competent BA/Vendors	Thorough & effective communication and review of Contract Safety specifications at Pre-bid, Post-bid & pre-award meeting. Evaluation as per CSM F7 - Safety Bid Criteria and award contract through CSM F5 - Flow Chart for Issuing RFQ and PO.
4	Orientation and Training	BA workforce Safety training, generic & Skill-based Safety training (SHE L1,L2,L3)	Assure that BA's workers embrace the Tata Power's 'health & safety culture' and follow the Tata Power Safety standards. BA workforce training as per CSM F2 - Safety Term & Conditions (clause 3.3.2)
5	Managing the Work	Safety supervision/function ensuring implementation of Tata Power Safety standards and SOP	Hold Pre-work meetings and assessing field safety execution against contract requirements as per below- 1) CSM F6 – Safety Competency Assessment Form 2) CSM F8 – PPE Requirements 3) CSM F9– Site Safety Management Plan And High Risk job to be considered & managed as per 4) CSM F13- Indicative List of High-Risk Jobs (R8).
6	Periodic Evaluation	Post-work BA's Safety performance Evaluation	BA's Safety Performance evaluation as below- 1) CSM F10 – Process Flow Chart for Safety Performance Evaluation(R8) 2) CSM F11 - Safety Performance Evaluation Criteria 3) CSM F12 – Safety Violation Penalty Criteria and feedback to BA & Procurement, This will include Reward/Recognition & Penalty for safety violation/ accident. Enable all locations to have better access to Safety-qualified and capable BA's

5.1 Registration of Business Associates: Different vendors are to register based on following categories:

- ✓ **Category A- Vendors eligible to carry out High risk Jobs**
- ✓ **Category B- Vendors eligible to carry out technical jobs that are Medium/~~low~~ risk**
- ✓ **Category C- Vendors eligible to carry out administrative and office jobs**
- ✓ **Category D- Outsourced Jobs / Consultants /Medical Practitioners / Suppliers etc.**

For Vendor Registration, Contract Department will issue following documents for evaluation of Business Associate's safety capability.

- 1) **CSM F2 Safety Terms and Conditions (R8):** The document **CSM F2 Safety Terms and Conditions** provides the information about Tata Power-Division /Odisha Discom safety

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System to the Business Associate

- 2) **CSM F3 Safety Category Qualification Form(R8):** Business Associate will submit the **CSM F3 Safety Category Qualification Form** with all relevant details and documents to Vendor Registration Initiator, which will in turn forward it to Safety Concurrence Group (SCG) for evaluation.
- 3) **CSM F4 Safety Potential Evaluation Criteria:** The SCG will evaluate the details submitted by the Business Associate based on a predetermined criteria **CSM F4 Safety Potential Evaluation Criteria along with Star Rating (R8)** for Vendor Registration and will determine the category (Category A/B/C/D) for which the Business Associate will be registered. As mentioned in the above criteria, a site visit may also be organized by SCG prior to registration under Category A and B. In case, the Business Associate does not qualify the safety criteria, the Business Associate will not be registered. However, he may apply afresh for registration after 6 months.

5.1.1 Star Rating(R8):

SCG will evaluate Star Rating as per following -(R8)

- Initially potential Star Rating based on **CSM F4 Safety Potential Evaluation Criteria**
- After 6 month actual star rating assessment to be carried out based on **CSM F4 Safety Potential Evaluation Criteria** and safety performance evaluation.
- Odisha Discom & New Business Star Rating process will be applicable only 1 year after implementation of it.
- Based on Safety capability score Vendors rating will be evaluated (For 3 star rated vendors - within 12 months from previous assessment date and for 4 & 5 Star rated vendors – within 24 months from previous assessment and Re-assessment within three months from previous assessment date when a vendor is unable to achieve Star rating 3)
- Category A - Vendor must require [Safety Star Rating 4](#) and above.
- Category B - Vendor must require [Safety Star Rating 3](#)

***Star Rating will be evaluated by Third Party from FY 26 *(R8)**

5.2 Contract Preparation :

At the time of placing the Purchase Requisition (PR), Order Manager is required to declare the risk involved in the of the job (i.e., High Risk / Medium Risk / Low Risk jobs, based on the RPN in HIRA). If the Job is “High /Medium Risk” then RFQ will be attached **CSM F2 Safety Terms and Conditions** which includes following and safety bid will be evaluated

- 1) **CSM F6 Safety Competency Assessment Form**
- 2) **CSM F8 PPE requirements**
- 3) **CSM F9 Site Safety Management Plan Job Specific Safety Requirement (Educational and Professional Qualification, Skill & Experience Manpower, Tools, and Tackles, e.g., man lifter, use of drone, use & availability of rescue kit, Work Methodology etc.)**

Safety bid evaluation will not be done for category C and D.

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Contracts department will collect duly filled **CSM F6 Safety Competency Form** along with the bid. All other stakeholders will also put their efforts to get all relevant safety data during meeting / discussions with the vendor.

5.3 Contract Award: SCG will evaluate the document as per the **CSM F7 Safety bid evaluation criteria**. If any specific condition related to Contract is required to be conveyed to the Business Associate, Site safety team will attach the same as Annexure for specific conditions of job and submit it to contract team along with safety bid evaluation form. Commercial bid of Business Associate will be considered for evaluation by contract team only if Business Associate is qualified in safety bid. Site Safety Management Plan, defining the complete procedure of executing the job at site will be signed by the Business Associate and SCG after mutual agreement. Contract will attach a copy of Site Safety Management Plan along with PO to the successful bidder. Please refer **CSM F5 Process Flow Chart for issuing RFQ and PO significant health and safety risk associated with it**.

5.4 Capability Building(R8):

5.4.1 Before issuing gate pass:

For Odisha Discom/New business(R8): All Tata Power Business Associate and sub Vendor workforce is required to attend 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
- Hazard's reporting
- Reporting of injuries
- Emergency procedures
- Safety Activities and Program including disciplinary measure and incentives.
- Critical safety procedure relevant to the job

For Tata Power Divisions:

All Tata Power Business Associate and sub vendor workforce is required to attend L1 Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry.

5.4.2 Before start of actual work:

- Appropriate practical training such as SHE L1, L2& L3 (As per Competency Skill Matrix Annexure - 15)(R8) 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 followed by Post Assessment on the list of 15 critical Safety procedures mentioned under safety procedures. Duration of course is as specified by Division/Discom
- Business Associate shall ensure that concerned workmen are provided with adequate training

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before he/she is allowed to execute the work. An evaluation test will be conducted after the completion of the training. Those employees who meet the minimum required competency will be provided with Certificate (Bronze/Silver/Gold Card), which will be valid for 3 years, post which the workmen have to reappear for assessment.

- *BA Employee who Fail in assessment to be removed from work.(R8)*
- *BA Employee who achieved Bronze card can work for assisting Silver and Gold.(R8)*
- *BA Employee who achieved Silver card can Work under competent supervisors.(R8)*
- *BA Employee who achieved Gold card can Work independently.(R8)*
- *BA Supervisor who achieved Bronze card can be treated as Learner & can only supervise low Risk Job.(R8)*
- *BA Supervisor who achieved Silver can not take permit, Tata Power employee will take permit in such cases.*
- *BA Supervisor who achieved Gold card can take permit & supervise work.(R8)*
- *BA Safety Supervisor who achieved Bronze card can be treated as Learner.(R8)*
- If the workman is not able to qualify the assessment, he/she will be given 3 additional attempts to clear in 3-month time failing which he/she will not be allowed to work in the Division /Discom.
- After expiry of Certificate or Training /Competency Card again one day recertification of L1, L2 and L3 skill training will be provided.
- Quarterly /Half yearly (For Odisha and New business) Revalidation Test - "SHE L1 Revalidation test" will be conducted for the Business Associate's employees to revalidate their safety awareness and knowledge.
- Order Manager and Safety In charge of the Division/Site /Plant will conduct a Competency Assessment of all workforces, going to be deployed at site / plant for high-Risk job.
- The Contactor shall bear the conveyance and food expenses of his staff for attending training sessions and capability building sessions in new business-like Odisha Discom.
- The Contactor shall bear the entire cost of L1/L2/L3, the costs towards training, salaries/wages, boarding and lodging of his staff for attending training sessions and capability building sessions. These trainings are offered on nominal chargeable basis payable by Business Associate and rates shall be decided by TPSDI from time to time in case of training through TPSDI. Generally, L0 is of one day, L1 is for 2 days for each critical procedure and L3 is for one day. Around Rs 700+GST is approx. cost /Day/Candidate.
- All BA's workmen and BA must attend Safety foundation course Training, all workmen engaged in critical jobs must clear and get certified for critical procedures applicable on his work like Work at Height and Electrical safety-LT & HT/LOTO&LC separately and all supervisors must complete supervisor certification in safety.
- Competency assessment of all critical workforce to be carried out for all who has taken L2 training.

5.4.3 Recognition to the Prior Learning in Safety

If "Order Manager" recommends and "Head of the Safety Department of Discom" is satisfied with the safety knowledge and competency of the employee of Business Associate , a test may be conducted by Tata power Skill development Institute/ other recognized institute to assess the

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prior learning in safety. If employees of the Business Associates pass in such test, he will be exempted from appearing in SHE L1 training. This assessment is on nominal chargeable basis and rates are decided by TPSDI from time to time.

5.5 Managing Work(R8):

Order Manger shall -

- 1) Comprehensively assess and ensure field Safety implementation against Contract requirements and the Safety Management Plan.
- 2) Maintain a follow up process that drives continuous improvement in Safety practices and avoids repetition of common errors.
- 3) Order Manager and BA should aim at optimizing Safety performance of the Contract by working in a collaborative manner during the execution of the work. This can be achieved by:
 - Ensure that potential safety hazards are identified and controlled before any contracted work starts. Hazard identification should be conducted using multi-disciplinary teams which includes members from competent safety professional/execution team/competent BA supervisor & workforce to understand and identify project-specific safety hazards.
 - Monthly inspection and replacement of damaged Personal Protective equipment - PPE & Critical Equipment, lifting Tools & Tackles and hand tools used at site.
 - **PTW** - PTW procedure must be adhere and implement at site.
 - Reviewing the Safety Management Plan (**CSM F9– Site Safety Management Plan**) before each stage of work begins.
 - **TBT & Mass Meeting**: Every day Tool box talks to be conducted based on JSA/SOP with maximum participation of BA Workforce & Safety points to be shared by BA employee & line manager and 100% participation of BA employee & workmen in to mass meeting/communication.
 - **BA Self safety audit**: BA Safety Supervisor will carry out daily safety audit and inspections of tools, tackles, equipment and PPEs. They will identify and help in correcting the unsafe acts and unsafe conditions created while executing job at site with the help of BA's supervisors.
 - All respective **Critical safety Rules & Procedures and General safety Rules & Procedures** to be use and implement at site during job.
 - "**Suraksha Samwad**" also known as Safety Interaction is a proactive safety initiative. In this program, leadership engages with BA workmen and employees in a scheduled 30-minute session to discuss and observe safety practices in the workplace.

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- **Reporting safety observations by BA employee:** This involves the active participation of the workforce in identifying and reporting safety observations, which can help prevent accidents and improve safety performance.
- **Felt Leadership for Business Associates Proprietor /Co-ordinators:** This program aims to develop leadership skills within the Business Associates Proprietor/Co-ordinators. It encourages individuals to take ownership of their work and fosters a culture of responsibility and accountability.
- **Behavior based safety program (Jivan Ki Aur):** It aims to create regular awareness among all ground staff. It seeks to sensitize them, establish relationships, foster teamwork, enhance communication, motivate and empower everyone, promote good health, and enable a happy and safe life. The program will cover various activities such as morning meetings, home visits, personal meetings, group meetings, short training sessions, games, and other forms of engagement.

5.6 Periodic Evaluation(R8):

1. During the time of job execution, regular site inspection will be carried out by the Tata Power-Division /DISCOM officials **mainly Line manager (R8)** to evaluate monthly safety performance of the Business Associate as per **CSM F11 Safety Performance Evaluation Report (R8)** and monthly score will be maintained by the Order Manager. Violations will be dealt as per **CSM F12 Safety Violation Penalty Criteria**. Please refer **CSM F10 Process Flow Chart for Safety Performance Evaluation**. Percentage of retention amount is usually mentioned in safety terms and conditions.
2. The evaluation criteria include Lead Indicators such as percentage of workers trained in TPSDI, inspection of critical equipment. Lag indicators such as Fatalities, LWDC and man-days lost.
3. In case of job stoppage due to safety violations / unsafe observations at the site, no time extension from PO completion date shall be given to the Business Associate, if such delays are attributable to Business Associate.
4. In case of fatality, limb loss or loss of property, vendor must pay for liability, legal, statutory, and additional mutually agreed settlement charges imposed by the appointed committee by Division Chief/CEO. This charge is over and above the retention amount. The committee will finalize penalty amount based on factors such as advice by statutory authorities, contract value and impact of accident etc.
5. Order Manager, Head of Business and functional Chief have the authority to terminate the contract as per **CSM F12 Safety Violation Penalty Criteria** Through contract department.
6. **Site contract team will arrange Quarterly meetings with Order Manager to take feedback for Safety performance of Business Associates In-turn Site Leadership and Site Contract team will give feedback of safety performance to BA proprietors so as to take Corrective actions (R8).**
7. **CSM F11 Safety Performance Evaluation Report (R8) to be used to evaluate Star Rating of Business Associate for lead & Lag Indicator.**

5.6.1 Safety performance retention:

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 or every six-month based on Safety

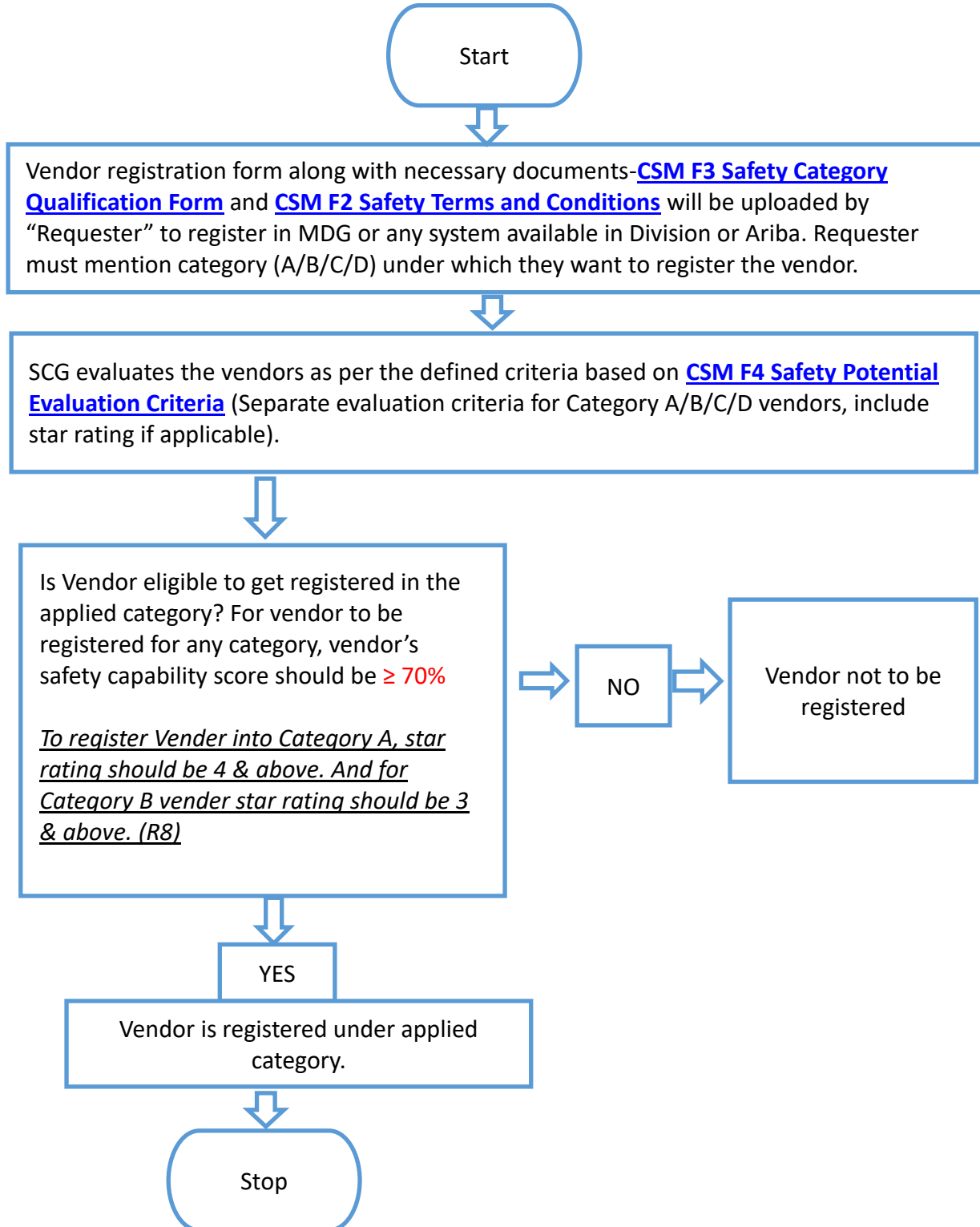
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Performance Score of Business Associate s. The retention amount will be calculated based on contract value as below.

Risk Category	Contract Value	Retention Amount (%)
<u>Very high/High risk job/ Medium Risk jobs</u>	Up to 10 Lakhs	2.5
<u>Very high/High risk job/ Medium Risk jobs</u>	10 – 50 Lakhs	2
<u>Low/Very Low Risk jobs</u>	10 – 50 Lakhs	1
<u>Very high/High risk job</u>	0.5 to 10 Cr	2
<u>Medium Risk jobs</u>	0.5 to 10 Cr	1.5
<u>Low/Very Low Risk jobs</u>	0.5 to 10 Cr	1
<u>Very high/High risk job</u>	>10 Cr	1.5
<u>Medium Risk jobs</u>	>10 Cr	1

1. The safety retention amount will not be applicable if there is clause of Contract Performance Bank Guarantee (CPBG) and safety performance of Business Associate is as per desired criteria.
2. If safety performance of Business Associate is not as per desired criteria (as per Appendix 10 – CSM F10 – Process Flow Chart for Safety Performance Evaluation and Appendix 11: CSM F11 - Safety Performance Evaluation Criteria. then safety retention percentage as mentioned in table above will be deducted from running bill.
3. Bidder to give understanding that if there are any deductions required to be made for safety non-performance as per the Safety Performance Score, then Tata Power shall recover any such deductions against safety non-performance directly from the monthly bills / final settlement or it shall be within its right to recover such sum from accounts payable or the CPBG or the retention of the Business Associate available with Tata Power for the said contract between the Business Associate and Tata Power.
For all other contracts retention amount is applicable as per table given above.
4. The retention amount against non-safety performance saved and Penalty will go to a separate Safety Improvement Fund.
5. 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.
6. 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%.

Appendix 1: CSM F1 - Process Flow Chart for Vendor Registration



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Appendix 2: CSM F2 - Safety Terms and Conditions

(Attached as a separate document under the title CSM F2 – Safety Terms and Conditions)

Appendix 3: CSM F3 - Safety Category Qualification form

1. **“Safety Category Qualification Form”** is part of vendor registration form. It needs to be filled by the Business Associate at the time of Registration and should be submitted to Requester / Order Manager with all relevant documents.
2. The same will be evaluated by Safety Concurrence Group of the Division (SCG).
3. Information provided by Business Associate will be verified during site visit.

Safety Category Qualification Form

Please consider my application for

Category A Vendor: Vendor eligible to carry out Very High- and High-risk O&M/Project jobs

Category B Vendor: Vendors eligible to carry out technical jobs, classified as Medium / low risk

Category C Vendor: Vendors eligible for to carry out low or very low risk administrative and office job

Category D vendor: All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises.

Name of the Vendor:							
#	Safety Information	Yes / No	Remarks				
1	Certified for i. ISO 45001, ii. ISO: 14001 iii. ISO: 9001 (ISO certificates to be issued from reputed accreditation agencies specified by Tata Power)	i. Y/ N ii. Y/ N iii. Y/ N	If Yes, Attach copy of the certification. If No, mention plan to get the certification.				
2	Safety Statistics for current and Last Three (3) Years - LTIFR	Yes/No		Current Year	Year 1(Last FY)	Year 2	Year 3

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Name of the Vendor:																		
	- LTISR		<table border="1"> <tr> <td>LTIF R</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>LTIS R</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	LTIF R					LTIS R									
LTIF R																		
LTIS R																		
3	Any Compensation paid due to accidents during current and last three years?	Yes/No	<table border="1"> <tr> <td></td> <td>Amount (INR)</td> <td>Man-hour</td> </tr> <tr> <td>Current Year</td> <td></td> <td></td> </tr> <tr> <td>Y1 (Last FY)</td> <td></td> <td></td> </tr> <tr> <td>Y2</td> <td></td> <td></td> </tr> <tr> <td>Y3</td> <td></td> <td></td> </tr> </table>		Amount (INR)	Man-hour	Current Year			Y1 (Last FY)			Y2			Y3		
	Amount (INR)	Man-hour																
Current Year																		
Y1 (Last FY)																		
Y2																		
Y3																		
4	Any prosecution against you by statutory bodies/clients during last three years due to statutory violations, criminal negligence towards safety and dereliction of duty of care towards your employees? Is any case still pending against you?	Yes/No	If yes, give details. If no, give an undertaking that no case is pending against you and you have not been prosecuted by statutory bodies or clients.															
5	Do you have Safety Policy? Safety Principles? And Lifesaving Rules?	Yes/No	If yes, attach copy of the documents available.															
6	Do you have Safety training process?	Yes/No	If yes, attach safety training process and average training man-hour of your employees for the last three years.															
7	Do you have a system for recording, reporting, and investigating all incidents or near misses?	Yes / No	If yes, show the incident statistics of last three years and implementation of CAPA.															
8	Do you have a disciplinary action program against your employees for violation towards safety rules and procedures?	Yes/No	If yes, show the records of disciplinary action taken the last three years.															
9	Do you have a reward and recognition scheme for your employees who show exemplary safe	Yes/No	If yes, show the records of Reward and Recognition given during the last three years.															

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Name of the Vendor:			
	behavior and contribute to overall safety improvement at site?		
10	Do you engage in safety promotional activities?	Yes/No	If Yes, Show the proof of engagement in safety promotional activities.
11	Have you been recognized or awarded or rewarded by government bodies of clients for showing excellence in safety management in your jobs during last three years?	Yes / No	If Yes, Show proof.
12	Do you provide adequate quality of PPEs to your workmen?	Yes/No	If yes, please provide details of PPE Matrix and if required, samples for inspection.
13	Do you have Safety organization structure e.g., Safety Officers and Safety Committees?	Yes/No	If yes, attach copy of the safety organization structure, details of safety committees and safety professionals.
14	Name and address of sites where work is in progress or worked earlier	Yes/No	Site details to be attached for inspection by Tata Power-Division /DISCOM Officials.

Note: If you respond NO to any of the above questions, you can mention your plan to get the required documents.

I hereby confirm that the information provided above are true. I give my consent to be penalized as deemed fit in case any information given above are found to be false.

I will abide the general safety guidelines mentioned in the purchase order / work order and will ensure to prepare and follow site specific safe operating practices in consultation with the site-in-charge and safety professional. I will abide by penalty scheme in case of non-compliance.

Signature :

Name and Designation:

Stamp of Organization :

Appendix 4: CSM F4 - Safety Potential Evaluation Criteria for Vendor Registration (R8)

At the time of vendor registration, vendor will be registered under 4 categories

- 1) **Category A-** Vendors eligible to carry out High risk Jobs
- 2) **Category B-** Vendors eligible to carry out technical jobs that are Medium/low risk

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3) **Category C-** Vendors eligible to carry out administrative and office jobs

4) **Category D-** Outsourced Jobs / Consultants /Medical Practitioners / Suppliers etc.

For vendors to be registered under **Category A/B**, a safety potential evaluation will be carried out based on following parameters. (Actual score is safety capability score)

Star rating criteria score: 5 Star- 90 to 100, 4 Star- 80 to 90, 3 Star- 70 to 80(R8)

Sr No	Description	Weight age (%)	Actual Score
1	Does the service provider have a valid 45001 Certification?	10	
2	<u>Performance Measure: Lead Indicator</u> <u>(Ref to Safety Performance evaluation report CSM F11 (A) Lead indicator score)(R8)</u>	<u>40</u>	
3	<u>Performance Measure: Laq Indicator</u> <u>(Ref to Safety Performance evaluation report CSM F11 (B) Laq indicator score)(R8)</u>	<u>20</u>	
4	Has there been any prosecution / conviction for any Contravention regarding safety and Health provision under the factories Act/Electricity Act / BOCW Act and Rules framed there under? If yes Give Zero otherwise 5 Marks.	5	
5	Check the Safety orientation & training process of Service provider- Records of Safety training provided to safety officer/supervisor /workmen during last 1 year as percentage (%) of total employed by service provider ✓ Safety Officer: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Safety supervisor: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Workmen: >80% of employees: 10 Marks, 50 to 79% of employee: 5 Marks and <50%: Zero	20	
6	Check the organizational structure for safety professionals & engineers / supervisors. ✓ Check Availability of number of Safety Supervisor from government recognized institute as per workforce strength. 1 in 50 employees than 5 Marks <u>otherwise Zero.</u> (R8)	<u>5</u>	
	Total	100	

Evaluation Criteria for Category C

Sr no	Description	Weight age (%)	Actual Score
1	Does the Business Associate have a valid ISO 9001 certification?	40	

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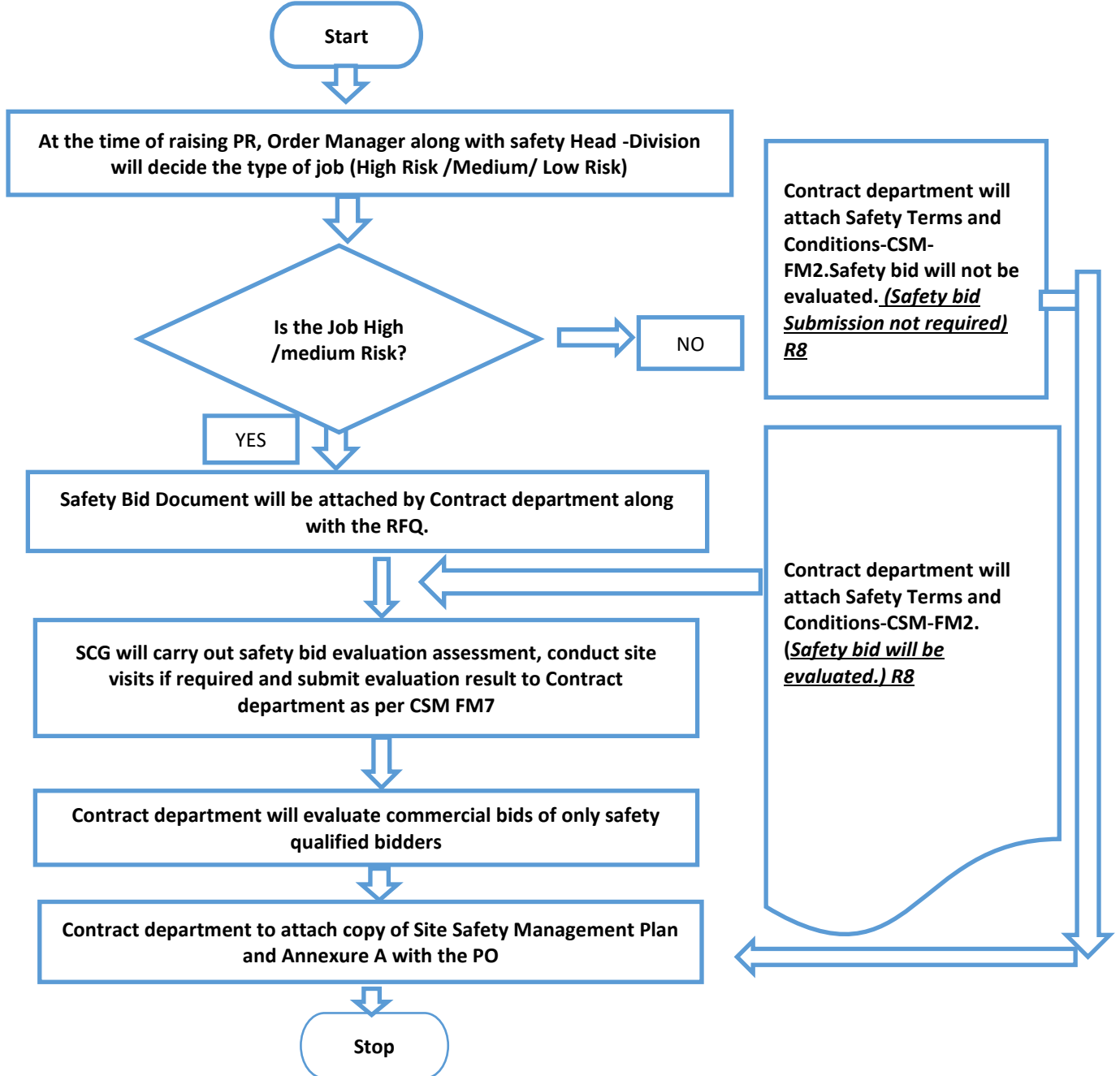
2	Check the Safety statistics of Service provider (If available than 10 otherwise Zero)	10	
3	Check the trend LTIFR/LTISR for last 3 years (If less than 0.2 than give 20 Marks if between 0.2 to 0.3 than give 10 marks and otherwise Zero)	20	
4	Has there been any prosecution / conviction for any Contravention regarding safety and Health provision under the factories Act/Electricity Act / BOCW Act and Rules framed there under? If yes Give Zero otherwise 10 Marks.	10	
5	Check the Safety orientation & training process of Service provider- Records of Safety training provided to safety officer/supervisor /workmen during last 1 year as percentage (%) of total employed by service provider ✓ Safety Officer: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Safety supervisor: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. Workmen: >80% of employees: 10 Marks, 50 to 79% of employee: 5 Marks and <50%: Zero	20	
	Total	100	

Evaluation Criteria for Category D

Category D does not require any evaluation as it is for outsourced job outside the Tata Power company premise.

For vendor to be registered for any category, vendor's safety capability score should be $\geq 70\%$.

Appendix 5: CSM F5 - Flow Chart for Issuing RFQ and PO (R8)



Appendix 6: CSM F6 - Safety Competency Assessment Form (Template)

Name of the Vendor/Bidder:

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Name of the Sub Vendor (If job is given to Sub Vendor):

Description of the Job:

Request for Quotation (RFQ) No.:

Vendor/Bidder to mandatorily provide the below safety competency related information:

1. Proposed Manpower Deployment Schedule :-

Type of manpower	Qualification	Experience	Month 1	Month 2	Month 3	
Project /AMC Manager						
Site In Charge						
Safety Manager						
Safety Officer						
Supervisors						
Technicians						
High Skilled workmen						
Skilled workmen						
Semiskilled workmen						
Lineman						
Helpers						
Drivers						
Unskilled						
Others						

Instruction to Bidders:

- Indicate the overall site manpower deployment schedule as above
- Indicate direct or subcontracted employees by using color code given below:

Direct Bidder Employee – Green

Partly Direct / partly Subcontracted – Yellow

Subcontracted – Red If sub Business Associate detail is not available at stage of Bid evaluation, then this can be agreed with Order manager or Engineer in charge before deployment Ensure that all sub-Business Associate's follow the Tata Power Safety Procedure and agreed CSM F9 Site Safety Management Plan.

- Against each category, indicate minimum educational qualification and work experience
- Add rows to include other specialized manpower, if any.
- Extend columns to cover the entire duration of the proposed contract.
- If the operation is in shifts, then indicate shift in charge and / or safety officers required for each shift operation.

2. List of Tools, Tackles, Machines and Equipment: -

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Bidder/ Vendor to provide the list of tools, tackles, equipment **to be used during the job / project execution**. Bidder/Vendor to ensure that all the lifting tools and tackles, pressure vessels are duly certified by the competent person authorised by the Chief Inspector of Factories of the respective state prior to start of the job

Sr. No	Description of Tools / Tackles	Capacity / Rating	Quantity	Make	Year of manufacture	Remarks
1						
2						
3						
4						
5						
.....						

3. Safety Records:

Bidder to provide the details of fatalities and lost workday cases (LWDC), occurred in last three years (data to be provided for the last completed FY and preceding 2 years).

Description	Safety Data for current and Last 3 Years			
	Current Year	Year 1 (Last FY)	Year 2	Year 3
		20__ - __	20__ - __	20__ - __
Fatalities (Nos.)				
Lost Workday Cases (Nos.)				

In case of no fatalities, LWDC during any year, the form may be filled stating NIL against the respective year. Bidders are encouraged to also submit the RCA / incident investigation reports and the learning's implemented out of the above reported incidents

4. Job Safety Plan/ Method Statement:

Bidder to provide / enclose a detailed Site/Job Safety Plan along with a Method statement detailing the execution philosophy (how the bidder intends to execute the Job/Project), identifying all key activities which are required to be performed by the Business Associate at Site. Bidder to also list down all high-risk activities and provide the Hazard Identification and Risk Assessment (HIRA) for all such high-risk activities involved in the site work.

(Use Method Statement template attached as Appendix 9)

5. PPE Requirement

Division/DISCOM Requirement	Bidders Response
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The Bidder/Vendor shall ensure that all PPE of Approved standards as per CSM F8 – PPE Requirements shall be always available and shall be used by his employees with no exception whatsoever. Bidders to also ensure Standard PPE matrix of Tata Power to be followed for all activities.	
10% Buffer stock of PPEs to be provided by bidders at each circle to meet any contingency	
Bidder will ensure that sample PPEs to be submitted/approved by Safety Department along with EIC at the time of submission of Safety bids for evaluation In case bidder manpower found using substandard or any PPEs which are not approved by the Tata Power-Division /DISCOM representative, then Tata Power-Division /DISCOM will provide the same to manpower deployed at the cost of bidders.	

6. Vehicle Deployment: Bidders to provide details of all vehicles deployed during execution of work

S. No.	Vehicle No.	Vehicle Type	Location	EV/CNG/Diesel/Petrol	Year	Whether CNG endorsed on RC

7. Crane Deployment: Bidders to provide details of crane to be deployed during the execution of work as and when required. Bidders to provide approved new gen crane ACE Model SX150, ACE FX150 and Escorts Model TRX 1550.

SI No	Crane No	Location	Year

8. Training Records: Bidders to provide training records of employees deployed for the execution of work during last one year. These training includes OHS (Occupational Health and Safety) Training,

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Training on SOP/Work Procedures and Medical Emergency trainings imparted at their own facility, cost, and expenses. Bidders to provide the following details:

Tata Power-Division /DISCOM Requirement	Bidders Response
Training records of employees at their own facility, cost, and expenses for last one year	
Training facility available with Bidders	
Future road map for enhancing the competency of workforce	

9. **Rewards and Recognition:** Bidders to provide the details of process deployed in their organization for sharing and resolution of safety concerns raised by their employees. Also, bidders to provide the details of Rewards and Recognition process in their organization for safety to encourage the morale of their workforce.

10. **Management System Certification: -**

Sr.No	Certification	Yes / No	If Yes, Year of Certification	If No, Target date for Certification
1	ISO 9001			
2	ISO 14001			
3	ISO 45001			
4	Any other (Specify....)			

Note: Please attach certificates to support above. In case not accredited for above but applied for, application letters may be attached.

Appendix 7: CSM F7 - Safety Bid Evaluation Criteria

The User must select whether the job is high /Medium Risk and long duration at time of raising the PR.

- 1) The decision whether job is “is high /Medium Risk “or not has to be made by order manager based on Risk involved (Risk Priority Number in HIRA) of the Jobs. An indicative list of high-risk jobs is attached as Appendix 13. The risk assessment will be done along with Division safety Head.
- 2) If a technical job is of low risk with estimated duration of the contract more than one year, the job should be treated as “**long duration**”.
- 3) All Safety bids will be evaluated by Safety Concurrence Group. Structure of SCG will be declared by contract department with the assistance of Division / Discom safety. Safety

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team will audit bid evaluation process of a few selected jobs and Quality of evaluated safety Bids.

- 4) Records of jobs sent by for Safety Bid evaluation shall be maintained by Contract team in existing tracing sheet along with other jobs.
- 5) Safety bid evolution will be done by SCG within one working week.
- 6) Contracts / Division shall provide a list of regular Business Associates participating in multiple tenders during the year for a one-time umbrella Safety Evaluation of Bidder (as against the specific Bid evaluation) by indicating the nature of the type of jobs / works which the BA usually participates in bidding. SCG shall evaluate such bidders for the requested works and on satisfying the evaluation criteria may be granted a Safety Pre-Approved status for the specific types of work (e.g., O&M of Boiler, Turbine, CHP, AHP, Turnkey EPC, Switchyard, Distribution Electrical Contract etc.) which shall be initially valid for a period of 1-year and shall thereon be extended further against revalidation / re-evaluation as required.
- 7) Business Associates having such Safety Pre-Approved status for the type / category of jobs shall be exempted from submission of Safety Evaluation Bid against each tender provided that their Safety Pre-Approved status is valid for the subject work / tender.
- 8) A suitable system shall be developed by Contracts to track the validity of such Safety Pre-Approved status of Bidder for timely renewal failing which the Safety Pre-Approved status shall cease and Bidder will thereon have to provide Safety Bids with each tender until such one-time approval is renewed.

Safety Bid Evaluation will be based on following parameters.

Evaluation Criteria

S. No.	Description	Max Marks	Criteria for evaluation
1.	Qualification and Experience of manpower	15	As per Clause No. 1 <u>CSM F6 – Safety Competency Assessment Form (R8)</u>
2.	Tools and Tackles to be provided by bidder	15	To be evaluated as per approved tool list of concerned departments.
3	PPE Requirements	5	To be evaluated as per approved PPEs standard and PPE Matrix specified in <u>CSM F8 – PPE Requirements (R8)</u>
4	Job Safety Plan/ Method	15	To be evaluated as per as per SOP/WI/HIRA
5	Vehicle Deployment	5	<u>Weightage will be given for CNG/Electrical Vehicles with endorsement of CNG kit on RC (R8)</u>
6	Crane and Mechanized heavy equipment Deployment	15	<u>Date of manufacturing or running hours or stipulated in laws.(R8)</u>
7	Training Records	5	Training records to be evaluated with evidence and scoring to be done as per availability of records
8	Certificate Accreditation	5	ISO 9001-2.5 Marks ISO 45001- 2.5 Marks ISO14001- 2.5 Marks. Total Max 5 Marks for all Three

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9	Safety Initiative for learnings implemented in accidents in organization and work force (Fatal / Non-Fatal)	15	Maximum 15 marks will be awarded for visible evidence in terms of safety initiative deployed based on learning of accident in organization and workforce in case of accident
10	Rewards and Recognition Process	5	Maximum 5 marks will be awarded for R&R process evidence
Total		100	

Safety Records (Lag Parameter)

1.	Fatal Accident	(-) 10 Marks for each case with max of 15 marks	For any fatality in Tata power /Other company in Current and last three years 10 marks will be deducted with maximum up to 15 marks. For new entrant BA, these marks will be deducted for Past safety records. If and BA found hiding such facts, then contract will be terminated immediately during the execution stage.
2	LWDC (Non-fatal)	(-) 5 Marks for each case with max of 10 marks	For each LWDC (Non-Fatal) case in Tata power /Other company in Current and last years, 5 marks will be deducted with maximum up to 10 marks. For new entrant BA, these marks will be deducted for past safety records. If and BA found hiding such facts, then contract will be terminated immediately during the execution stage.

The Tata Power Ltd	Company		Minimum Requirement	Weightage	Score Obtained
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Manpower	Safety Officer (1 per 500 workers) or as per requirement		Qualification - Safety Officer shall possess recognized degree in any branch of engineering with practical experience in similar industries of Min 2 years and Advance Diploma In Industrial Safety by State technical board. (Each state government prescribes the qualification of safety officer.). Require knowledge of Local language. Experience - Minimum 2-year experience in relevant field as mentioned in the job in PR.	5	
	Safety Supervisor (1 per work site up to max. 50 workers). <u>(For any specific & specialized work, site safety supervisor will be decided by SCG)(R8)</u>		Qualification - Supervisor shall possess ITI/ Diploma in relevant field. PDIS is desirable, but not mandatory. Require knowledge of Local language. Experience - Minimum 5-year experience in relevant field as mentioned in the job in PR. Training – Trained and certified by Tata power Skill development Institute or equivalent institute in relevant safety procedures. Note: On request of the Business Associate /Users -TPDSI should vet & certify the skilled & experienced Technician if Technical Qualification is not adequate.	5	
	Qualified Technician (Skilled workers as electrician, rigger, fitter, welder, cable jointer, line men etc.)		Experience - Minimum 2-year experience (or experience prescribed by state government) in relevant field as mentioned in the job in PR. Training – Trained and certified by TPSDI or equivalent institute in relevant safety procedures.	5	
Tools & Tackles	Equipment / Machines/ Tools & Tackles (lifting and shifting tools)		The list of Equipment /Machines / Tools and tackles to be used for job to be submitted by the Business Associate. Evaluation of the list will be carried out based on 1) Suitability as per the relevant job	15	

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		2) Make and age of the tools from authorized agencies defined by the user. 3) Certification by the competent authority of respective state.		
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Final Qualifying Criteria

S. No.	Description	Max Marks	Criteria for evaluation
1.	Qualified Bidders	More than 70 marks	Marks Obtained. 60 Marks for New business-like Odisha Discom for one year from CSCC implementation date.

Appendix 8: CSM F8 - PPE requirements

The Business Associate shall ensure that the following PPE of Approved standards shall be always available and shall be used by his employees with no exception whatsoever. • PPE shall be conforming to BIS/DGMS/DIN specifications, in good condition and shall be comfortable to his employees, when used. This is indicative. For better clarification refer PPE procedure- **TPSMS/GSP/PPE/023**. As per safety terms and condition Appendix 2 CFM 2 in detail.

PPE Requirement

1	All Business Associate 's employees at site	Safety Florescent Jacket (orange color), Safety helmet & safety shoes with composite or steel toe cap
2	Workers mixing asphalt, cement, lime / concrete	Safety goggle & protective Hand gloves and footwear, Nose mask.
3	Welders / Grinders/Gas cutters	Welding screen/goggles, safety shoes, leather hand gloves, aprons, leg guard
4	Stone breaker	Protective goggle, hearing protection, anti-vibration hand gloves and Protective clothing.
5	Electricians / Linemen	Rubber hand gloves with correct voltage rating and expiry date normally one year from Manufacturing date& Electrical resistant shoes, Safety helmet with induction strip to alert about presence of voltage for those linemen who climb the poles or work on electrical equipment

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6	Workers working at a height of 1.8 Meter or above.	Double lanyard full body harness, fall arrestor and safety net made of reinforced nylon fiber ropes firmly supported with steel structures, Work positioning attachment
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PPE Type and Testing Frequency

Sl. No.	Name of PPE	IS / EN Standard	Testing Frequency	Remarks
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298 (Part-2)	Monthly and visual check every day for any crack or damage in the leather or sole.	
02	HDPE Safety helmet with chin strap and ratchet type for adjustment for non-Electrical work	IS:2925-1984	Monthly and visual check every day for any crack in shell.	
03	Full body harness (Safety belt)	EN 361	Monthly and visual check every day of the bends and the harness.	
04	Electrical Safety Gloves	EN: 60903 CE marked	Weekly and visual check for any crack and blow test before every work.	Manufactured not beyond 12 months.
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	Monthly and visual check every day for any crack in shell.	Clear acrylic visor attached with safety helmet.
06	Fireproof jacket for chest protection		Monthly and visual check every day.	
07	Safety helmet with induction Strip for linemen and working for electrical work-Class E	EN 397/2012	Monthly and visual check everyday	Induction Strip alerts presence of voltage
08	Shorting clamps, crocodile clamps, Discharge Rod and Neon tester		Monthly and visual check everyday	For discharging the residual voltage and test before touch

Pictorial View of PPEs for reference purpose

Sl. No.	Name of PPE	IS / EN Standard	Picture
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298(Part-2) and with test report of electrical resistance.	
02	HDPE Safety helmet with chin strap and ratchet type for adjustment for Nonelectrical work and electrical work	IS:2925-1984/ EN 397/2012	
03	Full body harness (Safety belt) The straps at shoulder and thigh shall have full pad for comfort. The back shall be so designed that harness straps do not tangle with each other.	EN 361:2002 EN 358 : 2000 IS: 3521:1991/2002	
04	Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual.	EN: 60903 CE marked	
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	

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06	Fireproof jacket for chest protection		
08	Reflective jacket to each workman	As per Tata Power standard	

These pictures are indicative. Actual product may vary.

Note:

1. Any other Personal Protection Equipment required beyond above list will be according to BIS or EN Standards.
2. All Personal Protection Equipment will be checked by the engineer in-charge or SAFETY group of company.
3. Safety Representative of the BA must maintain the record of the availability, condition and checking of the PPEs.
4. All tools required as per the contract must be according to respective IS / EN standards.
5. Company may revise or add the above list of PPE and their specifications as and when feel necessary. The information about new specifications /models will be circulated by the Engineer In-charge (EIC), which shall adhere by the business associated in the shortest possible time. The EIC shall issue a memo / instruction to BA with timeline for implementation. Any delay will be treated as non- compliance / safety violations.

Appendix 9: CSM F9 - Site Safety Management Plan / Method Statement

Site Safety Plan / Method Statement (Template)

This Method Statement describes the specific safe working methods which will be used to carry out the described work. It gives details of work procedure with control measures to counter health and safety issues related to this work. The listed content of this Method Statement can be changed/modified subjected to job scope / specifications, but task specific method statement once finalized & approved, that should not be modified during work execution without permission from the approving authority.

Project/Job Name	
Scope of work: -	
Drawing References: -	

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Detail of Sub Business Associate s involved: -		
Method Statement Prepared By: - Designation: - (e.g., Site Manager)	<u>Signature</u>	<u>Date</u>

1.0 Introduction (*Describe purpose of the work, give details of type and scope of work being carried out*)

--

2.0 Location of Work (*Give site address and precise location on site where work is to be carried out*)

--

3.0 Safety Document /Specific Approval Required (*Details of any safety documents or specific approval i.e., Client specific approval required to undertake the work*)

--

5.0 Role & Responsibilities of Personnel/Parties Involved in activities: *Clearly define roles and responsibilities of all personnel involved in activity i.e., Site management staff including subBusiness Associate s' staff, Project Manager/Site Manager of principal Business Associate , Sub Business Associate Site Manager, Project Engineer, Safety officer, Competent Supervisory Staff etc.)*

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6.0 Working/Activity Description: - *It is important that all operatives should have clear idea of those operational sequences and responsible supervisor must verify their competency prior to their engagement in operation.*

6.1 Pre-Working Checks

--

6.2 Resources (Equipment, tools including manpower) Details *i.e., Equipment and Tools, specific operational equipment, test kits, lifting resources, Details of materials to be used in operation, including any reference to COSHH assessments in case of use of any chemicals, Details of the manpower allocated to the task, e.g., titles, qualifications, competences, direct manpower, Business Associate s. Details of plant, tools, and equipment to be used for the work, including the availability of relevant statutory documents, checks or inspections etc. Details of fencing, barriers, cones, chains, dangers notices, warning signs etc.*

Tools required for work:

Sr.No	Tools /Equipment /Machine	UOM	Required Qty.	Remark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

6.4 Operational Sequence of work: - *Full description of the work, setting out the methodology in a sequential manner, including any reference to any identified operational restraints. Also refer here sec. 5.0 responsibilities part for every step of work sequence).*

S. No	Activity	Details of job sequence	Risk Involved	Control Checks
1.				
2.				

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3				
4				
5.				

6.7 Final Checks & restoration of work area after completion of work: *Those checks to be carried out by responsible supervisor in witness of his line hierarchy by use of specific checklist of certain operational checks and once those completed satisfactory, PTW (if applicable) to be closed and isolation arrangements to be restored by removing barricades/cautionary tags.*

7.0 Task Specific Hazards: - *Refer to Task Specific Risk Assessment and attach in appendix*

Attachment: - Specific Risk Assessment

In addition, please provide below control measures in risk assessment *(as applicable)*.

Fall Protection Measures: (Where Work at height cannot be avoided)							
Control Measures for Electrical Hazards							
Others Hazard if any (please provide details)							
Hazardous Substances to be used in job: (Attach MSDS if required)	 Acute Toxic	 Health Hazard	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable	 Explosives
	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

8.0 Emergency Provisions: *Relevant operational possibility of a programme in the case of emergency situation i.e. electrical supply restoration. In addition, emergency response provisions i.e., first aiders,*

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firefighting, and first aid arrangements, nearest onsite/offsite emergency response also to be considered during emergency planning.

9.0 "5S issues" / Waste Disposal/ Housekeeping and Environmental issues: *Details waste disposal processes and or housekeeping activities, Details of environmental impacts and control measures.*

--

10.0 Personal Protective Equipment (PPE): *Tick on PPE requirements for the task/Job*

<i>Safety Helmet / Hard Hats</i>		<i>Safety Shoe / Safety Boots</i>	
<i>Gum Boot</i>		<i>Double Lanyard Safety Harness with work positioning attachment</i>	
<i>Electrical Hand gloves</i>		<i>Other hand gloves</i>	
<i>Eye protection</i>		<i>Respiratory protection</i>	
<i>Ear Protection</i>		<i>Electrical Arc flash suit</i>	
<i>Chemical resistant suit</i>		<i>Reflective Jackets</i>	
<i>Any Other</i>		<i>Any Other</i>	

11.0 First Aid facilities and Nearby Hospitals Details

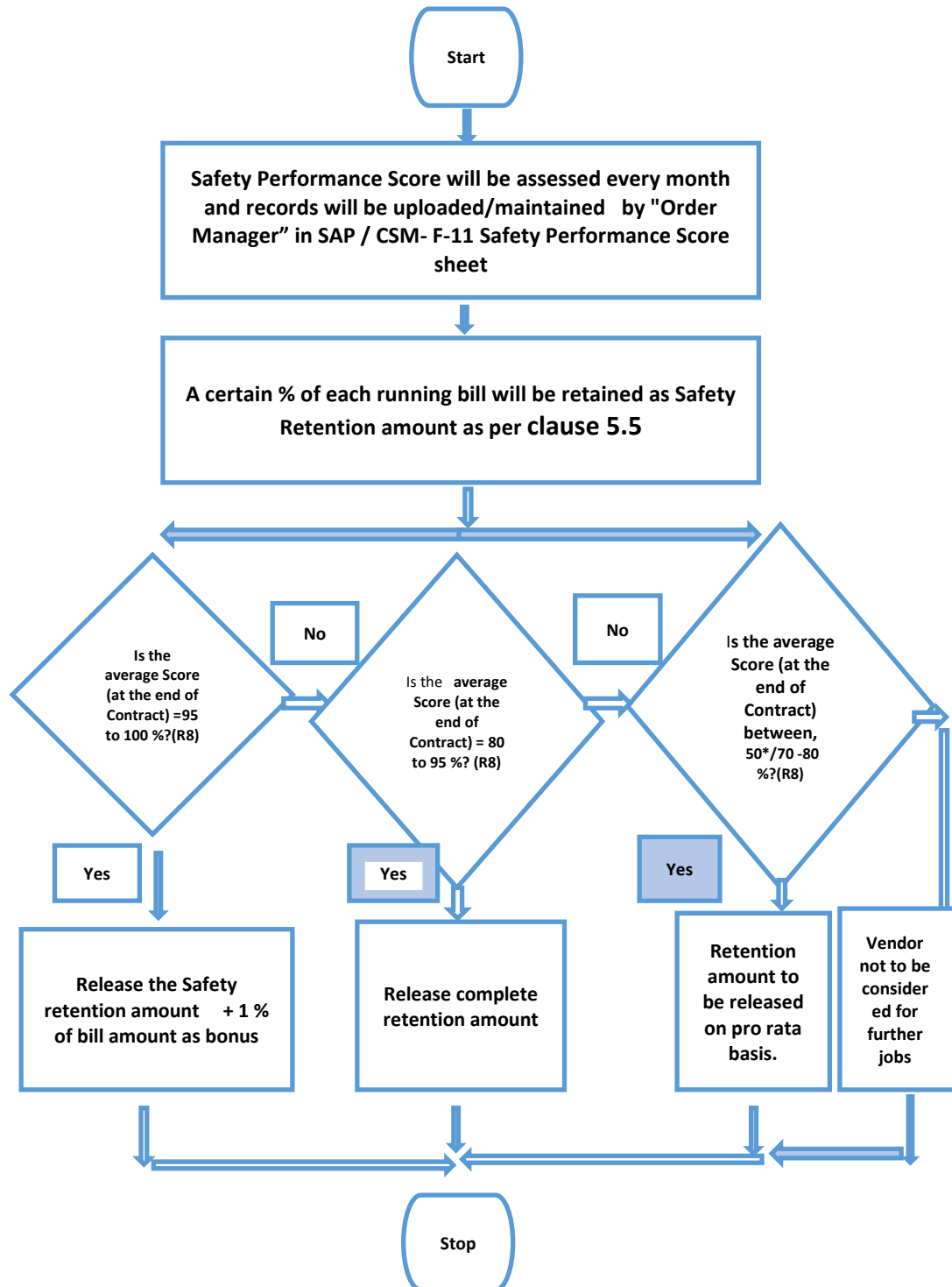
- Name of On Site First Aider
- First Aid Box Location
- Location of nearest hospital

12.0 Occupational Health, Fitness and COVID-19 related Preparedness:

- | |
|---|
| <ul style="list-style-type: none"> • Please give a brief write-up / methodology of your organization's plan to avoid impact of the COVID-19 pandemic at Tata Power working site. • Please give brief details of occupational health and hygiene related interventions planned by your organisation to ensure good health and fitness of workforce at Tata Power site. |
|---|

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Appendix 10 – CSM F10 – Process Flow Chart for Safety Performance Evaluation (R8)



*** For New Business such as Odisha Discoms**

Appendix 11 CSM F11 - Safety Performance Evaluation Criteria (R8)

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Safety Performance Evaluation Report- CSM F11

BA field safety audit (Safety Performance Evaluation for BA).							
Division		Function					
Name of BA		Month					
Nature of Work		PO					
	A. Lead Indicators		100 (for star rating score will dividend scale of 2.5)				
	-	UOM	Target		Actual score for the month		
1	% of employees certified in Skill development institute/ authorized agency/Card issued.	% Workforce covered	100 %	51% to 99%	50%	<50 %	
	Score		10	Pro-rata	5	0	
2	Monthly inspection and replacement of damaged Personal Protective equipment -PPE by BA (Safety shoes, Induction helmet, full body safety harness with work positioning lanyard, rubber insulated gloves, reflective jacket etc.as per Job requirement)	% of total workforce	100 %	99% to 50%	<50%		
	Score		10	5	0		
3	Monthly inspection and replacement of damaged Critical Equipment, lifting Tools & Tackles and hand tools used at site by BA (Neon Tester, Discharge rod, ladders Vehicle, Tools & tackles carried out and defective equipment replaced as required.	% Total T&T	100 %	99% to 50%	<50%		
	Score		10	7	0		

4	Unsafe Conditions/Acts (Potential Hazards), near miss(Close calls), minor injury(First aid cases and MTC) cases reported	Observation / Nos of workforce	0.50	0.25	<0.25		
	Score		10	7	0		
5	Monthly R&R for workforce along with Tata power reparative monthly	% of total workforce	10%	5%	0		
	Score		10	5	0		
6	Nos of workforce covered under program under Jivan Ki Aur/Ghar se Ghar tak/Surkhshit Pariwar ki aur	% of total workforce	10%	5%-10%			
	Score		10	0			
7	Safe (designated way) Disposal of Waste generated, Records of waste (Hazardous Waste – Oily cotton waste – E-waste etc.) generation. No effluents to drain/discharges to ground		YES	NO			
	Score		15	0			
8	<u>Daily Tool box talk and Weekly Mass communications covering 100 % workforce and records maintained or not(R8).</u>	% of total workforce	100 %	50-100%	<50%		
	Score		10	5	0		
09	<u>Check for housekeeping at site(R8)</u>	At least 3S.	YES	NO			
	Score		15	0			
	B. Lag Indicators		50 (for star rating score will dividend scale of 2.5)				
			Target				

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1	Number of Fatalities	0	>0			
	Score	30	0			
2	No of LWDC - Reportable	0	>0			
	Score	10 / 20*	0			
3	Major Fire	0	>0			
	Score	10 / 0*	0			
	Total score	150				0
	* Odisha					% 0

Appendix 12: CSM F12 - Safety Violation Penalty Criteria

Major Violations and Escalation matrix

Consequence of safety violation observed not related to incidents or accidents		Violations				
Sl. No.	<u>Safety Violation</u>	1st	2nd	3rd	4th	<u>Subsequent violation</u>
1	Working without required PPE such as Helmet/gloves/safety shoes/Safety harness etc.	A	B	C	D	Will Attract the same penalty as 4th violation
2	Working without proper tools and tackles	A	B	C	D	
3	Poor or bad condition of Crane/Hydra/Vehicle and/or Incompetent driver and/or helper).	B	C	D	E	Termination of Contract and blacklisting after repetition of violations (3 to 4 times as the case may be)
4	Improper Working at Height	B	C	D	E	
5	Untrained /unauthorized workman engaged in high-risk jobs	B	C	D	E	
6	Violation of SOP or WI or LOTO	C	D	E		
7	Working without PTW or LC / Without authorization / Without creating Safe Zone	C	D	E		

Legend	Action to be Taken	Responsibility	Penalty (INR)	Repeat Violations
A	Levy of Penalty	Order manager / EIC	5000	The no. of repeat violations shall be calculated
B	Memo to BA and Levy of Penalty	Order manager / EIC	10000	

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C	Memo to BA and Levy of Penalty	Order manager / EIC	25000	cumulative during the FY and deduction will be done from the monthly bills.(R8) the contract period, not on a monthly basis
D	Memo to BA and Levy of Penalty	Order Manager / EIC	50000	
E	Memo to BA, Levy of Penalty, Termination of Contract, Blacklist	Order Manager / EIC	100000	

***Blacklisted Business Associates shall eligible for New Bid after one year subjected to Star Rating Performance evaluation (R8).**

Other Violations and Penalty

Penalty shall be imposed on the Business Associate's under the following circumstances for breaching the contractual agreements. The list is not exhaustive, but indicative.

Sl. No	Description of Violation	Severity	Penalty (INR)
1.	Unhygienic/Bad condition of PPE	2	500
2.	Unsafe Act/Condition of Severity 4	4	4000
3.	Unsafe Act/Condition of Severity 5	5	5000
4.	No Earthing of Electrical equipment	5	5000
5.	Working without efficient supervision	4	4000
6.	Non-reporting of incidents	3	3000
7.	Starting the job without Toolbox Talk	4	4000
8.	Electric cable tied with metal wire / Use of damaged electrical cable / Use of two core cable	3	3000
9.	Rubber mat not available in front of electrical panels.	3	3000
10.	Inserting naked wire into the socket instead of a plug	5	5000
11	Inflammable materials stored inside PSS/FCC/Distribution Room	5	5000
12	Water accumulation found near electrical panels / equipment	5	5000
13	Grinding wheel/ Coupling/ Piling winch/other rotating parts without guard	4	4000
14	Inadequate illumination of working area	3	3000
15	Bringing inside PSS/FCC or any other work area any chemicals without approval.	5	5000

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16	Loose materials in work area which can fall down or fly during a storm	5	5000
17	Misusing emergency facilities like fire hydrant line/ hose box/ spray system/ eye wash etc.	3	3000
18	Entering restricted areas like switch yard, hazardous material storage room etc. without authorization	3	3000
19	Not using 24 V lamp inside confined spaces	3	3000
20	Bypassing/overriding safety interlocks	5	5000
21	Working besides road without proper barricading and monitoring of traffic	5	5000
22	Smoking in prohibited area (Closed Go-downs, Storage of flammable material, Storage of Gas cylinders, PSS, Offices etc.)	3	3000
23	Improper stacking of materials in Storage Yard	4	4000
24	Sleeping at workplace	3	3000
25	First aid box not available / in locked condition	2	2000
26	Appointment of sub Business Associate without his Safety Bid Evaluation and/or without the permission of engineer in charge or Order manager.	5	5% of order value
27	Bad Housekeeping with respect to <i>TPSMS/GSP/GHK/022</i> • 1st Instant • 2nd instant • 3rd instant • 4th instant • Subsequent instants	2	• 1000 • 2000 • 5000 • 10000 • 10000
28	Violations related to vehicles with respect to <i>TPSMS/CSP/RSP/015</i> . • Parking without wheel choke • Parking in undesignated area • Heavy vehicle without helper or co-driver • Seat belt not available / not used • Driver without license • Heavy vehicles without reverse horn • Using mobile phone while driving • Lights/mirrors not working /broken	3	1000 per each violation
28	Violation in Gas cutting and Gas cylinder handling • Cylinder valve without guard • No flashback arrester • Leaky DA/Oxygen hose • Cylinders not kept in secured manner	5	2000 per each violation

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	• Cylinder trolley not available • Cylinders are transported by manual rolling		
29	Violations in Lifting Operations w.r.t. to TPSMS/CSP/HEMS/005 • Hook latch missing • Load raised or swung over people or occupied areas of building • Persons standing within the swing area of the crane • No barricading of crane working area • Use of damaged lifting tools and tackles • Lifting tools and tackles not tested / Test certificate expired • Crane operator without proper license • Angular loading • Lifting / shifting heavy material without guide rope • Using mobile phone during loading and unloading jobs	5	2000 per each violation
30	Violation in Scaffolding work w.r.t. to TPSMS/CSP/SCAF/007 • Unstable scaffolding/nonstandard Scaffolding in use • Handrails/mid rails/toe guards missing • Safety harness not anchored on fixed structure • Opening found in working platform	5	2000 per violation
31	Violation in Excavation Work w.r.t. to TPSMS/CSP/EXS/002 • Loose material falling into excavated pit • Water logging in excavated pits / trenches • Inadequate or no barricading • Undercut / cave in found on sides of excavated pits	4	2000 per violation
32	Caution boards, danger signs (luminescent /red) along with emergency contact number are not found displayed.	3	3000
34	Spillage of hazardous material/chemicals during transportation	4	4000

Penalty for Incidents / Accidents

Consequence of incident / Accident		Incident / Accident				Action Required
Sr.No.	Type of Injury	1st	2nd	3rd	4th	
1	Major Injury (Bone injury or burn or hospitalization >48 hrs.) Non-fatal	F	F	G	G	Action Required
2	Major Injury (Bone injury or burn or hospitalization >48 hrs.) Non-	G	G	H		Intolerable

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	Fatal (Two or more non-Fatal in one event)					
3	Single fatality in one event	G	H			
4	Multiple fatalities (Two or more fatalities in one event). Anywhere in Tata power.	H				
Legend	Action to be taken	Responsibility		Penalty (INR)	The no. of violations shall be calculated cumulative during FY and deduction will be done just after Consequence of incident / Accident(R8)the contract period for all contracts in SBU, not on a monthly basis	
F	Memo to BA and Levy of Penalty	Order Manager/Engineer in charge		200000		
G	Memo to BA and Levy of Penalty	Order Manager/Engineer in charge		500000		
H	Memo to BA, Levy of Penalty, Termination of Contract and Blacklisting the BA	Order Manager/Engineer in charge		1000000		

Appendix 13: Indicative List of High-Risk Jobs (R8)-

Indicative high-risk jobs are given below. This is not an exhaustive list. This is only indicative.

Sl. No.	Jobs
1	Transmission Line Tower Erection on columns, near live lines, In congested areas, In creeks, In the Sea.
2	Conductor Stringing on Tower Using Tensioner & Puller in the area such as Line Crossing, Near Live lines, Congested Areas, Road Crossing, Bridge Crossing, Railway line Crossing, In creeks, In the Sea
3	Cable Pulling by Using winch Machine in City and Rural Areas
4	Hot Washing of HT and Extra HT lines, Towers and switchyards equipment
5	Maintenance / Testing and Replacement of High Voltage (33 KV etc.) Switchyard equipment
6	Installation of Lifts
7	Installation of EOT Cranes
8	Tower Dismantling
9	Working on H Frame /Pole mounted Transformers
10	Excavation in operational Area having power cables in receiving station
11	Identification and spiking of cable / disconnection of cables from poles
12	Working on Electrical Panels

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13	Working on live electrical switch yard, Material handling and equipment repair/installation.
14	All activities that require climbing on a pole/structures/Towers/Transformers
15	Cable laying and termination jobs
16	Excavation beyond 5 feet near existing building and structures
17	Working in confined Spaces
18	Stringing of new conductors over poles
19	Work at height
20	Electrical Work
21	Excavation work >3 ft.
22	Line breaking - Fuel
23	Line breaking - Power
24	Line breaking - Gas
25	Hot work - Welding, Brazing , Gas cutting , Grinding and any process which generates heat and Spark
26	DG Maintenance
27	Gas line - Cylinder change over
28	Gas line - Any part replacement, Flushing, working with high pressure (Not applicable for General check or any other Alarm reset etc.)
29	Chemical drum change over
30	Effluent handling - Loading to tanker, Pump or any other part replacement
31	Chemical and Effluent handling - Pump, Valve replacement, and any work which exposes chemical or effluent (Not applicable for General check or any other Alarm reset etc.)
32	Working on Robots - General check using check list, alarm reset etc.
33	Working on Robots - Replacement of Faulty devices, sensors etc.
34	Working Inside ASRS- General check using check list, alarm reset etc.
35	Working Inside ASRS - Replacement of Faulty devices, sensors etc.
36	Lifting activity
37	Working in Elevator / Lift
38	Canopy work
39	Panel & equipment Testing.
40	String Connection & VOC Testing
41	Commissioning activities.
42	Transformer Testing.

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43	HIPO Test.
44	Battery Bank Installation & testing.

Appendix 14: Sub-vendor Engagement Request Form (R8)

(This form is to be used by Prime / Main Vendor's organisation in their letter head)

Form

Ref No.....

Date:

The Chief Procurement Officer / Chief Commercial (Division.....) Tata Power
Location:

Sub: Approval Request for Engagement of Sub-vendor against Work Order
No.....dated [High risk job/Medium risk job/Low risk job]

Through: Representative of user department (Signature)-

Dear Sir,

This is to bring to your kind attention that Tata Power/.....has placed a Work Order on us: No:
..... date:.....for execution of the following job
.....

We seek your approval for the engagement of Sub-vendor/ Vendors (registered as per BASCC) for execution of the job as detailed below.

Tick option A or B as applicable:

A) M/s Vendor code (3-Star qualified) will be
deployed as

B) Sub-vendor for executing the job under their own supervision.

M/s

.....Vendor code will be deployed as Sub-vendor
under Prime / Main Vendor supervision (Star-rating is not mandatory).

We hereby declare that we shall be solely responsible for compliance of all the terms and conditions of the said order as well as with various statutory provisions as applicable for the execution of the job through the said sub-vendor to be engaged by us.

Thanking you

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Yours sincerely
(Prime Vendor with office seal)

Name of the prime vendor's representative:..... Designation..... Vendor

Name:..... Vendor Code:.....

For Official Use only

Approval Granted/ Not Granted:
Order Manager/Contract Administrator -

Appendix 15: CSM F 15: BA Competency Skill Matrix

Generation Cluster

SI No.	Department	Designation	Qualification	Experience	Mandatory Requirement	L0	L1	L2	L2 Trainings	L3
1	O&M	Helper	Preferably 10th Pass				Mandatory			
		Electrician	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	License is required		Mandatory	Mandatory	LT/HT/WAH	
		Heavy Equipment Operator (EOT/Crane/ Heavy vehicles)		Mini. 2Yr Exp.	License is required as per state statutory requirement		Mandatory	Mandatory	Road/Vehicle Safety/ Lifting Operation	
		IBR Welder/ Welder/gas cutter/Grinder		Mini. 2Yr Exp.			Mandatory	Mandatory	HOT Work/WAH/CS	
		Rigger		Mini. 2Yr Exp.			Mandatory	Mandatory	Lifting /WAH/	
		Foreman		Mini. 5 Yr Exp.			Mandatory	Mandatory	Lifting /WAH/CS	
		Fire Man		Mini. 2Yr Exp.			Mandatory		Fire Fighting	
		Masson		Mini. 2Yr Exp.			Mandatory			
		Carpenter		Mini. 2Yr Exp.			Mandatory			
		fitter		Mini. 2Yr Exp.			Mandatory			
		Garden Maintenance/ Security/ Pantry Staff / Pest Controller		Mini. 2Yr Exp.		Mandatory	Mandatory			
		Assit. Chemist	Bsc Chemical	Mini. 2Yr Exp.			Mandatory	Mandatory		
		Chemist	Bsc Chemical	Mini. 2Yr Exp.			Mandatory	Mandatory		
		Scaffolder		Mini. 2Yr Exp.			Mandatory	Mandatory	Scaffolding / WAH/CS	
		Supervisor	Degree/Diploma in Engg.	Mini. 5Yr Exp.			Mandatory			Mandatory

		BA Engineer	Degree/Diploma in Engg.	Mini. 2Yr Exp.			Mandatory			Mandatory
2	Projects	Helper	Preferably 10th Pass				Mandatory			
		Electrician	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	License is required		Mandatory	Mandatory	LT/HT/WAH	
		Operator		Mini. 2Yr Exp.			Mandatory	Mandatory	Road/Vehicle Safety/ Lifting Operation	
		Welder		Mini. 2Yr Exp.			Mandatory	Mandatory	HOT Work/WAH/CS	
		Rigger		Mini. 2Yr Exp.			Mandatory	Mandatory	Lifting /WAH/	
		Foreman		Mini. 5 Yr Exp.			Mandatory	Mandatory	Lifting /WAH/CS	
		Scaffolder		Mini. 2Yr Exp.			Mandatory	Mandatory	Scaffolding / WAH/CS	
		Supervisor	Degree/Diploma in Engg.	Mini. 5Yr Exp.			Mandatory	Mandatory		
		BA Engineer	Degree/Diploma in Engg.	Mini. 2Yr Exp.			Mandatory			Mandatory

Competency Framework -

Competency Assessment criteria consists of	-	<u>Criteria for competency assessment of Lineman/helper Bronze/Silver/Gold Category</u>
1. CV Selection before imparting training L1/L2 2. One to one interaction with CFT. (CFT comprises of more then 2 member team in which a safety/SDI official, and a functional Manager from the same department or cross functional department.)	-	<u>For Skilled - L1(30) + L2/L3(30) + Interview (40 Marks)</u>
Gold - 91% - 95%, Silver - 81% -90%, Bronze - 71% - 80%, Fail - 70% & Below		
Notes: All trade to be assessed for Technical competency even before imparting L1/L2/L3 training. 1. Fail: To be removed from work. 2. Bronze: Work for assisting Silver and Gold. 3. Silver: Work under competent supervisors. 4. Gold: Work independently. This is only for BA workforce		

T&D Cluster

SI No.	Department	Designation	Qualification	Experience	Mandatory Requirement	L1	L2	L2 Trainings	L3
1	O&M	Helper	Preferably 10th Pass	Mini. 2 Yr working Exp. in power distribution, ability to read, write emphasis on safety.		Mandatory			
		Lineman/ Fitter	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	license is required	Mandatory	Mandatory	LT/HT	
		Cable Joiner				Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
2	Projects	Helper	Preferably 10th Pass	Mini. 2 Yr working Exp. in power distribution, ability to read, write emphasis on safety.		Mandatory			
		Lineman/ Fitter	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
3	Civil	Helper	Preferably 10th Pass	Ability to read, write emphasis on safety		Mandatory			
		Masson		Mini. 2Yr Exp.		Mandatory	Mandatory	Excavation Safety	
		Supervisor	Degree/Diploma in Electrical Engg./Civil Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
4	MMG	Helper/MI	Preferably 10th Pass	Minimum 2 Yr working Exp. in power distribution, ability to read, write emphasis on safety.		Mandatory			
		Lineman	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory

		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
5	EHV	Helper	Preferably 10th Pass	Minimum 2 Yr working Experience in power distribution, ability to read, write emphasis on safety.		Mandatory			
		Lineman	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor		2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Engineer	Degree/Diploma in Electrical Engg.	2 Yr. Post Qualification Exp. with valid supervisory license		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
6	Admin	Helper	Preferably 10th Pass	Ability to read, write emphasis on safety		Mandatory			
		Driver	Preferably 10th Pass	With Valid driving Licence		Mandatory	Mandatory	Road/ Vehicle Safety	
		Supervisor				Mandatory			Mandatory

Competency Framework -

Competency Assessment criteria consists of	-	<u>Criteria for competency assessment of Lineman/helper Bronze/Silver/Gold Category</u>
1. CV Selection before imparting training L1/L2 2. One to one interaction with CFT. (CFT comprises of more then 2 member team in which a safety/SDI official, and a functional Manager from the same department or cross functional department.)	-	For Lineman/Supervisor - SDI Assessment(30) + L1(20) + L2/L3(20) + Interview (30 Marks)
Gold - 91% - 95%, Silver - 81% -90%, Bronze - 71% - 80%, Fail - 70% & Below		
Notes: All trade to be assessed for Technical competency even before imparting L1/L2/L3 training. 1. Fail: To be removed from work. 2. Bronze: Work for assisting Silver and Gold. 3. Silver: Work under competent supervisors. 4. Gold: Work independently. This is only for BA workforce		

Renewable Cluster

SI No.	Department	Designation	Qualification	Experience	Mandatory Requirement	L0	L1	L2	L2 Training (Specific)	L3
1	EPC Project (Large/Solar/ Wind/Roof Top Solar)	Helper	Preferably 10th Pass				Mandatory			
		Electrician	ITI(Electrician /Wireman trade) with wireman license from Respective state electrical licensing board for voltage level	Mini. 2Yr exp. in Industry	Possession of Valid Electrician/ Wireman License		Mandatory	Mandatory	LT	
		Heavy Equipment (Farahana/JCB/ Excavator etc.)		Mini. 2Yr Exp.	Possession of appropriate Driving license approved by RTO		Mandatory			
		Crane Operator		Mini. 2Yr Exp.	Possession of appropriate Driving License approved by RTO		Mandatory	Mandatory	Road/Vehicl e Safety	
		Carpenter		Mini. 2Yr Exp.			Mandatory			
		Fitter		Mini. 2Yr Exp.			Mandatory			
		Masson		Mini. 2Yr Exp.			Mandatory			
		Welder/Gas cutter/ Grinder		Mini. 2Yr Exp.			Mandatory			
		Supervisor	Preferably 10th/ITI/Diploma Pass	Mini. 5Yr Exp.			Mandatory			Mandatory
		Engr.	Degree/Diploma in Engg.	Mini. 2Yr Exp.			Mandatory			Mandatory
2	Manufacturin g/4GW	Helper/Security/ Canteen Staff/ HK Staff/Waste Mang. Handler	Preferably 10th Pass	Experience In similar working profile.		Mandatory				
		Electrician	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp.	License is required		Mandatory	Mandatory	LT/HT	
		Electrician (Working below 11KV)	ITI (Electrical/wire man trade)	Mini. 2Yr Post qualification exp.	NA		Mandatory	Mandatory	LT	
		Forklift Operator/Stacker/ BOPT	Preferably 10th Pass	Mini. 2Yr Exp.	License is required as per state statutory Req. (If not define in		Mandatory			

					that case LMV is must)					
		Operator/Trainee	ITI (Mech./Electrical/other trades)	NA			Mandatory			
		Operator/Trainee (Non-Technical)	Minimum 10th	NA			Mandatory			
		Carpenter	Preferably 10th Pass	NA			Mandatory			
		Welder	ITI welder trade	Min 2 Yr Exp.			Mandatory			
		Supervisor	Degree/Diploma	0 TO 2 Yr Exp.			Mandatory			Mandatory
		BA Safety Officer/ Supervisor	Degree/Diploma in Engg.	Mini. 2 Yr Exp.	Qualification as per State Factory Rule		Mandatory			Mandatory
		BA Engg.	Degree/Diploma in Engg.	Mini. 2Yr Exp.			Mandatory			Mandatory
3	Wind O&M	Technician Electrical	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category			Mandatory	Mandatory	LT/WAH/CS	
		Technician Mech.	ITI (Mach/fitter)	Mini. 2Yr Exp.			Mandatory	Mandatory	LT/WAH/CS	
		Supervisor	Degree/Diploma in Engg.	Mini. 5Yr Exp.			Mandatory			Mandatory
		BA Engr./Site In charge	Degree/Diploma in Engg.	Mini. 2Yr Exp.			Mandatory			Mandatory
4	Solar O&M	Helper	Preferably 10th Pass	Preferably exp. In similar working profile.			Mandatory			
		Electrician	ITI(Electrician /Wireman trade) with wireman license from Respective state electrical licensing board for voltage level	Mini. 2Yr Post qualification exp. in Project/maintenance as per voltage category	License ie required		Mandatory	Mandatory	LT/HT/WAH	

		Grass Cutter	Preferably 10th Pass	Mini. 2Yr Exp.			Mandatory			
		Module Cleaner	Preferably 10th Pass	Experience In similar working profile.			Mandatory			
		Technician		Mini. 2Yr Exp.			Mandatory	Mandatory	Lifting/LT	
		Supervisor		Mini. 5Yr Exp.			Mandatory			Mandatory
		BA Engg.		Mini. 2Yr Exp.			Mandatory			Mandatory

Competency Framework -

Competency Assessment criteria consists of	-	<u>Criteria for competency assessment of Lineman/helper Bronze/Silver/Gold Category</u>
1. CV Selection before imparting training L1/L2 2. One to one interaction with CFT. (CFT comprises of more then 2 member team in which a safety/SDI official, and a functional Manager from the same department or cross functional department.)	-	For Skilled - L1(30) + L2/L3(30) + Interview (40 Marks)
Gold - 91% - 95%, Silver - 81% -90%, Bronze - 71% - 80%, Fail - 70% & Below		
Notes: All trade to be assessed for Technical competency even before imparting L1/L2/L3 training. 1. Fail: To be removed from work. 2. Bronze: Work for assisting Silver and Gold. 3. Silver: Work under competent supervisors. 4. Gold: Work independently. This is only for BA workforce		

Odisha Discom Cluster

SI No.	Department	Designation	Qualification	Experience	Mandatory Requirement	L1	L2	L2 Trainings (Specific)	L3
1	O&M (33 KV, 11KV and below)	Helper	Preferably 10th Pass	Having basic knowledge of working in power distribution, ability to read, write emphasis on safety		Mandatory			
		Lineman/ Fitter	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance of 33/11/0.415KV as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Cable Joiner				Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
2	Projects	Helper	Preferably 10th Pass	Having basic knowledge of working in power distribution, ability to read, write emphasis on safety		Mandatory			
		Lineman/ Fitter	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance of 33/11/0.415KV as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety /Construction Safety		Mandatory			Mandatory
3	Civil	Helper	Preferably 10th Pass	Having basic knowledge of working in power distribution,		Mandatory			
		Masson				Mandatory	Mandatory	Excavation Safety/WAH	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr. Post qualification exp. In the field of Construction Safety		Mandatory			Mandatory
4	MMG	Helper/MI	Preferably 10th Pass	Having basic knowledge of working in power distribution, ability to read, write emphasis on safety		Mandatory			

		Lineman	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance of 33/11/0.415KV as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
		BA Safety Officer / Supervisor	Degree/Diploma in Engg. & Diploma in industrial safety From Recognised institute	Mini. 3 Yr Post qualification exp. In the field of Electrical safety		Mandatory			Mandatory
5	Enforcement	Helper	Preferably 10th Pass	Having basic knowledge of working in power distribution,		Mandatory			
		Lineman	ITI(Electrical trade) Or shall as per CEA Regulation chapter 2 clause 7.2 [Electrical Licence as per voltage]	Mini. 2Yr Post qualification exp. in Project/maintenance of 33/11/0.415KV as per voltage category	Minimum MV license is required	Mandatory	Mandatory	LT/HT	
		Supervisor	Degree/Diploma in Electrical Engg.	2 Exp. as per voltage category and valid supervisory licence		Mandatory			Mandatory
6	Admin	Helper/ Plumber/ Gardner/ AC Mechanic	Preferably 10th Pass	Ability to read, write emphasis on safety		Mandatory			
		Driver	Preferably 10th Pass	With Valid driving Licence		Mandatory	Mandatory	Road/Vehicle Safety	
		Supervisor	Preferably 12th Pass	2 Yr. Relevant Experience		Mandatory			Mandatory

Competency Framework -

Competency Assessment criteria consists of	-	<u>Criteria for competency assessment of Lineman/helper Bronze/Silver/Gold Category</u>
1. CV Selection before imparting training L1/L2 2. One to one interaction with CFT. (CFT comprises of more then 2 member team in which a safety/SDI official, and a functional Manager from the same department or cross functional department.)	-	For Lineman/Supervisor - SDI Assessment(30) + L1(20) + L2/L3(20) + Interview (30 Marks)
Gold - 91% - 95%, Silver - 81% -90%, Bronze - 71% - 80%, Fail - 70% & Below		
Notes: All trade to be assessed for Technical competency even before imparting L1/L2/L3 training. 1. Fail: To be removed from work. 2. Bronze: Work for assisting Silver and Gold. 3. Silver: Work under competent supervisors. 4. Gold: Work independently. This is only for BA workforce		

The Tata Power Company Ltd	TPC ODL TPS ODL	 TATA TATA POWER	TPN ODL TPW ODL	Appendix 3 to CSCC Safety Terms and Conditions
Document No. TPSMS/GSR/STC/009 REV 05				Date of Issue: 01/08/2023

Appendix 3:

Safety Terms and Conditions

Reason for Change	Date of Last Revision	Prepared By	Reviewed By	Approved by
Inclusion of Odisha Discom and periodic Revision	<u>10-Jan-2021-R4</u>	All Discom and CFT members	Debi Prasad Acharya (Head-Safety-Odisha Discom)	Suresh H Khetwani (Chief safety and Environment)

The Tata Power Company Ltd	TPC ^{ODL} TPS ^{ODL}	 TATA POWER	TPN ^{ODL} TPW ^{ODL}	Appendix 3 to CSCC Safety Terms and Conditions
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1.0 Objective:

The Objective of Safety Terms and Conditions is to apprise the Business Associates about various critical procedures of the Tata power Division/Discoms and the expectations from the BA to implement such procedures without fail. Certain terms and conditions are also mentioned to ensure a safe work atmosphere round the year. Refer Contractor's Safety Code of Conduct- Document no TPSMS/GSP/ CSM/015

2.0 Scope:

This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like Electric Vehicle charging, Home Automation, Microgrid, Roof top solar etc. This Code of Conduct also applies to all operating and project sites of four Odisha Discoms and New business based on mutually agreed timeline for implementation. R5

3.0 Safety Organization & Responsibilities

3.1 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 every 50 workers or less than that. When workforce ranges to 500, the contractor must provide at least one qualified safety officer (This may be subjected to change as per applicable act). Thus, for work force of 500 workers there will be one qualified safety officer and 10 safety supervisors. For every 500 additions in workforce, the contractor must add 1 safety officer and 10 safety supervisors. The Order Manager or Safety Department of the Tata Power Division /Discoms will review and approve the appointment of all safety officers and supervisors. The safety supervisors/officers will work with the guidance from Tata Power Division /Discoms Safety Department and align themselves with Tata power Division/Discom safety requirements.

For O&M related AMC activities, minimum one qualified safety officer to be deployed for each Division of the Discoms.

Qualified safety officer means he or she has completed PDIS or ADIS from a recognized institute.

Site Safety Officer/Safety Supervisor / Safety Coordinator shall be interviewed by the Order Manager/ Safety head of the Tata Power Division/Discom and then gate passes shall be issued if the interview is successful.

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Site Manager of Contractor/Subcontractor is responsible, and will be held accountable, for the safety of their own workforce as well as that of sub-contractors. He should also ensure that all equipment, materials, tools, and procedures remain in safety compliance at job site.

Responsibility of Site manager includes, but not limited to:

- 3.1.1 Holding officer/supervisors accountable for safety and actively promote safe work performance.
- 3.1.2 Participate in and cooperate with all safety program requirements to be implemented to meet Tata Power Division /Discoms safety objectives
- 3.1.3 Ensure timely reporting of safety incidents, near misses, unsafe acts, and conditions.
- 3.1.4 Identify the training needs of BA employees and maintain all safety training documents.
- 3.1.5 Provide Safety Performance Report at an agreed frequency.
- 3.1.6 Stopping of unsafe work (Acts and/or Conditions) immediately. Work to start only after corrective actions are implemented.
- 3.1.7 Ensure and participate in daily toolbox talk for all the jobs.
- 3.1.8 Ensure that only tested and certified tools and equipment are issued to the workers and being used at the site.

3.2 Contractor Supervisors and General Staff.

Contractors' site supervisors and general staff members in charge of job site functions such as field engineering, warehousing, purchasing, costing, 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. Each supervisor will proactively participate in the Safety program by observing, correcting, and recording unsafe acts and conditions at plant / sites.

3.3 Contractor Workforce

- 3.3.1 Contractors shall provide adequate quality and quantity of manpower as mutually agreed. (R5)
- 3.3.2 All the contractor employees shall attend "SHE L0(Other than new business and Odisha Discom)/L1 Foundation Course in Safety". Depending on the critical procedure in job employees shall also be required to attend "SHE L2 course of critical/high risk operations". All Supervisors shall be required to attend "SHE L3 Supervisory Training". All the above trainings will be conducted by TPSDI/Skill development institute of Disco, or other equivalent institute approved by Tata Power.

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- 3.3.3 Contractor employees shall be required to attend any other additional training if suggested by Order manager or Site Safety Head. The cost of such additional training shall be borne by the Vendor.
- 3.3.4 Contractor / Vendor shall mobilize their manpower well in advance to complete the training through TPSDI/Sill development Institute.
- 3.3.5 The Vendor / BA shall arrange or bear the conveyance and food expenses incurred during training of BA employees in Odisha Discom. (R5)
- 3.3.6 The validity of the training L1, L2 and L3 is 3 years. There will be competency assessment as Revalidation test in every three months for Tata Power Division and six months for Odisha Discom till one year from implementation of CSCC.(R5) Those who fail in the competency assessment shall undergo training again.
- 3.3.7 Supervisors/Welder/Electricians/Line man /Fitters /Radiographers/Riggers engaged by the contractor shall have valid competency certificates issued by authorized agency/Institute.
- 3.3.8 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 Safety programs for the Site.
- 3.3.9 Every member of the workforce is expected to report for work without influence of any Drug/Alcohol. Failure to comply with this requirement shall result in immediate termination of employees under the influence of drug and alcohol plus show cause notice/penalty to the vendor.
- 3.3.10 All employees shall report hazardous conditions, practices and behaviours in their work areas and correct wherever possible.
- 3.3.11 Workforce is responsible for active participation in safety and health programs, suggestion systems, trainings and reporting of unsafe act/practices, Unsafe conditions incidents and injuries to their supervisors.

3.4 Vendor/Contractor/sub-contractor

- 3.4.1 Vendors/Contractor shall always comply with and ensure that their workforce comply with all site safety rules and regulations. Specifically, with applicable provisions of the Site Safety Management Plan and all statutory safety rules and regulations.
- 3.4.2 After receiving the work order/ purchase order vendor/contractor/bidder shall not appoint Sub-contractor without safety assessment of the sub-contractor through safety concurrence group Under Contractor Safety Code of Conduct. Penalty of 5% of contract value will be applicable to the contractor if subcontractor is appointed without the permission of SCG and without evaluation through CSCC process.

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4.0 Tools and Tackles(R5)

- 4.1 Tools & Tackles used to carry out the job shall be checked and inspected by Order Manager and safety Officer.
- 4.2 Vendor must submit a valid Certificate from Competent person under the Factories Act 1948 and State Factories Rule for all Lifting Tools and Tackles (like Hoist, D Shackles, chain Block, wire ropes etc.).
- 4.3 All Electrical Hand Tools must be tested for leakage of current by a person /agency authorized by Tata Power Division /Discoms. Electrical power must be taken through RCCB of 30mA. Electrical hand tools should not have cord more than 3 meters in length. If power source is at > 3 meters, extension boards with RCCB of 30 mA and ON/OFF switch, shall be used.
- 4.4 Removal or inclusion of tools any new tool /tackles / machinery / equipment at site should only be done with concurrence of the order Manager / Head Safety.

5.0 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. All safety rules and procedures developed from time to time shall be mandatorily followed by the vendor and his employees while working at Site.

6.0 Critical safety Rules and Procedures: 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

6.1 Lock Out and Tag Out Procedure.

This procedure is intended to be used for the protection of Personnel while servicing or performing maintenance on distribution network/ 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**

6.2 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**

6.3 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**.

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6.4 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.

6.5 Heavy Equipment Movement Safety Procedure.

Heavy equipment lifting and movement is an activity involving loading, unloading, storage and movement from one place to another including lifting and erection or repairing of equipment with cranes or hoists. Material, machinery and equipment handling operations are being carried out by large capacity cranes and hoists, which make the job safer and faster. This procedure addresses the hazards and precautions associated with such equipment and their use. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/HEMS/005.

6.6 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 must 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.

6.7 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.

6.8 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.

6.9 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.

6.10 Electrical Safety Procedure.

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The objective of these standards is to specify minimum mandatory requirements and advisory guidance for identifying and controlling hazards to ensure 'Zero Harm' regarding operation maintenance and testing of electrical equipment. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/ELEC/010

6.11 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/ELEC/011

6.12 Hazard Identification & Risk Assessment (HIRA) Procedure(R5):

Objective of this procedure is to define guidelines for Hazard identification, Risk assessment and determination of controls. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/HIRA/012.

6.13 Management Of Change (MOC) Procedure(R5):

The objective of this document is to establish the procedures necessary to ensure that HSE risks are managed to an acceptable level in Tata Power Management of Change (MOC) process. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/MOC/013.

6.14 Pre-Start-up Safety Review (PSSR) Procedure(R5).

Objective of this procedure is to provide guidelines for safe initial startup of a new facility or restart of a modified facility. The PSSR process verifies that the new/modified facility meets the original design and operating parameters. The intent is to prevent incidents caused by inadequate, incomplete, unauthorized design, construction, installation, and/or commissioning. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/MOC/014.

6.15 Road Safety procedure(R5):

To provide Safety Rules for road travel management and safe usage of all types of vehicles viz. passenger/ commercial, owned/ hired by company, driven by employees or contractors. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/RSP/015.

7.0 General safety Rules and Procedure:

7.1 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,

7.2 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/003

7.3 Batteries Handling & Disposal(R5)

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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**

7.4 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**.

7.5 Office Safety Procedure(R5):

The objective is to provide a safe working environment to those working in office premise, who may be exposed to emergency situations and other chronic / cumulative risks that may arise due to various reasons of unsafe act, unsafe condition, fire and or pandemic crisis like COVID-19 etc. For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/OFS/006**

7.6 Earth Leakage Circuit Breaker (ELCB) Testing Procedure(R5):

The objective of this procedure is to define the minimum requirements for testing of Earth Leakage Circuit Breaker (ELCB). For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/ELCB/008**.

7.7 Occupational Health & Safety Legal Compliance Procedure(R5):

Objective of this procedure is provide guidelines for compliance of Occupational Health & Safety (OH&S) legal requirements and all ratified protocols and agreements are incorporated in Tata Power Safety Management System (SMS). For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/LEGL/009**.

7.8 Incident Reporting & Investigation Procedure(R5):

Objective of this procedure is to outline the process for reporting, recording and investigating an incident, recommending corrective and preventive actions and to communicate the lessons learned to prevent recurrence of similar incidents. For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/IRI/011**.

7.9 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**.

7.10 Tree Trimming Procedure(R5):

The objective of this procedure is to define guidelines and minimum requirements for Tree trimming. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/TTRM/017**

7.11 Safe Lone Working Procedure(R5):

Objective of this procedure is to lay down guidelines for reduction and safe managing of any additional risk arising from lone working. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/LONE/019**.

7.12 Good Housekeeping(5S) Procedure(R5):

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Objective of this procedure is to explain the meaning, importance and provide guidelines for implementation of Good Housekeeping(5S) at workplaces across organization. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/GHK/022**.

7.13 Personal Protective Equipment(R5):

This procedure describes the basic requirements, applicability, minimum specifications of Personal Protective Equipment (PPE). For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/PPE/023**.

7.14 Process Safety Management Procedure(R5):

The objective of this document is to provide a standardized & uniform guideline to implement Process Safety Management in Tata Power, its JVs, and subsidiaries to prevent or minimize the consequences of releases of toxic, flammable, pressurized or uncontrolled chemicals/Steam/Water or any other material which may result in toxic, fire, explosion, burn or flood like situation. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/PSM/024**

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

8.0 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 Division /Discoms Safety department will audit contractors training and related documentation to assure its adequacy.

8.1 Tata power Odisha Discom Site Safety Orientation.R5

All Tata Power contractor and subcontractor workforce is required to attend 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:

- 8.1.1 Job rules, personal safety, and conduct
- 8.1.2 Hazard's reporting
- 8.1.3 Reporting of injuries
- 8.1.4 Emergency procedures
- 8.1.5 Safety Activities and Program including disciplinary measure and incentives.
- 8.1.6 Critical safety procedure relevant to the job

8.2 Capability Building:

- 8.2.1 All Tata Power contractor and subcontractor workforce is required to attend L1 Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry.
- 8.2.2 Appropriate practical training such as SHE 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

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- by Tata Power on the list of 15 critical Safety procedures mentioned under safety procedures. Duration of course is as specified by Division/Discom
- 8.2.3** 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 employees who meet the minimum required competency will be provided with Certificate (Card), which will be valid for 3 years, post which the workmen have to reappear for assessment.
- 8.2.4** If the workman is not able to qualify the assessment, he/she will be given 3 additional attempts to clear in 3-month time failing which he/she will not be allowed to work in the Division /Discoms.
- 8.2.5** After expiry of Certificate or Training /Competency Card again one day recertification of L1, L2 and L3 skill training will be provided. R7.
- 8.2.6** Quarterly /Half yearly(For Odisha and New business) Revalidation Test - "SHE L1 Revalidation test" will be conducted for the contractor's employees to revalidate their safety awareness and knowledge.
- 8.2.7** Order Manager and Safety In charge of the Division/Site /Plant will conduct a Competency Assessment of all workforces, going to be deployed at site / plant for high-Risk job.
- 8.2.8** The Contactor shall bear the conveyance and food expenses of his staff for attending training sessions and capability building sessions in new business-like Odisha Discom.
- 8.2.9** The Contactor shall bear the entire cost of L1/L2/L3, the costs towards training, salaries/wages, boarding and lodging of his staff for attending training sessions and capability building sessions. These trainings are offered on nominal chargeable basis payable by Contractor and rates shall be decided by TPSDI from time to time in case of training through TPSDI. Generally, L0 is of one day, L1 is for 2 days for each critical procedure and L3 is for one day. Around Rs 700+GST is approx. cost /Day/Candidate. -R5
- 8.2.10** Competency assessment of all critical workforce to be carried out for all who has taken L2 training. R5

9.0 Recognition to the Prior Learning in Safety-R5

If "Order Manager" recommends and "Head of the Safety Department of Discom" is satisfied with the safety knowledge and competency of the employee of contractor, a test may be conducted by Tata power Skill development Institute/ other recognized institute to assess the prior learning in safety. If employees of the contractors pass in such test, he will be exempted from appearing in SHE L1 training. This assessment is on nominal chargeable basis and rates are decided by TPSDI from time to time.

10.0 Safety performance retention(R5) and Safety Performance Evaluation: 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 or every six-month based on Safety Performance Score of contractors. This is as per CSCC Document no TPSMS/GSP/ CSM/015

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This safety retention shall be waived for Contractors who have either submitted a Contract Performance Bank Guarantee or have a retention from each running bill for an amount not less than 10% of each bill subject to the express undertaking / understanding that if there are any deductions required to be made for safety non-performance as per the Safety Performance Score, then Tata Power shall recover any such deductions against safety non-performance directly from the monthly bills / final settlement as the case may be failing which it shall be within its right to recover such sum from accounts payable or the CPBG or the retention of the Contractor available with Tata Power for the said contract or any other contract between the Contractor and Tata Power.

11.0 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)
- HEM 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 (Chest X-ray and Lung Function T)
- Workforce in high Noise area (> 90 Decibel), Check for Hearing
- Workforce handling radiography equipment for conducting NDT.
- Workforce, working in specific areas requiring specific medical attention should conduct the medical tests test as laid down in the respective Site Safety Management Plan.

12.0 Other Conditions:

- 12.1. The manpower/vehicles/Tools & Tackles/Equipment provided shall be as per mutually agreed SLA.
- 12.2. No Supervision No work policy should strictly be followed.
- 12.3. Test Before Touch must be ensured every time a job is being carried out in electrical network.
- 12.4. HIRA /JSA as per the job scope must be prepared in detail and submitted along with Site Safety Plan by the successful bidder.
- 12.5. Personal protective equipment (PPE) must always be checked before use to ensure that they are in good condition and clean. Replace them if necessary.
- 12.6. All relevant PPE shall be provided by the vendor while working at the site.
- 12.7. Housekeeping shall be maintained all the time while execution of work. All the unwanted material shall be removed from the site at the end of the day's work. Old/damaged parts if taken out of the system shall be kept at

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identified placed and it shall be shifted to scrap yard or disposed of as per instruction of order manager.

- 12.8. Site Safety Plan shall be prepared by successful bidder along with order manger. Appendix 1 to be filled by successful bidder and submitted to Tata Power safety in-charge, before mobilization of team at site and start of the work.
- 12.9. The Owner or Proprietor of BA must visit worksite at least once in a month and meet Order Manager every month. In case of incidents, the Owner or Proprietor of BA is required to attend Time Out Meetings to understand the gaps that contributed to the incident.

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General Safety Conditions for various contracts Specific to Odisha Discom(R5)

13.0. Safety Conditions for maintenance of STS (Sub Transmission System) Network.

A BA awarded a major contract work of maintenance of sub – transmission network in area of a power system will be required to fulfil the following conditions:

- Availability of Discharge Rods - Minimum 6 Nos. in each maintenance vehicle, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each Maintenance Vehicle, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum two sets of 33 KV and two sets of 11 KV in maintenance vehicles.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff for managing safety in worksites. In case the BA has been awarded work in more than one area power system, then the following safety structure will be adopted.
- Safety manager and Safety engineer must be having PDIS or ADIS.

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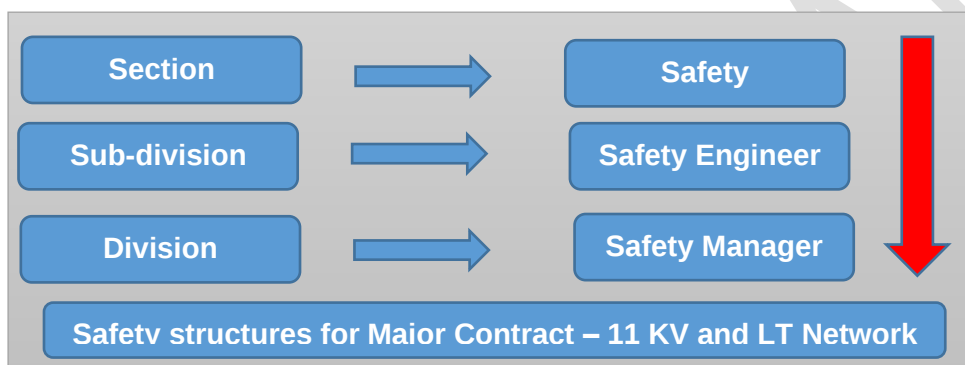
14.0 Safety Conditions for maintenance of 11 KV and LT Network.

A BA awarded a major contract work of maintenance of 11 KV and LT Network in area of a power system will be required to fulfil the following conditions:

- Availability of Discharge Rods - Minimum 6 Nos. in each PSS/FCC and maintenance vehicle, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each PSS/FCC/ Maintenance Vehicle, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum two sets of 33 KV and two sets of 11 KV in each PSS/Maintenance vehicles and two sets of LT hand gloves at each FCC.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not engage new workman without training and issue of ID card.
- PSS operator shall not be involved in maintenance activities.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA to ensure that all LT complaints are routed through Call Centre and recorded in FCC. Rectification of fault shall be done only after call centre logging and with the knowledge of BA supervisor.
- No one will work alone or unsafely under public pressure or otherwise.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.

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- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff - One safety supervisor per section, One safety engineer per sub-division and one safety manager per Division Safety manager and Safety engineer must be having PDIS or ADIS.



15.0 **Safety Conditions for the major contract work in Civil Projects:**

A BA awarded a major contract work of / in civil project will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.

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- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall refer Construction Safety Manual of the Discom for details.
- BA shall ensure to depute a Safety Supervisor (for workforce up to 100 at site) / a safety engineer (for workforce up to 250 at site) / safety manager (for more than two safety engineers) for managing safety at the project site. In case the BA has been awarded more than one major contracts, then the following safety structure will be adopted.
- Safety Engineers and Safety Managers must be having PDIS or ADIS.



16.0 Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc.:

A BA awarded a major contract work in meter management group & energy auditing group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.

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- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute a Safety Supervisor for managing safety at worksite.
- The BA for the RRG work shall depute one Safety supervisor.



17.0 Safety Conditions for Major Projects in Distribution Network

A BA awarded a major Projects in Distribution Network shall be required to fulfil the following conditions:

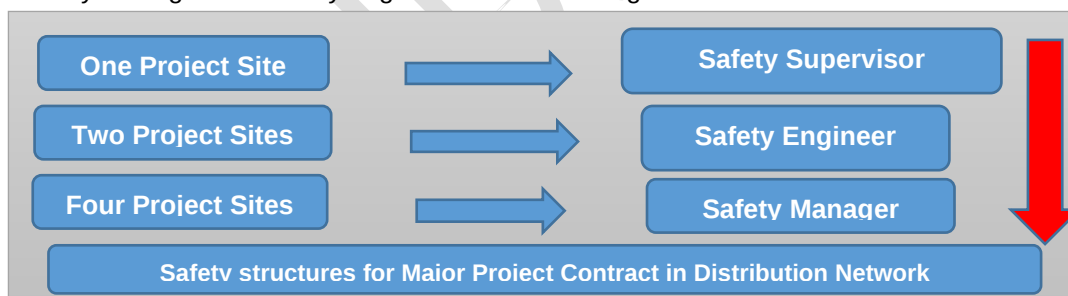
- Availability of Discharge Rods - Minimum 6 Nos. for each project site, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each project site, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum one sets of 33 KV, 11 KV and LT in each project site.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.

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- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.

Sr. No	Type of Audit	Frequency
1	Tool Bag and PPE audit	Weekly
2	First Aid Box Maintenance Record	Fortnightly
3	Fire Extinguisher Record (Applicable for the BA involved in major construction works and have storage of flammable material at worksite)	Monthly
4	Safety Talk Register	Weekly
5	Site Safety Audit	Daily

- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff for managing safety in worksites. One safety supervisor per project site or 100 persons, one safety engineer for 2 project sites of 250 persons, and one safety manager for four project sites or 500 persons.
- Safety manager and Safety engineer must be having PDIS or ADIS.



18.0 Schedule of Safety Audits by BA Safety Staff

Safety Undertaking of BA by way of Affidavit

I _____ s/o _____ R/o _____ (AUTHORIZED REPRESENTATIVE/PARTNER/DIRECTOR/PROPRIETOR) of M/S _____ (name of company/firm) having its office at (Complete address of Company), authorized vide power

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of attorney dated -----/Board resolution dated----/letter of authority dated----, hereinafter referred to as **Contractor [or Business Associate (BA)]** which expression shall, unless it be repugnant to or inconsistent with the meaning or context thereof, be deemed to include its heirs, executors, administrators, and assigns do hereby affirm and undertake as under :

1. The present undertaking shall remain in force from the date of execution of contract and shall be valid till the date of termination of the said contract by either party. The undertaking is binding on me (contractor) as well as my sub-contractor and its employees, representatives etc.
2. That I (the contractor) will be responsible and liable to comply and abide by all the safety rules, instructions and regulations as may be specified and laid down by the Discom to achieve its goal of Zero for on-site incidences.
3. That the Contractor shall be fully responsible for ensuring occupational health and safety of its employees, representatives, agents as well as of its subcontractor's employees, at all times during the discharge of their respective obligations under the contract including any methods adopted for performance of their tasks / work.
4. That Contractor shall ensure ,at its own expense to arrange for and procure, implement all requisite accident prevention tools, first aid boxes, personal protective equipment, fire extinguisher, safety training, Material Safety Data Sheet, pre-employment medical test, etc. for operations & activities including as & when so specified by Discom specifically. , failing which Discom shall be entitled, but not obliged, to provide the same and recover the actual cost thereof from the Contractor's payments.
5. That the Contractor shall engage adequate and competent Safety – Supervisor / Engineer / Manager / Skilled persons at site as per the Para 5 (Qualification and experience of safety personnel) and Annexure 3 of Contract Safety Management.
6. That the Contractor shall engage the competent Site – Supervisor with each group of workers for safe and correct workmanship, proper co-ordination of material and site work as per contract.
7. That the Contractor shall immediately replace supervisor in case it is found to be not up to the level of skill and experience required, but any such replacement shall be only with the prior concurrence of the Discom representative.

The Tata Power Company Ltd	TPC_{ODL} TPS_{ODL}	 TATA TATA POWER	TPN_{ODL} TPW_{ODL}	<i>Appendix 3 to CSCC Safety Terms and Conditions</i>
<i>Document No.</i> TPSMS/GSR/STC/009 REV 05				<i>Date of Issue: 01/08/2023</i>

8. That the Contractor and its subcontractors shall abide by all the safety guidelines as per Safety Manual, Contract Safety Management and other guidelines issued from time to time by Discom during the contract period.
9. That in case the Contractor and/or any of its Subcontractor fail to ensure the compliance as required in terms of this undertaking the Contractor shall keep and hold Discom / its directors / officers / employees indemnified against any / all losses / damage / expense / liability / fines / compensation / claims / action / prosecutions or the like which might be suffered by Discom or to which Discom might get exposed to as a result of any breach /wilful negligence /deliberate default on the part of the Contractor /Subcontractor in complying with the same. Contractor shall also furnish any press release, clarification etc. if sought by Discom for any near miss or safety violations, accidents, which are attributable to fault of Contractor.

VERIFICATION

DEPONENT

Verified aton this _Day of _____ 20__ that the contents of the above affidavit are true and correct and nothing material has been concealed therefrom

	TP CENTRAL ODISHA DISTRIBUTION LIMITED	
	WORK INSTRUCTION /OPERATING GUIDELINES	
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1.0 ORGANIZATIONAL VALUES

The Tata 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 members of Team TPCODL, Associates and Stakeholders are requested to submit any grievance on ethics violation to Mr. Rajeev Kharyal, Chief Ethics Counselor.

3.0 CONTRACT PARAMETERS

3.1 Issue/Award of Contract

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

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

3.2 Contract Commencement Date

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

3.3 Contract Completion Date

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

3.4 Contract Period/Time

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

3.5 Contract Execution Completion Date

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

3.6 Contract Execution Period/Time

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

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

3.7 Contract Price /Value

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

3.8 Contract Document

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

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

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

3.9 Contract Language

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

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

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

3.10 Reverse Auction

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

4.0 SCOPE OF WORK

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

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

Completeness: Any supplies and services which might have not been specifically mentioned in the Contract but are necessary for the scope mentioned in Special Terms & Conditions and/or completeness of the works at the highest possible level, including any royalties, 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 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

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

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

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

4.1 Technical Evaluation

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

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

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

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

4.2 Indemnity

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

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

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

4.3 Display of Notice Boards at Work Sites

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

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

4.4 Disposal of Waste at Site

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

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

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

4.5 Deployment of Work Force

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

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

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

4.6 Damages to Properties

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

4.7 Issuance of Material

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

4.8 Company's Right To Use Works

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

4.9 Rights of TPCODL to vary the scope work

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

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

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

5.0 PRICES/ RATES/ TAXES

5.1 For Supply part of Contract

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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, cesses and duties, particularly Goods and Services Tax as applicable. All government levy / taxes shall be paid only when the invoice is submitted according to the relevant act.

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

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

5.2 For Service part of Contract

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

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

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

5.3 Changes in Statutory Tax Structure

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

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

6.0 TERMS OF PAYMENT

- A. 5% of the Release Order/ Purchase Order price shall be paid as initial interest free advance on fulfillment of the following by the Associate:
 - a) Acceptance of PO/ LOI.
 - b) Submission of advance payment BG of 15% of the Release Order/ Purchase Order price which shall remain valid till the advance is fully adjusted.

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- c) Submission of Contract Performance Bank Guarantee of 5/10% of the RC/ PO price valid till 30 days after taking over of the works.
- B. 10% of the Release Order/ Purchase Order price shall be paid as interest free advance against approval of drawings under Category-1 of major drawings, Quality Plans, Pert Chart, Field Quality Plan, posting of Project Manager and commencement of the first mile stone of the work mutually agreed including C-3 Form, and submission of a true copy of 'Erection All Risk Insurance Policy' taken for the awarded jobs. The drawing list shall be mutually agreed at the time of award of work.
- C. 50% on account payment of the total of item wise cost of material Release Order/ Purchase Order shall be paid against receipt of material at site in good condition and certification by TPCODL along with bills complete in all respects viz. MDCCs etc.
- D. 20% on account payment of the actual executed value shall be paid against mechanical completion of erection on prorata basis against monthly bills and 70% on account of the actual executed value shall be paid against the service line item including composite line item. In case this milestone is not completed beyond 120 days for reasons attributable to TPCODL, the payment corresponding to supply part shall be released subject to submission of BG of equivalent amount by the BA valid for a period of further 12 months. If required, it shall be extended by the BA on request of TPCODL.
- E. 15% payment of the actual executed Release Order/ Purchase Order shall be paid after completion of acceptance test and Taking Over of the complete systems specified in the enquiry, including clearance of Electrical Inspection, compliance of final punch point and after reconciliation & adjustment of payments, if any, towards Quantities of materials issued from purchaser's stock and consumed by the contractor for expeditious completion of the job. In case this milestone is not completed beyond 120 days beyond schedule for reasons attributable to TPCODL, the payment corresponding to supply part shall be released subject to submission of BG of equivalent amount by the BA valid for a period of further 12 months. If required, it shall be extended by the BA on request of TPCODL.

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

6.1 Pre-Requisites for Payment

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

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

6.2 Bills & Invoices

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

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

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

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

6.3 Payment & Statutory Deductions

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

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

6.3.1 Statutory Deductions

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

6.4 Guidelines for Raising Running/Final Bills

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

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

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6.5 Quantity Variation

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

6.6 Full and Final Payment

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

7.0 MODE OF PAYMENT

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

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

8.0 SECURITY CUM PERFORMANCE DEPOSIT

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

(a) 5% of the PO value if purchase order value is more than Rs 5 Crores.

(b) 10% of the PO value if purchase order value is less than Rs 5 Crores.

This shall remain valid till the end of the Guarantee Period of contract, plus one month.

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

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

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

9.0 STATUTORY COMPLIANCE

9.1 Compliance to Various Acts

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

9.2 Social Accountability

TPCODL expects its Associates to follow guidelines of best practices on the following aspects

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

9.3 Affirmative Action

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

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

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

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

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

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****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).

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

9.4 Compliance to Labour Laws

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

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

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

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

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

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10.0 QUALITY

10.1 Knowledge of Requirements

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

10.2 Material/Equipment/Works Quality

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

10.3 Adherence to Rules & Regulations

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

10.4 Specifications and Standards

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

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

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

11.0 SAFETY

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

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

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

12.0 INSPECTION/PARTICIPATION

12.1 Right to Carry Out Inspection

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

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

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

12.2 Facilitating Inspection

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

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

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

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

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

12.3 Third Party Nomination

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

12.4 Waiver of Inspections

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

12.5 Incorrect Inspection Call

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

13.0 MDCC & DELIVERY OF MATERIALS

13.1 Material Dispatch Clearance Certificate

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

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

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

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

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

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

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

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

- i) Identify and obtain the correct type of trucks/trailers, keeping in view the nature of consignments to be dispatched.
- ii) Take such actions as may be necessary to avoid all possible chances of damages during transit and to ensure that all packages are firmly secured.

Timelines for inspection and MDCC is as below:

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

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

13.2 Right to Rejection on Receipt

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

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

13.3 Consignee

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

13.4 Submission of mandatory documents on Delivery

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

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

13.5 Dispatch and Delivery Instructions

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

14.0 GUARANTEE

14.1 Guarantee of Performance

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

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

14.2 Guarantee Period

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

14.3 Failure in Guarantee Period (GP)

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

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

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

14.4 Cost of repairs on failure in GP

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

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14.5 Guarantee period for Goods Outsourced

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

14.6 Latent Defect

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

14.7 Support beyond the Guarantee Period

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

15.0 LIQUIDATED DAMAGES

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

15.1 LD Waiver Request

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

15.2 Material Recovery

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

16.0 ASSIGNMENT OR SUBCONTRACTING

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

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

In such cases where outsourcing is done by the Associate

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

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

17.0 UNLAWFUL ACTIVITIES

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

18.0 CONFIDENTIALITY

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

18.1 Documents

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

18.2 Geographical Data

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

18.3 Associate's Processes

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

18.4 Exclusions

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

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

18.5 Violation

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

19.0 INTELLECTUAL PROPERTY RIGHTS

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

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

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

20.0 INDEMNITY

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

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

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

21.0 LIABILITY & LIMITATIONS

21.1 Liability

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

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

21.2 Limitation of Liability

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

22.0 FORCE MAJEURE

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

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

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

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

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

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

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

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

23.0 SUSPENSION Of CONTRACT

23.1 Suspension for Convenience

TPCODL may, at any time and at its sole option, suspend execution of all or any portions of the schedule of items of contract to be supplied/work to executed by Associate under the contract by providing to the Associate 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.

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

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

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

23.2 Suspension for Breach of Contract conditions.

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

23.3 Compensation in lieu of Suspension

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

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

24 TERMINATION OF CONTRACTS

24.1 Termination for Default/Breach of Contract

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

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- a. Withdrawal or intimation by the Associate of its intent to withdraw or surrender the execution / completion of the contracted work /PO or failure in ensuring adherence to any delivery schedules, in deviation of the contract/ PO.
- b. Refusal or neglect on the part of the Associate to supply material/equipment of quantity or quality as specified by TPCODL and within the timeframe as specified in the contract document or refusal or neglect to execute the services/work in terms of the agreed standards of quantity or quality and/or within the timeframe specified in the contract/PO.
- c. Failure in any respect to perform any portion of the Work contracted with promptness, diligence, or in accordance with the terms of the contract.
- d. Failure to furnish guarantees as specified and /or failure to comply with the terms thereof.
- e. Failure to furnish such relevant documents or information within the time specified which may be necessary for due execution / completion of the works and documentation.
- f. Liquidation, bankruptcy either voluntary or involuntary OR entering into any composition or compromise with its creditors, or Insolvency.
- g. In case any reasonable information has been received by TPCODL that Associate has adopted/ or attempted to adopt any unethical conduct, action in award of the contract /PO or at any time thereafter.
- h. Failure to comply with applicable statutory provisions as contained in the contract or failure to comply with the applicable laws.
- i. Failure to comply with safety regulations/clauses stipulated in the contract or as may be generally instructed by TPCODL.

If the default or breach as specified under clause 24 (except sub clause g thereof) be committed by the associate for the first time, TPCODL shall issue, along the with notice of default or breach, a warning notice instructing the associate to take remedial/corrective action within the time frame stipulated in the warning notice and not to repeat the same in future. The timeframe for corrective action by the associate shall be specific to the nature of breach of contract and the same shall not be objected to by the Associate. If the Associate fails to comply with the instructions in the warning notice or in taking corrective action to the satisfaction of TPCODL then TPCODL may terminate the entire or part of contract at its discretion by issuing termination notice without incurring any liability on this ground.

In case the contract is terminated for any breach of the nature specified in clause 24 g stated above, TPCODL shall have the right to terminate all the contracts TPCODL is having with the Associate by issuing termination notice which shall be without prejudice to the other rights of TPCODL available to it under law.

Without prejudice to its right to terminate for breach of contract, TPCODL may, without assigning any reason, terminate the Contract in whole or in part at any time at its discretion while the contract is in force by serving a written notice of two weeks to the Associate.

In the event of TPCODL having proceeded with termination of the contract the associate shall comply and proceed further in the following manner:

- i) Associate shall discontinue the supply, on the expiry of the said period of two weeks.

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ii) Associate shall ensure that no further steps are being taken towards discharge of the obligations, terms and conditions as contained in the contract/PO. This shall include initiation of actions not limited to discontinuation of other allied and associated arrangements which the associate might have entered into with third parties for due discharge of its obligations under the contract with TPCODL.

iii) The Associate shall perform thereafter such tasks as may be necessary to preserve and protect the terminated portion of the material/service/work in progress and the materials and equipment at TPCODL sites or in transit thereto. However the associate shall continue to fulfill its contractual obligations with regard to the part of contract not terminated.

iv) It shall be open for TPCODL to conduct a joint assessment with the associate of the material ,supplies, equipment ,works or in general as to the subject matter of the contract in regard to which the associate claims having completed its obligations before or during such termination.

v) It shall be open to TPCODL to seek invocation of the performance bank guarantee or any other guarantee or other security deposit by whatever name called submitted by the associate, which shall not be objected to or protested against by the associate.

In case of termination of the contract the parties agree to be governed inter alia by the following:

a) In case TPCODL exercises its right of termination as stated above the associate shall not dispute or object to the same.

b) The Associate shall be entitled to receive and claim only such payments OR sums of money from TPCODL as may be found payable to it in regard to works executed by it under the terms of the contract and no other claim of any nature whatsoever shall be made by the Associate.

c) All such provisions which the parties have agreed to survive and prevail even after termination of the contract shall remain effective despite the termination.

In the event of such termination, TPCODL may finish the Work by whatever method it may deem expedient, including the hiring of services and /or purchase of material equipment from such third parties as TPCODL may deem fit or may itself provide any labor or materials and perform any part of the Work. The associate undertakes to bear the incremental costs if any paid by TPCODL in such a case attributable to failure on the part of the associate. The Associate in such a case shall not be entitled to receive any further payments and any sums found payable to it may be adjusted by TPCODL against the amount recoverable from him on this ground. The same shall be without prejudice to other rights available to TPCODL under law against the associate.

Upon the termination of any of the contract due to occurrence of any circumstances provided in clauses stated above and constituting repeated breach or misconduct , TPCODL shall be entitled to bar the associates its agents , affiliates from undertaking any negotiation / tendering, bidding, participation activities concerning TPCODL for a period of two years from date of such termination. The same shall be without prejudice to other rights available to TPCODL.

24.2 Termination for convenience of Associate

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Associate at its convenience may request for termination of contract, clearly assigning the reason for such request. TPCODL has full right to accept, reject or partially accept such request. This convenience will be available to associate only after one year from the contract effective date. For this purpose, associate will provide a notice period of 90 days to TPCODL, Associate will have to pay TPCODL a 'termination convenience fee' equivalent to 5% of unexecuted contract value.

24.3 Termination for Convenience of TPCODL

TPCODL at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Associate. TPCODL shall pay the Associate for all the supplies/ services rendered till the actual date of contract termination against submission of invoice by the Associate to that effect.

25.0 DISPUTE RESOLUTION & ARBITRATION

In case of any dispute or difference the parties shall endeavor to resolve the same through conciliatory and amicable measures within 15 Days failing which the matter may be referred by either party for resolution by the sole arbitrator to be appointed mutually by both the parties. The arbitral proceedings shall be conducted in accordance with Arbitration and Conciliation Act 1996 and the place of arbitration shall be Bhubaneswar. The language to be used at proceedings shall be English and the award of the arbitrator shall be final and binding on the parties. The parties shall bear their respective costs of arbitration. The associate shall continue to discharge its obligations towards due performance of the works as per the terms of the contract during the arbitration proceedings unless otherwise directed in writing by TPCODL or suspended by the arbitrator. Further, TPCODL shall continue making such payments as may be found due and payable to the associate for such works.

25.1 Governing law and jurisdiction

The parties shall be subject to the jurisdiction of the courts of law in Bhubaneswar and any matter arising here from shall be subject to applicable law in force in India.

26.0 ATTRIBUTES OF GCC

26.1 Cancellation

The Company reserves the right to cancel, add, delete at its sole discretion, all or any terms of this GCC or any contract, order or terms agreed between the parties in pursuance without assigning any reasons and without any compensation to the Associates.

26.2 Severability

If any portion of this GCC is held to be void, invalid, or otherwise unenforceable, in whole or part, the remaining portions of this GCC shall remain in effect.

26.3 Order of Priority

In case of any discrepancies between the stipulations in General Conditions of the Contract (GCC) and Special Conditions of Contract (SCC), the GCC shall stand superseded by the SCC to the extent stipulated hereinabove while balance portion of respective clauses of GCC shall continue to be applicable.

27.0 INSURANCE

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The Associate shall arrange accident insurance policy for his foreign experts/specialists/personnel deputed to Site and Associate's/his sub-Associates' manufacturing works as well as for his Indian engineers and supervisory staff. The Associate shall also take out for his Indian workmen, where applicable, a separate policy as required under Workmen's Compensation Act.

Associates shall be responsible to suitably insure their entire work-force (to the extent of at least meeting requirements under Workmen Compensation Act) Tools, Plant, Third party liability at the project site, All Risk comprehensive insurance for the entire works (insurance for free issue items will be in TPCODL scope) for total contract (PO/RO) value or any other such risks during execution of works, till the works are handed over to the company, in consultation with TPCODL and shall submit copies of such insurances to the Engineer-in-Charge for review / acceptance before commencing the work. Engineer-in-charge must ensure compliance to insurance requirement by Associate before commencement of works. TPCODL shall stand fully indemnified in this respect.

28.0 ERRORS AND OMISSIONS

The Associate shall be responsible for all discrepancies, errors and omissions in the drawings, documents or other information submitted by him, irrespective of whether these have been approved, reviewed or otherwise accepted by the TPCODL or not. However any error in design/drawing arising out of any incorrect data/written information from TPCODL will not be considered as error and omissions on part of the Associate.

29.0 TRANSFER OF TITLES

The title of ownership and property to all equipment, installations, erections, constructions materials, drawings & documents shall pass to the TPCODL after Commissioning and complete handing over-taking over.

However, such passing of title of ownership and property to the TPCODL shall not in any way absolve, dilute or diminish the responsibility and obligations of the Associate under this Contract including loss or damages and all risks, which shall vest with the Associate.

The Associate shall take all corrective measures arising out of discrepancies, errors and omissions in drawings and other information within the time schedule and without extra cost to the TPCODL.

The Associate shall also be responsible for any delay and/or extra cost if any, in carrying out engineering, and site works by other agencies arising out of discrepancies, errors and omissions stated in as well as of any late revision/s of drawings and information submitted by the Associate.

30.0 SUGGESTIONS & FEEDBACK

We welcome all our Business Associates to write to us about their experience with TPCODL; be it our Company, our services or our people. Each and every concern, issue, query and suggestion from you will help us to become a better company to work with and shall help us develop a strong bonding of trust and a long term relationship with you.

You may send your feedback by filling up our Business Associate Feedback Form enclosed herewith as Annexure-I. You can also log on to our website www.tpcentralodisha.com to provide your feedback according to the guidelines mentioned below:

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31.0 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

32.0 LIST OF ANNEXURES

S. No.	Subject	Annexure
1.	Performa for Bid Security Bank Guarantee	A
2.	Performa for Advance Payment Bank Guarantee	B
3.	Performa for Performance Bank Guarantee (CP cum EP)	C
4.	Performa for No Demand Certificate by Associate	D
5.	Performa for Indemnification on Statutory Compliance	E
6.	Performa For Application For Issuance of Consolidated TDS Certificate	F
7.	HR Service Level Agreement	G
8.	Under taking for competence of workmen	H
9.	Business Associate Feedback Form	I
10.	Acceptance Form For Participation In Reverse Auction Event	J
11.	NEFT or RTGS payment request form	K
12.	Contractor Safety Management System	L
13.	Vendor Appraisal Form	M
14.	Manufacturers Authorization Form	N

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ANNEXURE-A

PROFORMA FOR BID SECURITY BANK GUARANTEE

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 TP Central Odisha Distribution Limited (TPCODL) in the sum of _____ for which payment well and truly to be made to the TPCODL the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20_____.

The CONDITIONS of this obligation are:

i) If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid

or

ii) If the Bidder having been notified of the acceptance of his Bid by the TPCODL during the period of bid validity fails or refuses to furnish the Contract Performance Bank Guarantee, in accordance with the Instructions to Bidders.

We undertake to pay the TPCODL upto the above amount upon receipt of its first written demand, provided that in its demand the TPCODL will note that amount claimed by it is due to it owing to the occurrence of one or both conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force upto and including the date (No of days as mentioned in tender enquiry) days after the closing date of submission of bids as stated in the Invitation to Bid or as extended by you at any time prior to this date, notice of which extension to the Bank being hereby waived, and any demand in respect thereof should reach the Bank not later than the above date.

DATE.....

SIGNATURE

OF

THE

BANK.....

WITNESS.....

SEAL.....

(Signature, Name & Address)

(At least 2 witnesses)

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ANNEXURE-B

PROFORMA FOR ADVANCE PAYMENT BANK GUARANTEE

(On Rs.100/- Stamp Paper)

Note:

- (a) Format shall be followed in toto
- (b) Claim period of six months must be kept up
- (c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

TP Central Odisha Distribution Limited

Bhubaneswar

Advance Payment B.G.No.....

Contract No.....dated.....

1. You have entered into a Contract No _____ with M/s. _____ (hereinafter referred to as "the Vendor") for the supply and delivery of _____ (hereinafter referred to as "the said Equipment") for the price and on the terms and conditions contained in the said contract.
2. In accordance with the terms of the said contract, you have agreed to make an advance payment of Rs. _____ (Rupees _____ only) being _____% (_____ percent) of the total value of the contract on "the Vendor" furnishing you with an irrevocable, unconditional and acceptable bank guarantee to be valid till the date of receipt of "the said equipment" covered by your above mentioned contract. For this purpose you have agreed to accept our guarantee.
3. In consideration thereof, we, _____ hereby irrevocably and unconditionally guarantee to pay to you on demand but in any case before the end of five working days from the date of the claim and without demur and without reference to "the Vendor" such amount or amounts not exceeding the sum of Rs. _____ (Rupees _____ only) being _____% (_____ percent) of the total value of the contract on receipt of your intimating that "the Vendor" has not fulfilled his contractual obligations. You shall be the sole judge for such non-fulfillment and "the Vendor" shall have no right to question such judgment.
4. You shall have the right to file / make your claim on us under the guarantee for a further period of three months from the date of expiry.
5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but

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not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security available to you, and our Bank shall not be released from its obligations under this guarantee by your exercising any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises
7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.
8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch **(to be confirmed by Bhubaneswar Branch by a letter to that effect)**
9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs. _____
(Rupees _____ only) and the guarantee will remain in force upto and including _____ (Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".
10. Unless a demand or claim under this guarantee is received by us in writing within one month from _____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at _____ this _____ day of _____ 200_____

Witness

1. _____

Bank's rubber stamp

Banks full address

2. _____

Designation of Signatory

Bank official number

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ANNEXURE- C

PROFORMA FOR PERFORMANCE BANK GUARANTEE (CP cum EP)

(On Rs.100/- Stamp Paper)

Note:

- (a) Format shall be followed in toto
- (b) Claim period of one month must be kept up
- (c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

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 three month** from the date of expiry.
5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security

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available to you, and our Bank shall not be released from its obligations under this guarantee by your exercising any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises
7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.
8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (to be confirmed by Bhubaneswar Branch by a letter to that effect in case BG is from the branch outside Bhubaneswar)
9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs. _____ (Rupees _____) only and the guarantee will remain in force upto and including _____ (Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".
10. Unless a demand or claim under this guarantee is received by us in writing within one months from _____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at _____ this _____ day of _____ 200__

Witness

1. _____

Bank's rubber stamp

Banks full address

2. _____

Designation of Signatory

Bank official number

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ANNEXURE-D

PROFORMA FOR “NO DEMAND CERTIFICATE” BY ASSOCIATE

(On Company's Letter head or with Company Seal)

(To be submitted by the Associate to TPCODL Accounts Department at the time of receipt of full and final payment)

(Certificate No. CCP/002)

Name of the Project

Order/ Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

We, M/s. _____ (Associate) do hereby acknowledge and confirm that we have received the full and final payment due and payable to us from TPCODL, in respect of our aforesaid Order No _____ dated _____ including amendments, if any, issued by TPCODL to our entire satisfaction and we further confirm that we have no claim whatsoever pending with TPCODL under the said contract / W.O.

Notwithstanding any protest recorded by us in any correspondence, documents, measurement books and / or final bills etc., we waive all our rights to lodge any claim or protest in future under this contract.

We are issuing this “NO DEMAND CERTIFICATE” in favour of TPCODL, with full knowledge and with our free consent without any undue influence, misrepresentation, coercion etc.

Dated

Signature

Place

Name

Designation

(Company Seal)

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ANNEXURE – E

PROFORMA FOR “INDEMNIFICATION ON STATUTORY COMPLIANCES”

(To be submitted by the successful Bidder within seven days of award of work)

(Certificate No. CCP/001)

Name of the Project

Letter of Award / Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

By this confirmation we, _____
(Associate) are formally bound to M/s. TPCODL towards any sum which may be imposed, levied or hereinafter recovered by the Provident Fund Organization under the provisions of the Employees of the Provident Fund and Miscellaneous Provisions Act 1952 in respect of employees employed by us.

We well and truly bind ourselves and our heirs executors administrators and representatives jointly severally and respectively for the above payment only to be paid to M/s. TPCODL.

AND WHEREAS we, _____ (Associate)
is making compliance of the Employees Provident Fund and Miscellaneous Provisions Act 1952, have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Provident Fund Act.

Similarly we hereby confirm that we have complied with all statutory and local laws and nothing is outstanding with regard to Local Sales Tax, Labour Laws, Local Municipal dues, Electricity dues etc. We have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Local Sales Tax Laws, Local Laws, Labour Laws, Local Municipal Dues, Electricity dues etc.

NOW THE CONDITION, of the above written bond is as such that if the Associate during the period of this contract commits any default or fails to make payment of Contributions in respect of his employees to the Employees Provident Fund Organization, he shall indemnify the Principal Employer M/s. TPCODL from all and every loss and damage caused to them from any act, omissions or negligence of the said Associate in respect of compliances under the Employees Provident Fund and Miscellaneous Provisions Act, 1952.

IN WITNESS to the above written bond we have here to set our hands, with our free consent.

Dated

Place

Signature

Name

Designation (Company Seal)

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ANNEXURE-F

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

To be printed on the letterhead

To,

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

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ANNEXURE - G

SERVICE LEVEL AGREEMENT

(To be adhered to by Business Associates (BAs) in TPCODL on Human Resource Issues)

1.0 The following shall be adhered to by the Business Associates during his / its association with TPCODL:

Shall Abide by Tata Core Values:

- a) **Integrity** – We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.
- b) **Understanding** – We must be caring, show respect, compassion and humanity to our colleagues and customers and always work for the benefit of the communities we serve.
- c) **Excellence** – We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of services we provide.
- d) **Unity** – We must work cohesively with our colleagues across the group and with our customers and partners to build strong relationships based on tolerance, understanding and mutual co-operation.
- e) **Responsibility** – We must continue to be responsible and sensitive to the communities and environments in which we work and always ensuring that what comes from the people; goes back to the people many times over.
- f) **Agility**- We must work in a speedy and responsive manner and be proactive and innovative in our approach.

2.0 The Business Associate / his manager / supervisor who is responsible for managing the project site / performance contract etc. in TPCODL would also ensure adherence of these values by his employees / persons deployed by him in connection with his works undertaken in TPCODL.

3.0 The Business Associates are required to:

- a) Support and respect the protection of human rights and make sure that they are not complicit in human right abuses.
- b) Respect freedom of association and effective recognition of the right to collective bargaining.
- c) Not to resort to any form of forced and compulsory labour.
- d) Shall ensure abolition of child labour in his area of work.
- e) There is no discrimination in respect of employment and occupation in respect of his employees.
- f) Support precautionary approach to environmental challenges.
- g) Promote greater environmental responsibility by himself and his employees in his areas of work.
- h) Deploy and defuse environmental friendly technologies while carrying out the works.
- i) Work against corruptions in all its form including extortion and bribery by himself and his employees.

4.0 The Business Associates are required to adhere to all applicable Labour Laws with special reference to the following:

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- a) No person below the age of 18 years and no child labour will be engaged directly or indirectly for executing the work connected with the business of TPCODL.
- b) Minimum wages along with other statutory dues like PF, ESI, etc. as applicable to the workers shall be made within the prescribed period of 7th / 10th day of the following month.
- c) Deduction / deposit / record keeping and all other requirements under Employees PF Act 1952, Employees State Insurance Act 1948 and other applicable acts (if any) shall be adhered to.
- d) Only statutorily authorized deductions (if any) shall be made in accordance with the relevant statutes.
- e) All the provisions of Contract Labour (R&A) Act 1970 shall be complied with in respect of the workers engaged for TPCODL work. The work will be commenced only after completing necessary formalities for obtaining Labour License (if applicable).
- f) Necessary registers / records, filing of returns etc. shall be maintained for verification by Statutory / TPCODL authorities.
- g) Payment of wages shall be made only in presence of and with certification of authorized representative of TPCODL or shall be made in the form of cheque / bank transfer to the employee.
- h) During the period of contract, the Business Associate will arrange for deployment of his supervisor / manager for total supervision and control of the work and their manpower. All the activities related to their manpower e.g. attendance, leave, wage disbursement etc. will be done under the supervision & control of Business Associates, While adhering to the prescribed standard / norms of production / productivity & quality. During execution of the work, Business Associate shall engage only such qualified / skilled manpower as may be envisaged / required for ensuring level of production / service into the contract / work order.
- i) Clearances as follows shall be obtained from IR & Welfare Group:
 - i. Clearance for commencement (before start of the work).
 - ii. No Objection Certificate (after completion / before final settlement).
 - iii. Copies of PF / ESI Challans shall be deposited with IR & Welfare Group every month
- j) The Business Associate shall indemnify TPCODL from any liabilities under applicable Labour Statutes.
- k) The Business Associate shall ensure safety and health of his employees and shall also maintain hygienic working environment / condition in his area of work.
- l) The Business Associate and his employee shall abide by Laws of Land and shall not violate any applicable provisions.
- m) The Business Associate appreciates with and acquiesces to the right of TPCODL as principal employer to fulfil any of his legal obligations, if he fails to do so under applicable labour laws and deduct the same from his running bills / final payments / encashing security deposit / Bank Guarantee as the case may be. If there is any further shortfall TPCODL has the right to recover the same from the Business Associate.
- n) The Business Associate ensures that person employed by him adhere to the moral and legal conduct and shall not violate any standard conduct envisaged in the premise of

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TPCODL by all such as, Transparency, Safety, Discipline, Integrity etc. The Business Associate or his employees should refrain from corrupt practices, giving or taking bribe in connection with any TPCODL business.

5.0 The 'Statutory Compliance Enforcement System' in TPCODL is detailed below for adherence by all concerned. Business Associate Cell (BA Cell) will be the process owner for implementation of the system with the help of concerned Engineer I/c or Officer I/c.

- a) Statutory Compliance being a professed value in TPCODL Code of Conduct, the concerned Engineer / Officer in charges are requested to adhere to the provisions and advise respective Business Associates in their domain to comply in letter and spirit.
- b) Immediately after issuance of letter of intent, the authorized representative of the Business Associate will report to BA Cell for completion of statutory requirements.
- c) Normally, the work will be started only after 'Clearance for Commencement of Work (CCW)' is issued by BA Cell to the Business associate. However in exceptional exigencies in engineer I/c / Officer I/c may direct the Business Associate to start the work and inform BA Cell about the same. Statutory requirements in this case may be completed in parallel.
- d) First monthly bill will be released only after producing CCW to the finance department. Similarly closure of work and final settlement will be affected after issuance of no objection certificate from BA Cell group.

6.0 Requirements for 'Clearance for Commencement of Work' (CCW):

- a) Submission of filled up Form 'A' for database (Annexure-1).
- b) Copy of PF Code allocation letter.
- c) Copy of ESI Code allocation letter.
- d) Submission of duly filled up Form IV CL(R&A) act (In case more than or equals to 20 workers during the period of contract).
- e) Submission of duly filled up Form VI A (Notice of Commencement).
- f) Copy of insurance cover note under WC Act 1923 (if applicable).
- g) Copy of Contract Agreement.
- h) Copy of indemnity bond (if applicable).
- i) Affidavit with regard to payment of wages through cheque / bank transfer only.

7.0 Requirements during execution of work:

- a) Copy of receipt of application for license / license (if applicable).
- b) Copy of PF Challan (latest by 26th day of every Month).
- c) Copy of ESI Challan (latest by 26th day of every Month).
- d) Copy of Wage disbursement sheet / Bank statement.
- e) Filing / Maintenance of all statutory registers / reports / returns for inspection by Statutory/TPCODL authorities.
- f) Certification of wage disbursement by authorized representative of TPCODL.
- g) Copy of 'Labour Welfare Fund' deposit certificate / Challan.
- h) Insuring safe working practices at the work place.

8.0 Requirements for 'No Objection Certificate' (NOC) for closure of work:

- a) Submission of duly filled up Form VI A (Notice of Completion).
- b) Copy of Half yearly / Annual return for ESI / PF / CL(R&A).

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- c) Consolidated copy of wage sheet of last month indicating full & final settlement of all dues like retrenchment benefit, bonus, leave encashment etc. Copy of individual declaration by employees in Form X regarding termination of employment.
- d) Confirmation certificate regarding filling up of form for transfer / withdrawal of PF by the concerned workers.

In case any of the above are deviated / not complied with the Letter of Award/Order shall be liable to be withdrawn / cancelled.

Enclosure:

- 1) Form A
- 2) Form X
- 3) Form XI
- 4) Form VI A
- 5) Form XXIV

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FORM (A)

[To be submitted by the Business Associate to the Principal Employer within a week from LoA issuance]

A. Details of the Agency

1. Name of Agency :
2. Nature of work :
3. Local Address with Ph.No. :
(With Father's name) :
4. Permanent Address (Full) :
5. PF code no. & Place :
6. ESI Code no. & Place :
7. Name and address of :
Sub-contractor (if any)

B. Details of Work

8. Name of work (as specified in LOI/LOA) :
9. LOI/LOA Nos. & Dates :
10. Period of contract (Specify Dates) :
[Including Extension period, if any] :
11. Work Area [Department / Location] :
12. Name / Cell no. of Officer I/c :
13. Maximum No. of workers and staff to be engaged on any day during the year.
 - Supervisory Staff :
 - Workers :
14. Do you have any other contract in TPCODL : Yes/No
If yes, furnish details:

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15. Details of Workmen's compensation Policy, if applicable

Name of Insurance Company
.....Policy No Number of persons
covered Period of coverage: From To

If no, I hereby undertake the liability arising out of Workmen's Compensation Act and Rules made there under.

C. Details of workers to be engaged

No. of Workers

S. No.	Unskilled*	Semi-skilled*	Skilled*	Clerical / Supervisory

*** Number to be indicated**

I/We shall fulfill all obligations arising from and under all relevant law in force from time to time. I/We undertake to keep the TPCODL indemnified against any loss or liability arising out of failure of my / our abiding the relevant laws.

The name of my / our representatives is to enter the TPCODL Premises on my behalf.

Date:

**(Signature of the Business Associate
or his Authorized Representative)**

This Business Associate is / will be engaged in TPCODL.

(Signature and seal of

Officer I/c of the Work)

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Form X

Undertaking

I _____ hereby undertake that all the dues in respect of my employment with M/s _____ for the period of _____ to _____ have been settled and final payments including retrenchment benefit have been made to me in full.

(_____)

Date:

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Form XI

Undertaking

With reference to the contract job awarded by M/s TP Central Odisha Distribution Limited to M/s _____ vide work order No. _____ dated _____

I _____ on behalf of

M/s _____ hereby undertake:

1. that the dues in respect of the workmen/ employee(s) engaged by us for the said contract, payable as per the provisions of relevant statute pertaining to
 - i. wages/ salary
 - ii. PF & ESI, Bhubaneswar Labour Fund
 - iii. All other statutory obligation
 has been paid /settled in full and no amount/ compliance is due/ pending.
2. That in case any dispute / claim is raised by the concerned workers i.r.o. any dues / payments, M/s _____ will settle the same on it's own and such liability will be borne by M/s _____
3. That M/s _____ hereby indemnify M/s TPCODL from any future liability i.r.o. any statutory obligation in respect of said contract.

Date:

()

Authorized Signatory

For M/s _____

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FORM- VI A

Notice for Commencement /Completion of contract work

I/We, Sh. / M/s _____ (Name and Address of the Contractor) hereby intimate that the contract work _____ (name of work) in establishment of the _____ (name and address of the Principal Employer) for which License No. _____ dated _____ has been issued to me/us by the Licensing Officer _____ (name of the Headquarters), has been commenced / completed with effect from _____ date / on date.

Signature of Contractor

With Office Seal

The Inspector

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FORM XXIV

[See Rule 82(1)]

Return to be sent by the Contractor to the licensing Officer (in duplicate)

Half -Yearly Ending_____

1. Name and address of the Contractor
2. Name and address of the Establishment
3. Name and address of the Principal Employer
4. Duration of Contract: From _____ to _____
5. No. of days during the half year on which
 - (a) the establishment of the principal employer had worked
 - (b) the contractor's establishment had worked
6. Maximum No. of contract labour employed on any day during the half –year:

Men	Women	Children	Total

7.
 - (i) Daily hours of work and spread over
 - (ii) (a) whether weekly holiday observed and on what day
 - (b) if so, whether it was paid for
 - (iii) No. of man – hours of overtime worked

8. No. of man days worked by

Men	Women	Children	Total

9. Amount of wages paid

Men	Women	Children	Total

10. Amount of deductions from wages, if any

Men	Women	Children	Total

Whether the following have been provided –

- (i) Canteen : _____
- (ii) Rest rooms : _____

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(iii) Drinking water : _____

(iv) Crèches : _____

(v) First Aid : _____

Signature of contractor

Place _____

Date _____

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ANNEXURE – H

UNDERTAKING FOR COMPETENCE OF WORKMEN

Name of Associate :

Tender No. :

Item :

With reference to the tender mentioned above, I/We _____,
 hereby undertake that the workmen/ employee(s) engaged by M/s
 _____ for the job against said tender shall be competent in all
 respect, commensurate to the nature of job.

Date:

 ()

Authorized Signatory

For M/s

Seal

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ANNEXURE-I

BUSINESS ASSOCIATE FEEDBACK FORM

With an objective to improve our internal processes and systems, and serve you better, we solicit your valuable feedback & suggestions. It is estimated that it will take about 10 minutes to complete this survey. We assure you that your feedback shall be kept confidential. Please send the duly filled feedback form in the "TPCODL addressed - attached envelop"

You are associated with us as

☐ OEMs
 ☐ Service Contractor
 ☐ Material Suppliers
 ☐ Material & Manpower Supplier

You are associated with us for

☐ Less than 1 year
 ☐ More than 1 year but less than 3 years
 ☐ More than 3 years

Your office is located at

☐ Bhubaneswar
 ☐ Within 200 kms from Bhubaneswar
 ☐ More than 200 kms from Bhubaneswar

Your nearly turnover with TPCODL

☐ Less than 25 Lacs
 ☐ 25 Lacs to 1 Crore
 ☐ More than 1 Cr.

Additional information

Your Name	
Your Designation	
Your Organization	
Contact Nos.	
Email	

We once again thank you for your participation in this survey. Please spare 10 minutes to give your feedback on following pages (Section A to E)

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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/ 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)						
10	TPCODL Engineer-in-Charge timely certifies the jobs executed/ material supplied						

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S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
		Do Not Agree	Slightly in Agreement	In Fair Agreement	Mostly in Agreement	Fully Agree	
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						

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SECTION - B

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

SN	Parameters	1	2	3	4	5	Remarks/ Suggestion
1	How do you rate courtesy/ empathy/ attitude level and warmth of TPCODL employees you interact with from following team?						
1.1	Project Engineering						
1.2	Division / Sub-Division						
1.3	Projects/HOG						
1.4	Inspection & Quality Assurance						
1.5	Stores						
1.6	Metering & Billing						
1.7	Accounts / Finance						
1.8	Administration						
1.9	IT & Automation						
2	How would you rate TPCODL in comparison to your other clients in terms of fairness of treatment and transparency with its Business Associates?						
3	How would you rate TPCODL in comparison to your other clients in terms of processes and systems to manage partnership with its Business Associates						
4	How would you rate TPCODL in comparison to your other clients in terms of building long term & mutually relationship with its Business Associates						

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SECTION-C

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

SNo	Parameters	Certainly NO	Probably NO	Probably YES	Certainly YES	Remarks/ Suggestion
1	Based on your experience with TPCODL, would you like to continue your relationship with TPCODL?					
2	If someone asks you about TPCODL, would you talk "positively" about TPCODL?					
3	Would you refer TPCODL name to others in your community, fraternity and society as a professional & dynamic organization?					

SECTION - D

If we ask you to rate us on a scale of 1 to 10, how will you rate TPCODL, that truly represents your overall satisfaction with us (please tick appropriate box) -

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

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SECTION – E

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

Please spare your thoughts for TPCODL's improvement in particular areas of weaknesses, particularly relating to some great practices, attitudes that you have seen elsewhere in Indian and International Organizations, which you recommend TPCODL to adopt. Please give your valuable salient recommendations.

Please spare your thoughts for TPCODL's improvement in particular areas of major concerns for you. We also welcome your suggestions to adopt any best practices, altitudes that you have observed / experienced elsewhere in Indian/ International organization.

Recommendation	<i>Please tick (✓) 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 & 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 & quality assurance support for timely job completion</i>	

We thank you for your time and courtesy!!

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ANNEXURE-J

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder prior to participation in the auction event)

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

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

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

Signature & Seal of the Bidder

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send payment information)

Name of the Authorized Signatory :

Contact Person's Name :

Official Correspondence Address :

We confirm that we will bear the charges, if any, levied by our bank for the credit of NEFT/RTGS amounts in our account. Any change in above furnished information shall be informed to TPCODL well in time at our own. Further, we kept TPCODL indemnified for any loss incurred due to wrong furnishing of above information.

Thanking you,

For _____

(Authorized Signatory)

(Signature with Rubber Stamp)

Certification from Bank:

We confirm that we are enabled for receiving NEFT/RTGS credits and we further confirm that the account number (specify Bank a/c no.) of (Please mention here name of the account holder), the signature of the authorized signatory and the MICR and IFSC Code of our branch mentioned above are correct.

This also is certified that the above information is correct as per Bank record

(Manager's/ Officers Signature under Bank Stamp)

ANNEXURE-L

CONTRACTOR SAFETY MANAGEMENT SYSTEM

1. OBJECTIVE

The objective of the Contractor Safety Management System is to lay down clear guidelines for all Business Associates (including their associates, staff and agents) which would facilitate them to observe all statutory rules and regulations, comply with applicable standards of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010 & (safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations, 2011, TPCODL Safety Manual and Guidelines and thus, ensure creation of safe working environment for all stakeholders of our network.

2. SCOPE

All contracts (minor and major) will be subject to the provisions of this document.

Minor Contracts: Contracts which satisfy all the criteria listed under the head "Minor Contracts".

Major Contracts: Contracts which satisfy any two or more criteria listed under the head "Major Contracts"

Criteria	Minor Contracts	Major Contracts
Value of Contract	< Rs. 1500000/- (less than Rs. Fifteen Lac)	>= Rs. 1500000/- (Equal or more than Rs. Fifteen Lac)
Period	Period less than 1 year	Any period
Working on energized electrical equipment	No	Yes
Working on height (above 1.8 Mtrs from ground)	No	Yes
Work involving construction activity	No	Yes
Working with hazardous goods or chemicals	No	Yes
Work involving danger to general public	No	Yes

Note: Exceptions for major and minor contract are – in house software development, supply of material or equipment but no direct or indirect installation of the same material, administration contracts (courier, water supply, printing, security, transport, etc.), minor civil work like plastering at ground level or flooring, etc. The facility management (housekeeping) contract will always be treated as a minor contract.

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3. INFORMATION REQUIRED AT TIME OF VENDOR REGISTRATION OR BEFORE COMMENCEMENT OF CONTRACT

- 3.1 Business Associate is required to fill the Safety Management System Questionnaire as per *annexure 1* and submit along with the vendor registration process / bid / tender document. The filled questionnaire will be scrutinized by Engineer In-charge / indenting group and recommend suitability of the BA with respect to safety requirements. The fulfilment of statutory requirements for vendor registration pertaining to labour laws etc. shall be done by BA Cell on being referred to it.
- 3.2 Business Associate is required to take suitable risk control measures mentioned against the identified Hazards and Risk document provided for all contracts as per *annexure 2*. The primary objective of this is to evaluate the understanding of the BA towards risk mitigation and employment of safe work procedures. BA is required to conduct the Hazard identification and Risk Assessment study as per the procedure and deploy more or other measures if deemed necessary.
- 3.3 Business Associate shall comply with **Statutory Requirements related to Safety and Occupational Health** and submit the "Safety Undertaking" as per *annexure 4*.

4. GENERAL SAFETY CONDITIONS REQUIRED TO BE FULFILLED BY BUSINESS ASSOCIATES

The requirements of the contractor safety management system applicable to the minor or major contracts related to various groups are as following –

- 4.1 Maintenance of Distribution Network – *Annexure 3.1*
 - 4.2 Distribution Projects – *Annexure 3.2*
 - 4.3 EHV Projects – *Annexure 3.3*
 - 4.4 Maintenance of Sub transmission network – *Annexure 3.4*
 - 4.5 Civil / Generation Projects – *Annexure 3.5*
 - 4.6 Meter Management Group (MMG), Revenue Recovery Group (RRG), Energy Auditing Group, AML, MRG, etc. – *Annex3.6*
 - 4.7 Maintenance and Operation of Street Light. – *Annexure 3.7*
1. Please note that hydra cranes used by any dept should be ACE Model No. FX 150 ACE SX 150, Escorts Model No. TRX 1550 or contemporary. Use of old generation hydra cranes like ACE 14XW or ACE 12 XW, etc are prohibited.

(Details as per Annexure attached)

Note: For minor contracts, the BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver all duties and responsibilities of Safety Supervisor as detailed in this document.

The Business Associate (BA) having major contract will appointing Safety supervisor, engineer / manager for the TPCODL work. The BA shall make all necessary arrangements for getting their workforce safety trained and competency checked from the concerned official of TPCODL before deployment in the field. BA Cell shall recommend the suitability after competency checked by Engineer In-charge and SAFETY group (or his representative) of TPCODL. After getting the clearance from concerned official, BA cell and receiving temporary I-card issued by TPCODL, Business Associate shall commence the working.

Safety Representative of Business Associates will formally become the nodal point for safety concerns for TPCODL. **BA shall not frequently transfer or terminate the services of any of the safety representatives appointed for TPCODL work site. BA needs to ensure**

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that Safety representative is available at all points of time; failing which the work being carried out in the interim (period when Safety representative is not available) shall be treated as working under improper supervision and due penal provisions shall be initiated against the BA. BA will be required to provide all applicable infrastructure and power to ensure smooth working of the safety representative to maintain a sound safety management system. **In all contracts safety representative will not be assigned any other activity at site apart from the works related to safety management. The duties are detailed in clause 5.5 of this document.** TPCODL will be auditing the facilities provided to the BA's safety team time to time.

The Safety Representative of the BA shall be required to meet and follow the instructions of the Engineer In-charge and SAFETY Group of TPCODL. He shall be responsible for providing the MIS and/or any other relevant information, as and when desired, within the stipulated time frame as per the requirements of TPCODL. Any non-conformance to safety will lead to the negative marking or issue of safety violation challan/ tokens which shall affect the monthly evaluation and performance of BA.

All contracts where BA has to depute vehicle for their staff and equipment to move from one location to other, the BA shall ensure that vehicle complies all required statutory clearances and requirement as per The Motor Vehicle Act, 1988 as well as TPCODL Road Safety Policy and are in good & safe state of working.

5. QUALIFICATION AND EXPERIENCE OF THE SAFETY AND SITE PERSONNEL

Qualification and experience required for the safety and site personnel are as following:

5.1 Safety Supervisor: It is mandatory that educational qualification of safety supervisor be ITI (of relevant trade) / Diploma (Any branch of engineering) and he has a working experience on electrical system / relevant field of work at least 5 yrs for ITI and 3 years for Diploma holder. Having formal experience of the safety systems will be an added advantage

5.2 Safety Engineer: It is mandatory that educational qualification of safety engineer be at least Diploma (relevant branch) and he has working experience on electrical system of at least 3 yrs. Having the formal experience of the safety systems will be an added advantage.

5.3 Safety Manager: The educational qualification of safety manager should be graduate engineer with working experience on electrical system / network of at least 3 yrs. OR Diploma in Industrial Safety with working experience of 05 years including at least 02 years on electrical network.

However, clause 5.1, 5.2 and 5.3 are not applicable for minor contracts. In such cases, BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver required duties of Safety Representative (as per clause 5.5) in addition to other duties without diluting the importance of safety.

5.4 Site Skilled Personnel: For all responsibility related to site activities and operations, the BA shall employ only qualified and skilled persons and shall comply the provisions of section 19 & 29 of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010. Persons holding valid approvals only by any Government approved agency or a competency assessment panel or a team set up by TPCODL

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shall be allowed to perform the High Risk / High Hazard activities (refer page 1). The skill / qualification required for the electrician and electrical supervisor are given in *annexure 5*. The contracts related to maintenance of Distribution Network, Distribution Projects, EHV Projects, maintenance of Sub-Transmission Network, MMG & EAG, maintenance and operation of street lights, shall preferably have at least 20 per cent of ITI qualified electricians in the first year of the contract. This figure shall preferably be incremented by 15 per cent every subsequent year.

Note: For the competency assessment may please refer the work instructions. An employee shall have to necessarily undergo the competency assessment check once in every eighteen months.

5.5 Requirements from the Safety Representative(s) of the Business Associate:

- 5.5.1 Safety training of 2 hrs/employee/month and one day of safety induction training to all new employees joining the BA will be conducted by the BA as per Safety training modules of TPCODL.
- 5.5.2 Safety Talk / tool box talk before start of shift to BA employees.
- 5.5.3 Ensuring the availability & proper usage of the standard safety equipment (PPE)
- 5.5.4 Periodic inspection of PPE to ensure their serviceability and maintaining the 10% buffer stock of standard PPEs.
- 5.5.5 Ensuring the adherence to standard operating procedures of TPCODL as mentioned in TPCODL Safety standard and O & M and concerned function's manual.
- 5.5.6 Safety inspections / audits as per the process of TPCODL
- 5.5.7 Working in close coordination SAFETY Group of TPCODL.
- 5.5.8 Reporting of unsafe acts, unsafe conditions, near miss, incident or accident to Engineer In-Charge and SAFETY Group of TPCODL immediately after its occurrence.
- 5.5.9 Regular HIRA at site and comply the control measures as stated in the detailed HIRA as per the *annexure 2*. Also deployment of JSA based checklist shall be ensured.
- 5.5.10 Ensuring compliance with safety and other laws as may be applicable and providing for safety assurance.

5.6 Training and Syllabus: The BA shall not deploy any person at work place / site or send newly recruited personnel directly to concerned official for competency assessment without Safety Induction Training.

5.6.1 All new BA employees have to necessarily undergo one and half days Safety training and Competency assessment at training centre of BA cell. This training will be conducted once in a week. After the completion of Safety training & Competency assessment I-card will be issued to all competent BA employees

5.6.2 BA is expected to initially train and judge the capability of the workman at his own end before further recommending the workmen for Competency assessment. If any BA workman sent for competency assessment. In case any BA workman fails in the Competency test at concerned official, it will be deemed that BA has not imparted sufficient training at his end and actual cost of training ₹ 7500/ BA employee/ failed attempt will be recovered.

5.6.3 The workers who have imparted Safety Training and issued I-Cards of TPCODL, are not deployed at TPCODL worksites/ voluntarily left the job by workers/ used somewhere else other than TPCODL by the BA, in that case Management reserves the rights to intervene and recover the actual cost of training i.e. ₹ 7500/BA employee. (*Exempted for attrition rate of BA workers less than or equal to 10% of total workforce deployed at TPCODL*)

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- 5.7 It is desired that Safety representative of the BA to impart the general safety training to each employee of duration 2 hrs per month. The training will be organized at BA level and the record to be sent to engineer in-charge and SAFETY group of TPCODL every month. Please refer schedule and syllabus in *annexure 6*.

List of Personal Protective Equipment (PPE) and Maintenance schedule: BA shall commence the project or any work only when the required PPE are made available to the team of employees involved in the work. Each PPE of BA shall be checked / inspected by the safety representative / supervisor at zone before the work start or as prescribed in the list. Safety representative shall regularly check the healthiness of each PPE allocated to lineman. Suitable record shall be maintained at zone. Defective PPE shall be immediately replaced or within 24 hours by the BA. In no case linemen or any other official of BA may be allowed to work with defective PPE. It is preferred that BA ensures minimum stock of each PPE at zone for immediate replacement with defective one. The PPE shall be IS / BS / CE marked and exactly as per the standard or specification mentioned in the *annexure 7*. Working without PPE / non-standard PPE shall be treated as safety violation and penalty as stated in section 6.0 of this document. If TPCODL finds that BA has not provided the adequate / appropriate PPE to their staff, TPCODL reserves the rights to stop the work and call the BA to provide appropriate PPEs at the risk. If the BA fails to provide the required PPEs at the risk then the same shall be provided by TPCODL at the actual cost of the PPE. The amount shall be charged to BA and same shall be first recovered from the current bill of BA or any future payment to be made to BA. In the event of any balance amount still left for recovery, the same shall be adjusted against retention amount or by invoking bank guarantee submitted by BA.

- 5.8 Safety Audit / Inspection & HIRA:** The BA shall get the required safety inspection / audit conducted by his technical team comprising of safety representative as per the *annexure 8*. The safety representative will be required to conduct the HIRA (Hazard Identification and Risk Assessment) as per *annexure 2* of the process and work undertaken at least two times in a year or every time if a new process / activity / machine is introduced or whenever an accident take place. The risk identified to be addressed suitably with –

- Engineering Control
- Management Control, and
- Personal Protective Equipment.

The safety representative of BA shall inform and educate for the identified risk and hazard control methods to employees, supervisor and engineer as well as the engineer in-charge and SAFETY group of TPCODL.

- 5.9 Safety Performance and Safety MIS:** The BA shall maintain good practice of safety all through the contract duration. Safety shall always be of paramount importance during the contract period. Safety performance will be monitored on yearly basis throughout the period and no relaxation will be given for bad performance. BA with good track record and excellent performance will be rewarded suitably as per clause 6.0 of this document. The BA has to provide monthly “Performance Report – Safety” to engineer in-charge and SAFETY group TPCODL this shall be part of monthly bill along with training details. Performance of the report is enclosed as *annexure 9*.

- 5.10 Pre – Employment Medical Check-up and Fitness of employees engaged for the critical works:** The BA shall submit the health fitness certificate for all those workers involved in climbing the pole or working at height for following diseases:

5.10.2 Epilepsy

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- 5.10.3 Colour blindness
- 5.10.4 Deafness
- 5.10.5 Vertigo & height phobia

Every year BA will give an undertaking stating that all the employees are fit to work and have not developed aforesaid diseases. The Record of such medical check-ups shall be submitted to BA Cell before issue of temporary identity card. The records shall be maintained at BA Cell. All such medical check-ups shall be repeated once in a year for all workers involved in climbing the pole or working on electrical network.

6. REWARD AND PUNITIVE MEASURES

6.1 To support the enforcement of good SHE & DM practices by the Business Associate and to eliminate repeated or continuing safety violations, use of appropriate reward and punitive measures shall be made. Each unsafe act or violation of the safety guidelines as described in the Safety Manual of the TPCODL will be audit criteria of this system. Broadly the measures identified are following:

- 6.1.1 Working without PPE/ Safety Gadgets
- 6.1.2 Working without proper tools and tackles, barricading, Poor condition of Crane / Hydra / Vehicle, using without certification / Licence, Incompetent driver/ Helper
- 6.1.3 Working without creation of effective safety zone
- 6.1.4 Improper Supervision at worksite, Lineman/ Supervisor working without competency
- 6.1.5 Working without adherence to PTW process or authorization/ not adherence to SOPs / W.I. of TPCODL.
- 6.1.6 Improper Working at height equal to or above 1.8 mtrs without taking proper fall protection measures/ Poor condition of Ladder

6.2 Measures of Reward and Punitive Measures

The Engineer In-Charge, NSO, SC, ASOs, CSI / SIs and SHE &DM group will conduct the surprise audits of the work / project and if any non-conformance is found the same will be booked and entered in the format "Safety Violation Record" annexure 10. The flow of the information is given below:

Safety Violation Escalation & Monitoring process	
Action	Responsibility
Safety Violation form has been filled and counter foil sent to SAFETY team for information. The main form is to be given to BA supervisor / Engineer in-charge. <i>(Automatically generated if Site audit done through Mobile App.)</i>	Engineer In-charge/ NSO / SC / SAFETY Group /CSI/ ASO/ Any authorised TPCODL official.
↓	
Entry of the violation in the master record and sending the information to concerned Manager, HoG, HoD, Head and Chief (O &S). <i>(Automatically generated if Site audit done through Mobile App.)</i>	SAFETY Group
↓	
Forwarding the information Centralized Account Payable (CAPS) for amount deduction from the current bill of the BA,	Engineer In-charge

if any.	
↓	
HoG (Safety – II) & HoG (Safety & Quality – Commercial) and CAPS to generate the MIS of the violations and the amount deducted.	SAFETY Group
↓	
The pool of the amount generated after the deduction to be utilized in safety welfare of BA employees.	SAFETY Group with approval of CFO/Chief (O & S) /CEO&MD

The safety violations have been rated from 1 to 5 (figure 6.3) as per the gravity of the violation. If the same violation is repeated it may escalate into a higher penalty. If a particular Business Associate employee violates safety norms three times, he shall not be allowed to work in TPCODL for a period of one year from the date of the 3rd violation.

6.3 Safety Violation Escalation Matrix

6.3.1

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				
S.No.	Safety Violation	1st	2nd	3rd	4th	Subsequent Violations
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	A	B	C	D	Will attract the same penalty as applicable in the 4th violation.
2	Improper Working at Height	A	B	C	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	A	B	C	D	
5	Violation of SOP/ WI	B	C	D	E	
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		
Legend	Action to be taken	Responsibility		Penalty Amount (in Rs.)		The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
A	Warning letter	Engineer Incharge		Nil		
B	Levy of Penalty	Engineer Incharge		2,000		
C	Memo to BA & Levy of Penalty	Head of Group		4,000		
D	Memo to BA & Levy of Penalty	Head of Department		10,000		
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department		1,00,000		
Figure 6.3 (1a)-Penalty Matrix for Safety violation (Applicable for Minor Contracts)						

Figure 6.3 (1a)-Penalty Matrix for Safety violation (Applicable for Minor Contracts)

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				Subsequent Violations
S.No.	Safety Violation	1st	2nd	3rd	4th	
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	B	C	D	D	Will attract the same penalty as applicable in the 4th violation.
2	Improper Working at Height	B	C	D	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	B	C	D	E	
5	Violation of SOP/ WI	C	D	E		
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		
Legend	Action to be taken	Responsibility		Penalty Amount (in Rs.)		The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
A	Levy of Penalty	Engineer Incharge		5,000		
B	Memo to BA & Levy of Penalty	Engineer Incharge		10,000		
C	Memo to BA & Levy of Penalty	Head of Group		25,000		
D	Memo to BA & Levy of Penalty	Head of Department		50,000		
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department		1,00,000		
Figure 6.3 (1b)-Penalty Matrix for Safety violation (Applicable for Major Contracts)						

Figure 6.3 (1b)-Penalty Matrix for Safety violation (Applicable for Major Contracts)

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Once the BA reaches the “BLACK” (color – “5”) category, i.e. highest level of safety violation, “Termination” notice to BA will be issued from the office of the Head of Department (equivalent to GM/ Sr. GM level) and further, *if required*, continuation / extension of contract will only be initiated by Functional Chief / Head of the department (equivalent to Sr. GM / Chief level) and approved by CEO & MD. Till the extension, the contract will remain suspended.

TPCODL encourages the reportage of the safety violation during the contract work by BA. Any TPCODL employee can register a safety violation against the BA in the “Safety Violation Form” *annexure 10*. Initially the observer has to fill the form and handover the counterfoil (lower portion) of the document to the supervisor of the BA, inform the site engineer of TPCODL and send the top portion of the Safety Violation Form to SAFETY group for the further necessary action against the BA. **The cumulative nos. of Safety Violations pertaining to any particular BA shall be calculated on yearly basis.**

Safety violations resulting in incident / accident will be treated as per gravity of the injury / fatality and its impact as well as type i.e. minor or Major. Consequences of incident / accident are shown in the matrix (figure 6.3(2) for major and 6.3(3) for minor) below. In case of any accident, findings and recommendations of Accident Enquiry Committee will be final and binding and will supersede the arbitration clause of GCC.

Consequence Of an Incident / Accident (In case of <u>MAJOR</u> contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	F (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less then 48 Hrs)	F	G	G	H	
3	Major injury (Bone injury or burn or Hospitalization more then 48 Hrs)	G	G	H	I	
4	Single fatality	J	K			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	K				
Legend	Action to be taken	Responsibility		Penalty (in Rs.)		The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
F	Memo to BA and levy of penalty	Engineer Incharge		5,000/-		
G	Memo to BA and levy of penalty	Head of Group		20,000/-		
H	Memo to BA and levy of penalty	Head of Group		50,000/-		
I	Memo to BA and levy of penalty	Head of Department		2,00,000/-		
J	Memo to BA and levy of penalty	Head of Department		5,00,000/-		
K	Memo to BA, levy of penalty, termination of contract and black listing of BA	Functional Head		10,00,000/-		
Figure 6.3 (2) - Penalty Matrix for Incident / Accident in Major Contracts						

Figure 6.3 (2) - Penalty Matrix for Incident / Accident in Major Contracts

(For example: In major contracts, if there is first incidence of major injury say bone injury (Cat. 3) where worker was hospitalized for more than 48 hrs then a penalty of amount Rs.20000/- will be deducted from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 50,000/- on subsequent incidents as per the above matrix)

Consequence Of an Incident / Accident (In case of <u>MINOR</u> contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	L (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less than 48 Hrs)	L	M	M	N	
3	Major injury (Bone injury or burn or Hospitalization more than 48 Hrs)	M	M	N	O	
4	Single fatality	P	Q			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	Q				

Legend	Action to be taken	Responsibility	Penalty (in Rs.)	The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.
L	Memo to BA and levy of penalty	Engineer Incharge	5,000/-	
M	Memo to BA and levy of penalty	Engineer Incharge	10,000/-	
N	Memo to BA and levy of penalty	Head of Group	25,000/-	
O	Memo to BA and levy of penalty	Head of Department	1,00,000/-	
P	Memo to BA and levy of penalty	Head of Department	3,00,000/-.	
Q	Memo to BA, levy of penalty, termination of contract and black listing of the BA	Functional Head	5,00,000/-	

Figure 6.3 (3) - Penalty Matrix for Incident / Accident in Minor Contracts

(For example: In minor contracts, if a worker meets with a non-fatal accident say bone injury (Cat. 3) where he was hospitalized for more than 48 hrs then a penalty of amount Rs. 10,000/-, will be charged from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 25,000/- on subsequent incidents as per the above matrix.)

In case of single or multiple fatalities described under legends J&K of 6.3(2) and P&Q of 6.3(3), the concerned BA may be debarred from extension of contract or participate in new contract. In such event the approval of Chief (O & S) will be necessary for extension or award of new contract to concerned BA.

6.3.2 COMPENSATION FOR BA PERSONNEL

In the event of any untoward incident/ accident, the Business Associate shall ensure prompt medical assistance such as treatment, sickness benefit, etc. is provided to the victim(s) as per the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable. Also, the BA will be required to take adequate measures for compensating the victim(s) or his/her/their kin as follows:

I. For Death or Permanent / Total Disablement

The BA shall take an insurance coverage of at least Rs. 15 lakhs for each engaged employee, to cover any incidence of Death or Permanent / Total Disablement (Permanent/Total Disability shall be considered as defined under Employees' Compensation Act, 1923). In the event of any such unfortunate incident, the BA would ensure that adequate compensation is paid immediately to the family of the victim(s) from his own resources. This compensation shall be covered under the insurance policy subscribed by the BA mentioned earlier and the arrangement should be such that it would get reimbursed to the BA by the insurance agency subsequently.

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II. For Permanent Partial Disablement and Temporary Total Disablement

The compensation in this case will be as per provisions of the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable.

Accordingly, the BA shall obtain a suitable Insurance Policy on award of Contract and submit documentary evidence of the policy to the BA Cell before commencement of work. The BA shall ensure that the Insurance policy is active at all times and all employees are covered in all respects till the conclusion of contract period or till working with TPCODL. The BA shall submit a copy of the policy after periodic renewals to the BA Cell.

However, on occurrence of such unfortunate incident, if it is found that the victim(s) is/are not covered under any insurance policy, the BA shall be liable to pay the entire sum of Rs. 10 lakhs from his own resources.

Further, in case of an accident resulting in Death or Permanent / Total Disablement while on duty, the appointed BA Nodal Officer will ensure that the BA complies with all statutory provisions and benefits i.e. PF, Compensation, Gratuity etc., and that all these are made available to the employees' nominee(s) as per the stipulated timelines.

6.3.3 TPCODL rewards the BA with good track record of safety management. It is proposed that BA complying with Contractors Safety Management, Safety Manual and Safety process will be rewarded suitably as per the procedure, rule and regulations of the TPCODL. In any case major accident is reported during an assessment period BA will not be eligible for this reward scheme. Assessment of contracts will be once in year. Generally the assessment cycle is calendar year and guidelines will be declared time to time.

Abbreviations Used in the Document

TPCODL	TP Central Odisha Distribution Limited
BA	Business Associate
HIRA	Hazard Identification & Risk Assessment
JSA	Job Safety Analysis
EHV	Extra High Voltage
SAFETY	Safety, Occupation Health, Environment & Disaster Management
MMG	Meter Management Group
EAG	Energy Audit Group
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures
CSI/SI	Circle Safety In-charge / Safety In-charge
ASO	Area Safety Officer
NSO	Nodal Safety Officer
SC	Safety Coordinator
HoG / HoD	Head of Group / Head of Department
AGM / GM / VP	Assistant General Manager / General Manager / Vice President

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CFO / Chief (O & S)/ CEO & MD	Chief Finance Officer / Chief (Operating & Safety) / Chief Executive Officer & Managing Director
COS	Corporate Operation Services
CAP	Centralized Account Payable System
PTW	Permit To Work
GCC	General Conditions of Contract.

- END -

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Annexure 1 (Refer Para 3.1)

Business Associate Safety Management System Questionnaire

Certification				
The information provided in this questionnaire is a summary of the company's occupational health and safety management system.				
Company Name:				
Turnover and experience:		Name of top officer:		
Date:		Position		
Contract Details				
Contract Name			Contract Number:	
Business Associates Safety Management System Questionnaire		Marks	Yes	No
Score achieved				
<i>Safety Policy and Management</i>				
- Is there a written company Safety policy?		1		
- If yes provide a copy of the policy, if No please refer Note 1.				
- Does the company have an Safety Management system		1		
- If yes provide details, if No please refer Note 1.				
- Is there a company Safety Management System manual or plan?		2		
- If yes provide a copy of the content page(s), if No please refer Note 1.				
- Are Safety and occupational health responsibilities clearly identified for all levels of Management and staff?		2		
- If yes provide details, if No please refer Note 1.				
<i>Safe Work Practices and Procedures</i>				
- Has the company prepared safe operating procedures or specific safety instructions relevant to its operations and relevant work as per contract?		1		
- If yes provide a summary listing of procedures or instructions, if No please refer Note 2.				

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Certification				
- Comments				
- Is there a register of injury or accident? - If yes provide a copy (format)	1			
- Is there a documented incident or accident investigation procedure? - If yes provide a copy of a standard incident report form, if No please refer Note 2. - Comments	1			
<i>Safety Training</i>				
- Describe how occupational health and safety training is conducted in your company If No please refer Note 1.	2			
- Is a record maintained of all training and induction programs undertaken for employees in your company? - If yes provide examples of safety training records, if No please refer Note 2.	1			
- Are regular safety inspections / audits are undertaken at worksites? -If yes provide details (formats), if No please refer Note 3.	1			
- Is there a procedure by which employees can report hazards at workplaces? - If yes provide details if No please refer Note 1.	1			
<i>Safety Monitoring</i>				
- Is there an officer / supervisor responsible for monitoring workplace / worksite safety?	1			

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Certification				
- If yes provide details				
<i>Safety Performance Monitoring</i>				
- Are employees regularly provided with information on company health and safety performance?	1			
- If yes provide details				
- Has the company ever been convicted of an occupational health and safety offence?	NO Marks (Negative mark ONE for each case)			
- If yes provide details				
- Has there been any major accident of employee at TPCODL site in past	NO Marks (Negative mark ONE for each case)			
- Has there been any fatal accident of employee at TPCODL site in past. - (Note: Bid evaluation committee has to take cognizance of the incident and shall evaluate the bid only after formal approval of competent authority i.e. CTO. - In case of yes please refer Note 4.	NO Mark (Negative mark FIVE for each case)			
Minimum of 75% marks is required for qualification.		Total Marks achieved		
<i>Company Reference</i>				
1. Name of company 2. Name of company				

Note

1: If company does not have formal procedure on Safety Management System than vendor may submit proposed Safety road map along with safety action plan and brief safety policy on his letter head signed by head of the organization.

2: The vendor may submit the same in the Safety Action Plan.

3: The vendor may utilize the same format of TPCODL or on request SAFETY group will assist the vendor in developing the audit system. For other points also vendor may take the assistance of SAFETY group for development of Safety management system.

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4: The vendor may submit the Safety Improvement Plan and Safety Action Plan for his employees based on following points.

- i. Action plan for enhancing safety awareness*
- ii. Action plan for safety training of employee*
- iii. Action plan for increasing safety audit in field*
- iv. Action plan for provision and utilization of safety PPE.*
- v. Action plan for fatality reduction.*
- vi. Action plan for enhanced supervision at site*
- vii. Action plan for making employee more responsible and accountable for safety.*
- viii. Action plan for availability and utilization of all required tool and equipment.*
- ix. Safety Improvement done in last two years, specially highlighting those which have been taken after the fatal accident along with results.*
- x. Safety initiatives planed or started recently.*
- xi. Any other point.*

Based on above points and documentary evidences vendor will be required to submit a detailed report in support of his bid. The bid evaluation committee and competent authority will scrutinize the facts and the evidence submitted. If found satisfactory competent authority i.e. CTO may accord his approval for bid opening otherwise his tender shall be disqualified.

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Annexure 2 (Refer Para 3.2 and 5.8)

Risk Assessment Form

Business Associate:
Scope of the work:
BA's Representative:
Telephone:
Signature:
Date:

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Working at Height	Fall from height	2	1. Mandatory usage of JSA checklist prior to start of work 2. Use appropriate ladder 3. Use full body safety harness having double lanyard. 4. Use Electrical Safety Shoes if working on electrical network otherwise use safety shoes. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Refer Work instruction related to Working at Height for other details 8. Use of metal scaffold to be ensured in height work (cup lock type) 9. Deploy competent workforce who are medically fit

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Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Working on electrical equipment / network	Electric flash / electrocution	3	1. Mandatory usage of JSA checklist prior to start of work 2. Use Electrical Safety Shoes while working on electrical network. 3. Use Electrical Safety gloves of appropriate voltage rating. 4. Use face shield / visor attached with helmet. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Mandatory usage of Insulated tools & tackles on electrical system 8. Mandatory compliance for Lock Out & Tag out system. Refer Work instruction related to Working on electrical equipment / network for other details
Excavation / Civil work	Collapse of soil, Fall in excavated pit leading to Injury	2	1. Use safety shoes. 2. Use Safety helmet. 3. Use PPE as per the annexure 7 of this CSM document 4. Hard Barricading of the worksite. 5. Refer Work instruction related to excavation / civil work for other details
Material lifting & Mechanical Erection work	Fall of material/object, Topple of crane,	2	1. Mandatory compliance of crane checklist 2. Visual condition check of lifting tools and tackles such as wire rope sling, belt sling, chain, pulley block, D-shackles, etc. shall be ensured. 3. The operator's physical fitness and alertness should be judged by sup. / EIC. 4. Use PPE as per the annexure 7 of this CSM document 5. Refer Work instruction related to Material lifting & Mechanical Erection work
Road Safety	Road Accidents	3	1. Mandatory compliance of TPCODL Road Safety policy W07(COR-P-12)

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Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
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Note: This information for the general indication purpose. The detailed risk assessment shall be conducted before start of the work by the authorized representative of the BA. The report of same shall be submitted to engineer in-charge along with annexure 4 of the CSM document.

Guidelines for filling the Risk Assessment Form

- *Specific Task/Activity* - The documentation of each major task associated with the contract.
- *Potential Hazards* - The identification of hazards associated with each activity or task to be carried out.
- *Class of Risk* - Each hazard should be evaluated as a level of risk, described as Risk Class 1, 2 or 3 defined above.
- *Control Measure* - The identification and documentation of actions required to eliminate or reduce the hazards that could lead to accident or injury.

Hazard / Risks shall be classified according to the following schedule:

- Class 1: Potential to cause injury treatable with first aid
- Class 2: Potential to cause death or permanent injury
- Class 3: Potential to cause more than one or more lost time injuries.

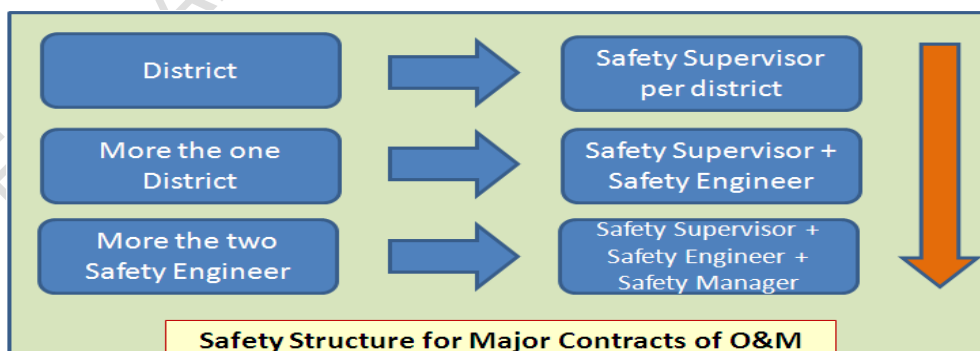
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Annexure 3.1 (Refer Para 4.0)

General Safety Conditions for the Maintenance of Distribution Network Contracts:

A BA awarded a contract (O&M) work of maintenance of distribution network will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in *annexure 7*.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in a district. In case the BA has been awarded work in more than one district, then the following safety structure will be adopted.



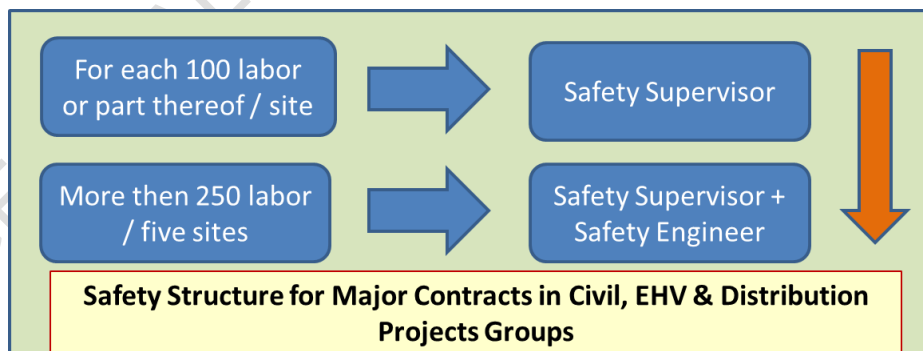
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Annexure 3.2 (Refer Para 4.0)

General Safety Conditions for the Distribution Projects Major Contracts:

A BA awarded a major contract work of TS&P in area of a circle will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1.
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.



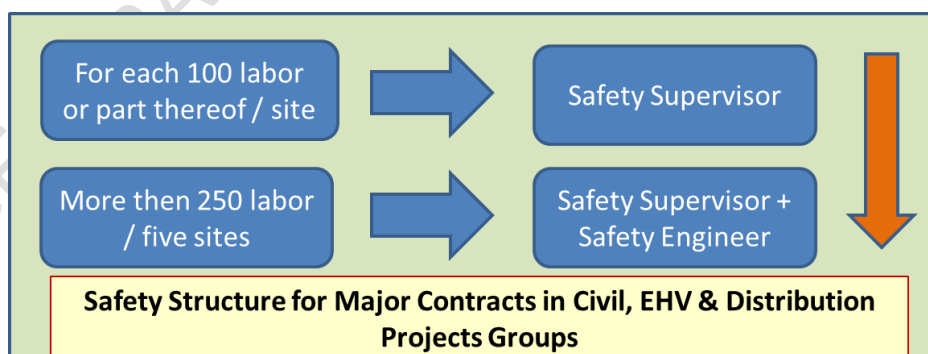
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Annexure 3.3 (Refer Para 4.0)

General Safety Conditions for the major EHV Projects Contracts:

A BA awarded a major contract work of EHV projects will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.



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Annexure 3.4 (Refer Para 4.0)

General Safety Conditions for the Maintenance of Sub – Transmission Network Contracts:

A BA awarded a major contract work of maintenance of sub – transmission network in area of a power system will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Coordinator for managing a complete safety management system in the area. In case the BA has been awarded work in more than one area power system, then the following safety structure will be adopted.



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Annexure 3.5 (Refer Para 4.0)

General Safety Conditions for the major contract work in Civil / Generation Projects:

A BA awarded a major contract work of / in civil or Generation project will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor (for workforce upto 100 at site) / a safety engineer (for workforce upto 250 at site) / safety manager (for more than two safety engineers) for managing a complete safety management system at the project site. In case the BA has been awarded more than one major contracts, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.



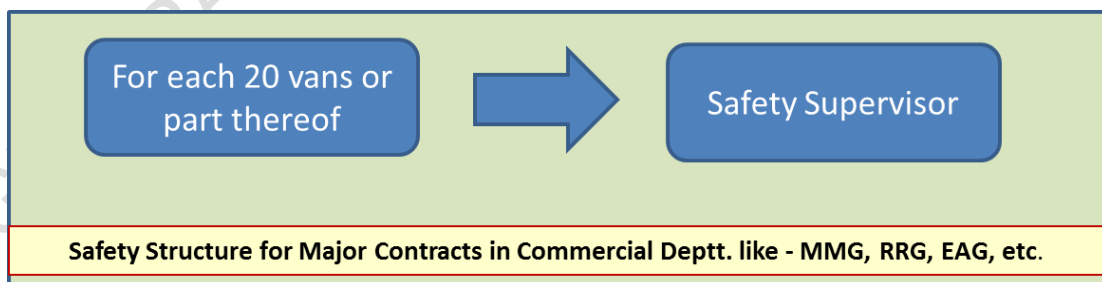
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Annexure 3.6 (Refer Para 4.0)

General Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc.:

A BA awarded a major contract work in meter management group & energy auditing group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work as per the following safety structure.
- The BA for the RRG work shall depute one Safety supervisor.



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Annexure 3.7 (Refer Para 4.0)

General Safety Conditions for the major contract work in O&M of street light group:

A BA awarded a major contract work in operation and maintenance of street light group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment PPE as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- Each BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work awarded as per the below structure.



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Annexure 4 (Refer Para 3.3)

Safety Undertaking by way of Affidavit

I _____ s/o _____ R/o _____ (AUTHORIZED REPRESENTATIVE/PARTNER/DIRECTOR/PROPRIETOR) of M/S _____ (name of company/firm)___ having its office at (Complete address of Company), authorized vide power of attorney dated -----/Board resolution dated----/letter of authority dated----, hereinafter referred to as **Contractor [or Business Associate (BA)]** which expression shall, unless it be repugnant to or inconsistent with the meaning or context thereof, be deemed to include its heirs, executors, administrators, and assigns do hereby affirm and undertake as under :

1. The present undertaking shall remain in force from the date of execution of contract awarded by TPCODL and shall be valid till the date of termination of the said contract by either parties. The undertaking is binding on me (contractor) as well as my sub-contractor and its employees, representatives etc.
2. That I(the contractor) will be responsible and liable to comply and abide by all the safety rules, instructions and regulations as may be specified and laid down by The TP Central Odisha Distribution Limited (TPCODL) so as enable TPCODL to achieve its goal of Zero On site incidences.
3. That the Contractor shall be fully responsible for ensuring occupational health and safety of its employees, representatives, agents as well as of its subcontractor's employees, at all times during the discharge of their respective obligations under the contract including any methods adopted for performance of their tasks / work.
4. That Contractor shall ensure ,at its own expense to arrange for and procure, implement all requisite accident prevention tools, first aid boxes, personal protective equipment, fire extinguisher, safety training, Material Safety Data Sheet, pre-employment medical test, etc. for operations & activities including as & when so specified by TPCODL specifically. , failing which TPCODL shall be entitled, but not obliged, to provide the same and recover the actual cost thereof from the Contractor's payments.
5. That the Contractor shall engage adequate and competent Safety – Supervisor / Engineer / Manager / Skilled persons at site as per the Para 5 (Qualification and experience of safety personnel) and Annexure 3 of Contract Safety Management.
6. That the Contractor shall engage the competent Site – Supervisor with each group of workers for safe and correct workmanship, proper co-ordination of material and site work as per contract.

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7. That the Contractor shall immediately replace supervisor in case it is found to be not up to the level of skill and experience required as in skill and experience required in *annexure 5* of this document, but any such replacement shall be only with the prior concurrence of TPCODL .
8. That the Contractor and its subcontractors shall abide by all the safety guidelines as per Safety Manual, Contract Safety Management and other guidelines issued from time to time by TPCODL during the contract period.
9. That in case the Contractor and/or any of its Subcontractor fail to ensure the compliance as required in terms of this undertaking the Contractor shall keep and hold TPCODL / its directors / officers / employees indemnified against any / all losses / damage / expense / liability / fines / compensation / claims / action / prosecutions or the like which might be suffered by TPCODL or to which TPCODL might get exposed to as a result of any breach /wilful negligence /deliberate default on the part of the Contractor /Subcontractor in complying with the same. Contractor shall also furnish any press release, clarification etc. if sought by TPCODL for any near miss or safety violations, accidents, which are attributable to fault of Contractor.

DEPONENT

VERIFICATION

Verified at Bhubaneswar on this __Day of _____20__ that the contents of the above affidavit are true and correct and nothing material has been concealed therefrom

DEPONENT

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Annexure 5 (Refer Para 5.4)

SKILL / QUALIFICATION REQUIRED FOR ELECTRICIAN AND ELECTRICAL SUPERVISOR

Skill / Qualifications Required for Electrician (*Certificate of Competency Class-II*):

1. Formal education in ITI – Wireman/ Electrician trade.

OR

2. Working experience of minimum three years of practical wiring.

OR

3. Have completed three years apprenticeship course through Apprenticeship Advisor, Govt. of Odisha / other state Govt. in the trade of Lineman / Wireman / Electrician.
4. A candidate must have attained the age of Eighteen years.

Skill / Qualifications Required for Electrical Supervisor (*Certificate of Competency Class-I*):

1. Have at least five years' experience of practical wiring after passing the certificate of competency class-II i.e. electrician.

OR

2. Recognized Degree or Diploma or equivalent qualification in Electrical Engineering from any Technical institute / College or University recognized by the Board.

AND

Must have completed the training/job in rectifying the common defects in electrical line and power installation for a period of one and three years after passing Degree or Diploma respectively

OR

3. Possessing the valid certificate of certificate of competency class – 1 (Electrical Supervisor)

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Annexure 6 (Refer Para 5.6)

Training Module for BAs Worker & Supervisor

Training for BA Supervisor

Duration – 02 Hrs / Month

Methodology: Lecture and Practical Demonstration of Safety Zone Creation

Session: 1

Topic: Electrical Safety Aspects

Sub Topics:

1. Learning specifics of HT & LT Network of zone
2. Major type of HT / LT / service lines / street light maintenance works
3. Understanding the need of Safety
4. Understanding the safe process of maintenance :
 - Planning of the maintenance job
 - Availability of men, material & machine, PPEs, Safety gear and approved PTW
 - Briefing of the job by the supervisor of the TPCODL
 - Identification of Risks associated with the maintenance work and planning for controlling measures by TPCODL supervisor
 - Creation of safety zone by TPCODL supervisor and satisfying that the network is dead – Use of Neon Tester, Shorting Chain and Safety Tagging
 - Start of the work – Right person for the right job
 - Alert supervision
 - Completion of the job – Check points
 - Energization of network
 - Actions to be taken in case of some accident

Session: 2

Topic: Use of Electrical Testing Equipment

Methodology: Lecture and Practical Demonstration

Sub Topics:

1. Meggar, Hi Pot, Clamp On Meter, Neon Tester, Discharge Rod, Line tester etc.

Session: 3

Topic: Awareness of Electrical Safety Aspects

- A. Understanding the need of this Training and Safety
- B. Learning specifics of HT & LT Network
- C. Major type of work to be carried out in zones
- D. Switching Operations (Do's & Don'ts) including Street Light Switching
- E. Working on Height (*practical demo also*)
- F. Understanding the Safe Process of Maintenance / Working:
 - Planning of the job
 - Availability of men, material & machine, PPEs, Safety gear and approved PTW
 - Briefing of the job by the supervisor
 - Permit to Work
 - Safety Tagging and Lock Out Tag out

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- Identification of Risks associated with the work to be carried out and planning for controlling measures by proper supervision
- Concept of “**Safety Zone**”
- Identification and use of Neon Tester, Shorting Chain, Clamp On Meter, Hi Pot, Meggar etc.
- Completion of the job – Check points
- Accident Theory & Incident Reporting
- Actions to be taken in case of some accident

Session: 4

Topic: Identification, Demonstration and Usages of Tools, PPEs and other Safety Gears and demonstration of working on HT pole

Session: 5

Topic: Practical demonstration of Safety Zone creation

FREQUENCY

Regular Safety Training Program

- It will be conducted for all field & supervisor staff of BA in such a manner that all BA Personnel attend at least two hours safety training during every month.

One Day Induction Safety Training Programs:

- This training will be for the new BA's personnel, who have been cleared by the Cross Functional Panel to undergo Safety training and who are likely to be deployed at various work sites of TPCODL by the BA, as a part of AMC / Work Contract.

Duration / Periodicity:

- Duration and periodicity has been defined above. However, this is subject to change at the discretion of TPCODL.

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Annexure 7 (Refer Para 5.7)

LIST OF PERSONAL PROTECTIVE EQUIPMENT AND TESTING FREQUENCY

Sl. No.	Name of PPE	IS / EN Standard	Testing Frequency	Remarks	Ref Brand & Model
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298 (Part-2)	Monthly and visual check every day for any crack or damage in the leather or sole.		BATA (Model No.- Endura L/C) Liberty (Model No. – 7198-01 HT Barton Black – Warrior)
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	Monthly and visual check every day for any crack in shell.		Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
03	Full body harness (Safety belt)	EN 361	Monthly and visual check every day of the bends and the harness.		Karam (PN Safetech) Joseph Leslie Accent Industries
04	Electrical Safety Gloves	EN: 60903 CE marked	Weekly and visual check for any crack and blow test before every work.	Manufactured not beyond 12 months.	Make Sparian / Sumitech / CATU supplied with inner cotton glove with over glove of split leather.
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	Monthly and visual check every day for any crack in shell.	Clear acrylic visor attached with safety helmet.	Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
06	Fire Proof jacket for chest protection		Monthly and visual check every day.		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	Weekly and visual check before every work.	Made of brass, Total length – 5.5 meters and made of 12 SWG.	

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1. Any other Personal Protection Equipment required beyond above list will be according to BIS or EN Standards.
2. All Personal Protection Equipment will be checked by the engineer in-charge or SAFETY group of TPCODL.
3. Safety Representative of the BA has to maintain the record of the availability, condition and checking of the PPEs.
4. All tools required as per the contract must be according to respective IS / EN standards.
5. TPCODL may revise or add the above list of PPE and their specifications as and when feel necessary. The information about new specifications /models will be circulated by the Engineer In-charge (EIC), which shall adhere by the business associated in the shortest possible time. The EIC shall issue a memo / instruction to BA with timeline for implementation. Any delay will be treated as non- compliance / safety violations. Refer picture of each PPE given in next page.

Pictures of PPE for reference purpose.

Sl. No.	Name of PPE	IS / EN Standard	Picture
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298(Part-2) and with test report of electrical resistance.	
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	
03	Full body harness (Safety belt) The straps at shoulder and thigh shall have full pad for comfort. The back shall be so designed that harness straps do not tangle with each other.	EN 361:2002 EN 358 : 2000 IS: 3521:1991/2002	

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04	Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual.	EN: 60903 CE marked	
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	
06	Fire Proof jacket for chest protection		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	
08	Reflective jacket to each workmen	As per TPCODL standard	

Note : Picture shown are for indicative purpose only. Actual product may differ.

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Annexure 8 (Refer Para 5.8) LIST OF AUDITS TO BE CONDUCTED

Audits	Responsibility	Freq.	Ref. Doc.
Permit to Work & Field Audit	BA Safety Representative	Weekly	F04 (COR P - 12)
Tool Bag & PPE's Audit		Weekly	F06 (COR P - 12)
First Aid Box Maintenance Record		Fortnightly	F08 (COR P - 12)
Fire Extinguisher Record (Applicable for the BA involved in major construction works and have storage of flammable material at worksite)		Monthly	F09 (COR P - 12)
Safety Talk Register		Weekly	F18 (COR P - 12)
Site Safety Audit		Daily	F29A (COR P - 12)

Note:

1. (BA Safety Representative has to use the formats as per Safety process COR – P – 12 of TPCODL)

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Annexure 9 (Refer Para 5.9)

PERFORMANCE REPORT – SAFETY

FOR THE MONTH OF.....

Name of BA :

Name of the Project and Purchase order No:

Date of commencement of work:

Man Hour Worked in this month (No. of employees X 8 Hrs + Overtime):

Cumulative Man Hour worked:

Total Number of Minor Injury (this month): Minor Injury (Total)

Major Injury (this month): Major Injury (Total):

Detail of the Incident / Sub Standard Acts and Condition

Activity	This Month	Cumulative (Total)	Day Lost (this month)	Days Lost (Cumulative)
No. of the Incident				
No. of lost time injuries				
No. of dangerous occurrences				
No. of near miss reported				
Substandard Act/Conditions observed			Attach details of observation of this month	
Safety Violation Notice received (from TPCODL) (both in numbers and in Rs.)	No.	No.	No. of violation letter received and compliance report for the TPCODL.	
	Rs.	Rs.		

Note: Cumulative means total from date of commencement of work according to the contract.

Detail of the Accident / Near Miss Incidents:

Date and Time	Type of the incident	Name of Employee	Brief Description	Corrective and Preventive actions recommended

Details of the Safety Violations:

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Date and Location	Brief Description	Name of employee involved	Action Taken

Detail of the Safety Talk / Tool Box Talk / Safety Training

Date and Location	Topic (s)	Total Number of employees (Worker / Supervisor)	Number of participants (Worker / Supervisor)

Detail of the Safety Meeting

Date and Location	Number of participants	Topics discussed	Major Observations / Innovation

Detail of the Safety Inspection /Audit: (as per TPCODL site audit checklist F29A(COR-P-12)

Date	Area / Location	Major Observations	Recommendations	Action Taken

Any other Safety, Occupational Health, Environment & Disaster Management Promotional Activity (During this month):

Date	Location	Activity	Level of Participation	Number of participation

Signature of the BA Safety Representative
HoG

Signature of ZM /

Name, E. No. and Date

Name, E. No. Date.

Note: The original form to be deposited with Engineer in-charge and a copy to SAFETY group on or before 5th of every month along with bill. List of training of the current month and status of PPE to be also mentioned individual wise.

BA may include additional lines if required. The TPCODL may revise the format as and when deemed required.

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ANNEXURE-M
VENDOR APPRAISAL FORM

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

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		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	:
9.0	MANUFACTURE		
	9.1	SHOP SPACE, LAYOUT LIGHTING, VENTILATION, ETC.	:
	9.2	POWER (KVA)	:
		MAINS INSTALLED	:
		UTILISED	:
		STANDBY POWER SOURCE	:
	9.3	MANUFACTURING FACILITIES (ATTACH LIST OF EQUIPMENT AS APPLICABLE)	:
		9.3.1 MATERIAL HANDLING	:
		9.3.2 MACHINING	:
		9.3.3 FABRICATION	:
		9.3.4 HEAT TREATMENT	:
		9.3.5 BALANCING FACILITY	:
		9.3.6 SURFACE TREATMENT PRIOR TO PAINTING/ COATING, POLISHING, PICKLING, PASSIVATION, PAINTING, ETC.	:
	9.4	SUPERVISORY STAFF	:
	9.5	ADEQUACY OF SKILLED LABOURS (MACHINISTS, WELDERS, ETC.)	:
	9.6	NO. OF SHIFTS	:
	9.7	TYPE OF MATERIAL HANDLED (SUCH AS CS, SS, ETC.)	:

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	9.8	WORKMANSHIP	:
	9.9	MATERIAL IN STOCK AND VALUE	:
	9.10	TRANSPORT FACILITIES	:
	9.11	CARE IN HANDLING	:
10.0	INSPECTION / QC / QA / TESTING		
	10.1	NUMBER OF PERSONNEL (INDICATE NO.OF YEARS OF EXPERIENCE)	:
	10.2	INDEPENDENCE FROM PRODUCTION	:
	10.3	AVAILABILITY OF PROCEDURAL WRITE UP/QUALITY PLAN	:
	10.4	INCOMING MATERIAL CONTROL AND DOCUMENTATION	:
	10.5	RELIABILITY/REPUTATION OF SUPPLY SOURCES	:
	10.6	STAGE INSPECTION AND DOCUMENTATION	:
	10.7	SUB-ASSEMBLY & DOCUMENTATION	:
	10.8	FINAL INSPECTION AND DOCUMENTATION	:
	10.9	PREPARATION OF FINAL DOCUMENTATION PACKAGE	:
	10.10	TYPE TEST FACILITIES	:
	10.11	ACCEPTANCE TEST FACILITIES	:
	10.12	CALIBRATION OF INSTRUMENTS AND GAUGES (WITH TRACEABILITY TO NATIONAL STANDARDS) (ATTACH LIST)	:
	10.13	STATUTORY APPROVALS LIKE BIS, IBR, ETC.(AS APPLICABLE)	:
	10.14	SUB-VENDOR APPROVAL SYSTEM AND QUALITY CONTROL	:
	10.15	DETAILS OF TESTS CARRIED OUT AT INDEPENDENT RECOGNISED LABORATORIES	:
		i) FURNISH LIST OF TESTS CARRIED OUT AND THE NAME OF THE LABORATORY WHERE THE TESTS WERE CONDUCTED	:
		ii) CHECK AVAILABILITY OF CERTIFICATES AND REVIEW THESE WHEREVER POSSIBLE	:
11.0	EXPERIENCE (INCLUDING CONSTRUCTION / ERECTION / COMMISSIONING) TO BE FURNISHED IN THE FORMAT INDICATED IN APPENDIX)		:
12.0	SALES, SERVICE AND SITE ORANISATIONAL DETAILS		:

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13.0	CERTIFICATE FROM CUSTOMERS (ATTACH COPIES OF DOCUMENTS)	:
14.0	POWER SITUATION	:
15.0	LABOUR SITUATION	:
16.0 *	APPLICABILITY OF SC/ST RELAXATION (Y/N) IF YES, SUPPORTING DOCUMENTS TO BE ATTACHED	
17.0	ORGANIZATIONAL DETAILS 1. PF NO 2. ESI NO 3. INSURANCE FOR WORK MAN COMPENSATION ACT NO 4. ELECTRICAL CONTRACT LIC NO 5. ITCC / PAN NO 6. SALES TAX NO 7. WC TAX REG. NO	:
18.0	DOCUMENTS TO BE ENCLOSED: 1. FACTORY LICENSE 2. ANNUAL REPORT FOR LAST THREE YEARS 3. TYPE TEST REPORT FOR THE ITEM 4. PAST EXPERIENCE REPORTS 5. ISO CERTIFICATE –QMS, EMS, OHAS, SA 6. REGISTRATION OF SALES TAX 7. COPY OF TIN NO. 8. COPY OF SERVICE TAX NO. 9. REGISTRATION OF CENTRAL EXCISE 10. COPY OF INCOME TAX CLEARANCE. 11. COPY OF PF REGISTRATION 12. COPY OF ESI REGISTRATION 13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO 14. COPY OF ELECTRICAL CONTRACT LIC NO 15. COPY OF PAN NO 16. COPY OF WC TAX REGISTRATION 17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0 18. GST Registration No	

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

- **Proprietorship/ Single Ownership Firm:** Proprietor of the firm should be from SC/ST community. Governing document shall be Proprietorship Deed.
- **Partnership Firm:** Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed.
- **Private Limited Company:** Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

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

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ANNEXURE-N

MANUFACTURER AUTHORIZATION FORM

(To be submitted on OEM's Letter Head)

Date:

Tender Enquiry No.:

To,

Chief (Procurement & Stores)

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