

**NOTICE INVITING TENDER (NIT)**

**SUPPLY, INSTALLATION, TESTING &  
COMMISSIONING**

**OF**

**11 KV PAD MOUNTED SUBSTATION (PMSS) OF VARIOUS  
TYPES**

**NIT NO: CMC/BY/24-25/RS/SkS/SV/58  
[RFx Number: 2200000103]**

**Due Date for Submission: 21.04.2025, 14:00 HRS**

**BSES YAMUNA POWER LIMITED (BYPL)  
CONTRACTS & MATERIALS DEPT.,  
SHAKTI KIRAN BUILDING, KARKARDOOMA,  
DELHI-110032  
CIN: U40109DL2001PLC111525  
WEBSITE: [www.bsesdelhi.com](http://www.bsesdelhi.com)**

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**BIDDERS**

**VOLUME – I: INFORMATION TO BIDDER (ITB)**

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## SECTION – I: REQUEST FOR QUOTATION

### 1.00 EVENT INFORMATION

- 1.01 BSES Yamuna Power Ltd (hereinafter referred to as “BYPL”) invites **Open Tender** in the E-Tender Bidding Process on a “Single Stage: Two Parts” from interested Bidders as detailed below:

Tender Description	Tender Fee (₹)	Estimated Cost (₹)	EMD Amount (₹)	Delivery at
Supply, Installation, Testing & Commissioning of 11 KV Pad Mounted Substation (PMSS) of Various Types	1,180	7.36 Crore	7.36 Lakh	Delhi Store(s)/ Site(s)

The bidder must qualify the requirements as specified in clause 2.0 stated below.

- 1.02 The tender document is available for downloading from our website [www.bsesdelhi.com](http://www.bsesdelhi.com) --> **BSES YAMUNA POWER LTD --> Tender --> Open Tenders** or through our E-Tendering portal link (<https://srmpportal.bsesdelhi.com:50001/irj/portal>).

- 1.03 **Tender Fee:** The bidder has to compulsorily submit the non-refundable tender fee of ₹ 1,180/- as demand draft or online transfer of the requisite amount through IMPS/NEFT/RTGS covering the cost of bid documents. Any such bid submitted without this Fee shall be rejected.

- 1.04 **Earnest Money Deposit (EMD)** of ₹ 7,36,000/- (Seven Lakh and Thirty Six Thousand only) valid for 120 days from the due date of bid submission in the form of BG/FD/online transfer of the requisite amount through IMPS/NEFT/RTGS. Any such bid submitted without EMD shall be rejected.

### 1.05 TIME SCHEDULE

The bidders should complete the following events within the dates specified as under:

S. No.	Events	Due date & Time
1	Date of availability of tender documents from BYPL Website & SRM	up to 21.04.2025, 15:00 Hours
2	Date & Time of Pre-Bid Meeting Pre-Bid Meeting will be done online, Register in advance for this meeting via, the Zoom Meeting link: <a href="https://zoom.us/join/zoom/register/2l7nt3NjSLaIS8yR32ZfaA">https://zoom.us/meeting/register/2l7nt3NjSLaIS8yR32ZfaA</a> After registering, you will receive a confirmation email containing information about joining the meeting.	09.04.2025, 15:00 Hours
3	Last Date of receipt of pre-bid queries, if any (Queries to be submitted via e-mail)	09.04.2025 up to 18:00 Hours
4	Last Date of replies to all the pre-bid queries as received	up to 11.04.2025, 17:00 Hours
5	Last date and time of receipt of Complete Bids (Tender Fees, EMD, Part A & Part B)	21.04.2025, 14:00 Hours
6	Date & Time of Opening of PART A – EMD and Technical Bid	21.04.2025, 15:00 Hours
7	Date & Time of opening of Price/RA of qualified bids	Will be notified to the qualified bidders through our website/e-mail

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

1.06 The Bid shall be submitted online in two (02) parts. Details of the parts are as follows:

**Part A – Techno-Commercial Bid**

**Part B – Price Bid**

Bids will be submitted online and received up to **21.04.2025, 14:00 Hr.** at the address given below.

Part A of the Bid shall be opened online on **21.04.2025, 15:00 Hr.**

Part B of the Bid will be opened in case of Techno-Commercially Qualified Bidders and the date of opening of same shall be intimated in due course. It is the sole responsibility of the bidder to ensure that the bid documents are submitted online and reach this office on or before the last date.

**Head of Department  
Contracts & Materials Deptt.  
BSES Yamuna Power Ltd  
Reception, Ground Floor  
Shaktikiran Building, Karkardooma  
Delhi 110032**

All envelopes shall be duly superscribed "**BID FOR SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF 11 KV PAD MOUNTED SUBSTATION (PMSS)**" "NIT NO: **CMC/BY/24-25/RS/SkS/SV/58 [RFx Number: 2200000103] DUE ON 21.04.2025, 15:00 Hr.**"

1.07 BSES Yamuna Power Ltd reserves the right to accept/reject any or all tenders without assigning any reason thereof in the event of the following:

- a) Tender is received after the due date and time.
- b) Tender fee of requisite value is not submitted.
- c) Earnest Money Deposit (EMD) of requisite value & validity is not submitted in the shape of a Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi or Online transfer of requisite amount through IMPS/NEFT/RTGS.
- d) Price Bid as per the Price Schedule is not submitted.
- e) Incomplete Bids.
- f) Necessary documents against compliance to Qualification Requirements mentioned in Section 1 Clause 2.0 of this Tender Document.
- g) Complete documents/details are not enclosed as per the Bid Index for Part-A (Technical Bid) at APPENDIX I ANNEXURE – 1.01.
- h) Filled in Schedule of Deviations as per Annexure is not submitted.

**2.00 QUALIFICATION CRITERIA**

The prospective bidder must qualify for all of the following requirements and shall be eligible to participate in the bidding who meets the following requirements and management has a right to disqualify those bidders who do not meet these requirements.

2.01 **Technical Criteria:**

S. No.	Criteria	Documents to be submitted by the bidder
1	The bidder must have its own established manufacturing or assembly facility in India for Package Substation/Pad Mounted	i. Manufacturing and factory incorporation certificate / Undertaking ii. The details of manufacturing units,

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	Substation with a rating of 630 kVA or higher, operational for a minimum of 7 years.	locations and works from where supply against this tender shall be proposed to be furnished by OEM.
2	The bidder must be the manufacturer of at least one of the two major components in Package Substations/Pad Mounted Substations, namely the 11KV RMU or the Distribution Transformer, and include that component in their bid.	i. Confirmation & Documentary proof on the offered equipment's
3	The Bidder should have supplied a minimum of 10 units of Package Substations with a rating of 11/0.415 kV, 630 kVA or higher within the last 7 years from the date of bid opening to any utility, SEB, PSU, or government organization. <b>OR</b> The Bidder should have supplied at least 3 units of Pad Mounted Substations with a rating of 11/0.415 kV, 630 kVA or higher within the last 7 years from the date of bid opening to any utility, SEB, PSU, or government organization.	i. Summary list of executed Purchase orders (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.09) ii. Purchase order copies iii. Material delivery clearance certificate copy or Invoice Copies or Delivery completion/ Performance certificate
4	The Bidder must provide two performance certificates confirming the satisfactory performance of Package Substations with a rating of 11/0.415 kV, 630 kVA or higher, supplied within the last 7 years from the bid opening date, issued by any utility, SEB, PSU, or government organizations. <b>OR</b> The Bidder must provide one performance certificate confirming the satisfactory performance of Pad Mounted Substations with a rating of 11/0.415 kV, 630 kVA or higher, supplied within the last 7 years from the bid opening date, issued by any utility, SEB, PSU, or government organizations.  If the Bidder has a prior association with BRPL/BYPL for similar products and services, the performance feedback from BRPL/BYPL will be the sole consideration, regardless of any performance certificates issued by other organizations.	Performance Certificates (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.10)
5	The bidder should have servicing, repairing, testing & refurbishment facility in INDIA with necessary spares and testing equipments for providing prompt after sales service for PTR..	Relevant Details/certificates/Undertaking (Details of the set-up available shall be brought out in the offer. the bidder shall also submit undertaking along with the bid confirming the infrastructure details submitted)
6	The bidder must have an installed plant capacity to supply a minimum of 5 units of	Installed Manufacturing Capacity

	Package Substations/Pad Mounted Substations per month.	
7	The Bidder must possess valid ISO 9001:2015 certification.	Valid copy of Certification

## 2.02 Commercial Criteria:

S. No.	Criteria	Documents to be submitted by the bidder
8	The Bidder must have an average annual sales turnover of ₹25 Crore or more in the last three (3) financial years (i.e., FY 2021-22, 2022-23, and 2023-24).	Balance Sheet / Copy of audited P&L Account / Duly certified CA certificate having UDIN to be submitted (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
9	The Bidder shall submit an undertaking stating that "No litigation" is pending with BYPL or its group/associate companies as of the bid opening date.	Self-Undertaking (as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
10	The bidder shall submit an undertaking (self-certification) confirming that they have not been blacklisted or debarred by any central or state government institution or electricity utilities as of the bid opening date.	Self-Undertaking (as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)
11	The Bidder must possess a valid PAN number and GST Registration Number, along with compliance to all other statutory requirements. The bidder shall provide copies of these registrations and submit an undertaking affirming that they will comply with all statutory regulations, laws, and rules prior to the commencement of supply/work.	Relevant Statutory Documents Copy/ Self Undertaking (as per the format enclosed in APPENDIX I - ANNEXURE – 1.15) (Details to be submitted as per the format enclosed in APPENDIX I - ANNEXURE – 1.14)

Notwithstanding anything stated above, BYPL reserves the right to assess the bidder's capability to perform the contract, assess the capability and installed capacity of the Bidder for carrying out the supplies, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

## 3.00 BIDDING AND AWARD PROCESS

Bidders are requested to submit their offer strictly in line with this tender document. Normally, the deviations to tender terms are not admissible and the bids with deviations 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 - Schedule of Deviations" and the same shall be submitted as a part of the Technical Bid.

### 3.01 BID SUBMISSION

#### BIDS ARE INVITED THROUGH THE E-PROCUREMENT PORTAL:

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BSES will carry out E-Procurement through its e-procurement portal (<https://srmpportal.bsedelhi.com:50001/irj/portal>).

Interested Non-registered bidders are requested to obtain the portal user name and password (if not available) for bid submission. For participating in e-Tenders of BYPL, please write a mail to

1. Mr Rakesh Sharma, E-mail: [Rakesh.Ku.Sharma@relianceada.com](mailto:Rakesh.Ku.Sharma@relianceada.com),
2. Mr Sumit Verma, E-mail: [sumit.ra.verma@@relianceada.com](mailto:sumit.ra.verma@@relianceada.com), with your details as per below:

- a) Existing Vendor Code with BYPL or its Group/Associates Companies (if available): .....
- b) Trade Name: .....
- c) Address of Principal Place of Business: .....
- d) Contact Person's Name: .....
- e) Contact Person's Designation: .....
- f) Contact Person's Mobile No.: .....
- g) Contact Person's email ID: .....
- h) Also, attach a valid copy of the Power of Attorney in favour of the above-mentioned Contact Person for being authorized to receive user ID and password on behalf of their organization.

The login ID details shall be sent through email to the email ID mentioned by you for the same.

Bids shall be submitted in 2 (Two) parts on the assigned folder of the e-procurement site. Please refer to the user manual available at <https://srmpportal.bsedelhi.com:50001/irj/portal> and enclosed with the tender.

**Bids have to be mandatorily submitted only through the e-procurement portal of BSES Delhi. Bids submitted through any other form/ route shall not be admissible.**

**However, documents that necessarily have to be submitted in originals like Tender Fee (in the form of DD) or EMD (in the form of BG/FD/DD as applicable) and any other documents mentioned in the tender documents have to be submitted at the BYPL office before the due date & time of submission.**

Please mention our NIT Number: - ..... on the Tender and drop the same in our Tender Box placed at **BSES Yamuna Power Ltd, Reception, Ground Floor, Shaktikiran Building, Karkardooma, Delhi 110032**

The bids and the outer envelope shall be addressed to the following:

**Head of Department  
Contracts & Materials Deptt.  
BSES Yamuna Power Ltd, Shaktikiran Building, Karkardooma, Delhi 110032**

Kindly Note:

- The bidder has to ensure that the tender is dropped in the correct box designated for tender submission only.
- BYPL shall not be responsible for any wrong placement of tender documents by the bidder.

This is a two-part bid process. Bidders are to submit the bids online in 2(Two) parts **PART-A TECHNO-COMMERCIAL BID** and **Part-B FINANCIAL BID** and shall be submitted before the due date & time specified.

**PART A:: TECHNO-COMMERCIAL BID** comprising of the following, do not contain any cost information whatsoever and shall be submitted within the due date:

S. No.	Descriptions	Type of Documents/Format
A.1	Bid Details	

1	<b>Bid Index for Part-A (Technical Bid)</b>	In the prescribed format enclosed at APPENDIX I ANNEXURE – 1.01
2	<b>Cover Letter, if any</b>	Standard Format
3	<b>Bid Form (Unpriced) Duly Signed</b>	Duly Signed Bid Form as per enclosed format at APPENDIX I ANNEXURE – 1.02
4	<b>Tender Fee</b>	Non-refundable demand draft or online transfer of the requisite amount through IMPS/NEFT/RTGS for Rs 1,180/-, Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.03
5	<b>EMD</b>	Online transfer of the requisite amount through IMPS/NEFT/RTGS or FD or BG in the prescribed stamp paper & format enclosed at APPENDIX I ANNEXURE – 1.05, EMD Details Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.04
6	<b>Power-of-Authorization/ Authorization Letter</b>	In the standard stamp paper/letter
<b>A.2 Technical Bid</b>		
7	<b>Communication Details of the Bidder</b>	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.06
8	<b>Manufacturer Authorization Form (as applicable)</b>	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.07
9	<b>Technical Qualifying Criteria Compliance Index &amp; Documents</b>	Documentary evidence in support of qualifying criteria mentioned in Section 1 Clause 2.00. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.08, ANNEXURE – 1.09 & ANNEXURE – 1.10
10	<b>Schedule of Deviations - Technical</b>	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.11
11	<b>Technical Details/ Filled in Guaranteed Technical particulars (GTP) as per specification</b>	Bidder shall submit duly filled GTP with all Technical documents
12	<b>Technical Drawings as per specification</b>	Bidder shall submit all Drawings as per the specification
13	<b>Type Test Reports</b>	Bidders shall submit a copy of type test reports in their technical bids in support of technical specifications. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.12
14	<b>Sample Submission Details (if applicable as per specification)</b>	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.13
15	<b>Product Catalogue (If applicable)</b>	Bidders shall submit a copy of the product catalogue in their technical bids in support of technical specifications
16	<b>Manufacturer's Quality Assurance Plan</b>	Bidders shall submit a copy of MQP in their technical bids in support of technical specifications
17	<b>Other drawings/ documents mentioned in technical specification</b>	Bidders shall submit a copy of documents in their technical bids in support of technical specifications
18	<b>Testing Facilities</b>	Bidder shall submit the details of testing facilities available at their works/factory.

<b>A.3</b>	<b>Commercial Bid</b>	
19	<b>Company Profile, Organization Chart &amp; Manpower Details.</b>	Bidder shall submit the details of Organization & Manpower with qualification and experience.
20	<b>Commercial Qualifying Criteria Compliance Index &amp; Documents</b>	Documentary evidence in support of qualifying criteria mentioned in Section 1 Clause 2.00. Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.14
21	<b>Undertakings</b>	Duly signed self-undertakings as per enclosed format at APPENDIX I ANNEXURE – 1.15
22	<b>Schedule of Deviations - Commercial</b>	Duly filled and signed as per enclosed format at APPENDIX I ANNEXURE – 1.16
23	<b>Acceptance Form For Participation in Reverse Auction Event</b>	Duly signed Acceptance Form For Participation In Reverse Auction Event as per enclosed format at APPENDIX I ANNEXURE – 1.17
24	<b>Commercial Terms and Conditions</b>	Acceptance of Commercial Terms and Conditions viz. Delivery Schedule/Period, Payment terms, PBG etc. Duly filled and signed as per enclosed format at APPENDIX II ANNEXURE – 2.05
25	<b>Un price Bid Duly Signed</b>	Item wise marked as "Quoted" & Duly Signed Un price Bid as per enclosed format at VOLUME – II - PRICE BID FORMAT
26	<b>Signed Tender document</b>	Original Tender documents duly stamped & signed on each page as a token of acceptance

**PART B:: FINANCIAL BID** comprising of

- Price strictly in the Format enclosed at VOLUME – II - PRICE BID FORMAT indicating Break up of basic price, taxes & duties, etc.
- The Bidder has to submit the item-wise price bifurcation in the bid. An unpriced copy must be attached with the Part A (Techno-Commercial Bid).

This will be opened internally after techno-commercial evaluation and only of the qualified bidders.

**REVERSE AUCTION CLAUSE::** Purchaser reserves the right to use the reverse auction as an optional tool through SAP-SRM as an integral part of the entire tendering process. All techno-commercially qualified bidders shall participate in the reverse auction. Reverse Auction will be carried out on individual item-wise rates or Package-wise.

Notwithstanding anything stated above, the Purchaser reserves the right to assess the bidder's capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final. Bidder is to submit their acceptance as per the format APPENDIX I ANNEXURE – 1.17.

**BIDS RECEIVED AFTER THE DUE DATE AND TIME MAY BE LIABLE FOR REJECTION**

**4.00 AWARD DECISION**

- 4.01 Purchaser intends to award the business on the lowest bid basis, so suppliers are encouraged to submit the bid competitively. The decision to place a Rate Contract/Purchase Order/LOI solely depends on the purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Purchaser may deem relevant.

- 4.02 In the event of your bid being selected by the purchaser (and/or its affiliates) and you subsequent DEFAULT on your bid; you will be required to pay the purchaser (and/or its affiliates) an amount equal to the difference in your bid and the next lowest bid on the quantity declared in NIT/RFQ.
- 4.03 In case any supplier is found unsatisfactory during the delivery process, the award may be cancelled and BYPL reserves the right to award other suppliers who are found fit.
- 4.04 Rate shall remain FIRM till the validity of the Contract.
- 4.05 Quantity Variation: The purchaser reserves the right to vary the quantity by ( $\pm$ ) 30% of the tender quantity during the execution of the contract.
- 4.06 Quantity Splitting: The purchaser reserves the right to distribute the procurable quantity on one or more than one of the eligible tenders. If the quantity is to be split, quantity distribution shall be in the manner detailed below:
- a) If the quantity is split among 2 bidders, it will be done at 70:30 on the L1 price.
  - b) If the quantity is split among 3 bidders, it will be done at 50:30:20 on the L1 price.
- Note: If quantity needs to be distributed and order splitting is required, quantity distribution shall be maximum among three (3) bidders.

## **5.00 MARKET INTEGRITY**

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules before participating. In addition to other remedies available, we reserve 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 Terms & Conditions. Bidders who violate the marketplace rules or engage in behaviour that disrupts the fair execution of the marketplace restrict a bidder to the length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honour prices submitted to the marketplace.
- Breach of the terms of the published in Request for Quotation/NIT.

## **6.00 SUPPLIER CONFIDENTIALITY**

All information contained in this RFQ is confidential and shall not be disclosed, published or advertised in any manner without written authorization from BYPL. This includes all bidding information submitted.

All RFQ documents remain the property of BYPL and all suppliers are required to return these documents to BYPL upon request.

Suppliers who do not honour these confidentiality provisions will be excluded from participating in future bidding events.

## **7.00 CONTACT INFORMATION**

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by e-mail/post/courier to the following addresses. The same shall not be communicated through phone

<b>Address</b>	<b>Name/ Designation</b>	<b>E-mail Address</b>
<b>Technical</b>		
CES Dept. 3 <sup>rd</sup> Floor, B-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032	Jeena Borana DGM (CES)	jeena.borana@relianceada.com
	Srinivas Gopu GM (CES)	srinivas.gopu@relianceada.com
	Gaurav Sharma Addl. VP (HOD-CES)	gaurav.a.sharma@relianceada.com
<b>Commercial</b>		
C&M Dept. 3 <sup>rd</sup> Floor, A-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032	Sumit Verma GM (C&M)	sumit.ra.verma@relianceada.com
	Santosh Singh Addl. VP (Head- Procurement)	santosh.kum.singh@relianceada.com
	Robin Sebastian VP (HOD-C&M)	robin.sebastian@relianceada.com

BSES

## **SECTION – II: INSTRUCTION TO BIDDERS**

### **A. GENERAL**

1.00 BSES Yamuna Power Ltd, hereinafter referred to as “The Purchaser” is desirous of implementing the various Systems Improvement/Repair & Maintenance works at their respective licensed area in Delhi The Purchaser has now floated this tender for procurement of material notified earlier in this bid document.

### **2.00 SCOPE OF WORK**

The scope shall include Design, Manufacture, testing at works conforming to the Technical Specifications/IS along with Packing, Forwarding, Transportation and Unloading and proper stacking at Purchaser’s stores/site, erection & installation, commissioning, handing over to “on turnkey basis”.

### **3.0 DISCLAIMER**

3.01 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their interest.

3.02 Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise arising in any way from the selection process for the Supply.

3.03 Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy itself that the Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.

3.04 This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient’s professional advisors).

### **4 COST OF BIDDING**

The Bidder shall bear all costs associated with the preparation and submission of its Bid and the Purchaser will in no case be responsible or liable for those costs.

### **B. BIDDING DOCUMENTS**

5.01 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents.

5.02 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and Specifications. Failure to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect may result in the rejection of the Bid.

## 6.0 **AMENDMENT OF BIDDING DOCUMENTS**

- 6.01 At any time before the deadline for submission of Bids, the Purchaser may for any reason, whether at its initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.
- 6.02 The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified on the website [www.bsesdelhi.com](http://www.bsesdelhi.com) and the same will be binding on them.
- 6.03 To afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids. The same shall be published as a corrigendum on the website [www.bsesdelhi.com](http://www.bsesdelhi.com)
- 6.04 Purchaser shall reserve the rights to the following:
- Extend the due date of submission,
  - Modify the tender document in part/whole,
  - Cancel the entire tender
- 6.05 **Bidders are requested to visit the website regularly for any modification/clarification/corrigendum/addendum of the bid documents.**

## C. **PREPARATION OF BIDS**

### 7.0 **LANGUAGE OF BID**

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, 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.

### 8.0 **DOCUMENTS COMPRISING THE BID**

The Bid prepared and submitted by the Bidder shall comprise the following components:

- All the Bids must be accompanied by the required Tender Fees and EMD as mentioned in the tender.
- PART A – Techno-Commercial Bid and
- PART B - Financial Bid

### 9.0 **BID FORM**

9.01 The Bidder shall submit Bid Form with the Bidding Documents.

### 9.02 **EMD**

Pursuant to Clause 8.0(a) above, the bidder shall furnish, as part of its bid, an EMD amounting to as specified in Section I. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which will warrant forfeiture.

The EMD shall be denominated in any of the following forms:

- Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi or

- (b) Fixed Deposit (lien marked in favour of BSES Yamuna Power Limited) payable at Delhi.
- (c) Online transfer of requisite amount through IMPS/NEFT/RTGS to BYPL account mentioned herein in Appendix II - **BYPL BANK DETAILS WITH IFSC CODE.**

EMD shall be valid for One Hundred Twenty (120) days after the due date of submission drawn in favour of BSES Yamuna Power Ltd.

The EMD may be forfeited in the 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.

#### 10.0 **BID PRICES**

- 10.01 Bidders shall quote for the entire Scope of Supply/Work with a break-up of prices for individual items. The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, and Transportation to the site, all in accordance with the requirement of the Bidding Documents. The Bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total Price.
- 10.02 The prices offered shall be inclusive of all costs as well as Duties, Taxes or Levies paid or payable during the execution of the supply work, a breakup of price constituents, should be there.
- 10.03 Prices quoted by the Bidder shall be "**Firm**" and not subject to any price adjustment during the performance of the Contract. **A Bid submitted with an adjustable price/ Price Variation Clause will be treated as non-responsive and rejected.**

#### 11.0 **BID CURRENCIES**

- 11.01 Prices shall be quoted in Indian Rupees Only.

#### 12.0 **PERIOD OF VALIDITY OF BIDS**

- 12.01 Bids shall remain valid for 120 days from the due date of submission of the Bid.
- 12.02 Notwithstanding Clause 12.01 above, the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing and sent by post/courier.

#### 13.0 **ALTERNATIVE BIDS**

- 13.01 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.

#### 14.0 **FORMAT AND SIGNING OF BID**

14.01 The original Bid Form and accompanying documents, must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0.

14.02 The original Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Attorney accompanying the Bid. 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 the 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 words 'President', 'Managing Director', 'Secretary', 'Agent' or other designations without disclosing his principal will be rejected.

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

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

#### **D. SUBMISSION OF BIDS**

##### 15.0 **SEALING AND MARKING OF BIDS**

15.01 Bid submission: Bids have to be mandatorily submitted only through the e-procurement portal of BSES Delhi. Bids submitted through any other form/ route shall not be admissible.

15.02 However, documents that necessarily have to be submitted in originals like EMD or Tender Fee (in the form of BG/ DD /FD as applicable) and any other documents mentioned in the tender documents have to be submitted at the BYPL office before the due date & time of submission. The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with — "Technical Bid & EMD". All the envelopes should bear the Name and Address of the Bidder and mark for the Original. The envelopes should be superscribed with — "Tender No. & Due date of opening".

15.03 The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to the Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc. shall be entertained by the Purchaser.

##### 16.0 **DEADLINE FOR SUBMISSION OF BIDS**

16.01 The Bid must be received by the Purchaser on or before the due date & time of submission.

16.02 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause 6.0, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

##### 17.0 **ONE BID PER BIDDER**

17.01 Each Bidder shall submit only one Bid by itself. No Joint venture is acceptable. A Bidder who submits

or participates in more than one Bid will cause all those Bids to be rejected.

**18.0 LATE BIDS**

18.01 No Bid will be received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0.

**19.0 MODIFICATIONS AND WITHDRAWAL OF BIDS**

19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's due date & time of submission subject to any corrigendum/addendum/modifications in the tender documents uploaded to the website.

**E. EVALUATION OF BID**

**20.0 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 Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

**21.0 CLARIFICATION OF BIDS**

To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its Bid. 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.

**22.0 PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS**

22.01 Purchaser 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. Purchaser may ask for submission of original documents to verify the documents submitted in support of qualification criteria.

22.02 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.

22.03 Prior to the detailed evaluation, Purchaser 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.

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

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**23.0 EVALUATION AND COMPARISON OF BIDS**

23.01 The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

23.02 The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids will be subjected to a responsiveness check. The Technical & qualifying Proposals and the Conditional ties of the Bidders will be evaluated.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation.

23.03 The Purchaser's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

- (a) Delivery Schedule
- (b) Conformance to Qualifying Criteria
- (c) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents.

The cost of all quantifiable deviations and omissions from the specification, terms and conditions specified in the Bidding Documents shall be evaluated. **The Purchaser will make its own assessment of the cost of any deviation to ensure a fair comparison of Bids.**

23.04 Any price adjustments that result from the above procedures shall be added for comparative evaluation only to arrive at an "Evaluated Bid Price". Bid Prices quoted by Bidders shall remain unaltered.

**F. AWARD OF CONTRACT**

**24.0 CONTACTING THE PURCHASER**

24.01 If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

24.02 Any effort by a Bidder to influence the Purchaser and/or in the Purchaser's decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder's Bid.

**25.0 THE PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

Submission of bids shall not automatically construe qualification for evaluation. The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to the award of the Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser's action.

**26.0 AWARD OF CONTRACT**

The Purchaser will award the Contract to the successful Bidder whose Bid has been Determined to be the lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Purchaser reserves the right to award the order to other bidders in the tender, provided it is required for the timely execution of the project &

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provided he agrees to come to the lowest rate. Purchaser reserves the right to distribute the entire tender quantity at its own discretion without citing any reasons thereof.

**27.0 THE PURCHASER'S RIGHT TO VARY QUANTITIES**

The Purchaser reserves the right to vary the quantity i.e. increase or decrease the numbers/quantities without any change in terms and conditions during the execution of the Order.

**28.0 LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance within 7 days of the issue of the letter of intent /Notification of Award by Purchaser.

**29.0 PERFORMANCE BANK GUARANTEE (PBG)**

To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/PO. Bidder shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for a period of 24 months from the date of Commissioning or 30 months from the date of last receipts at site/stores, whichever is earlier plus 3 months claim period.

**30.0 CORRUPT OR FRAUDULENT PRACTICES**

30.01 The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

(a) Defines, for this provision, the terms set forth below as follows:

- (i) "Corrupt practice" means behaviour on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or contract execution; and
- (ii) "Fraudulent practice" means a misrepresentation of facts to influence a procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (before or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition.

- (b) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (c) Will declare a firm ineligible, either indefinitely or for a stated period, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing a contract.

30.02 Furthermore, Bidders shall be aware of the provision stated in the Terms and Conditions of the Contract.

**31.0 STATUTORY GUIDELINES & REGULATIONS**

The bidder shall make himself fully aware & familiarize himself with all applicable laws/guidelines/regulations.

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## 32.0 SAFETY

Safety related requirements as mentioned in our safety Manual put on the Company's website which can be accessed at <http://www.bsesdelhi.com>. All bidders shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

## 33.0 PRIORITY OF CONTRACT DOCUMENTS

The several documents forming the Agreement are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies, the same shall be explained and adjusted by the company, who shall, accordingly, issue suitable instructions thereon to the Contractor. In such event, unless otherwise provided in the agreement or explained by way of instructions by the company, as mentioned above, the priority of the documents forming the Agreement shall be as follows:

- i. Contract Agreement/Purchase Order(s).
  - a) Special Conditions of Contract
  - b) General Conditions of Contract
- ii. Letter of Acceptance/Intent
- iii. Agreed Minutes of the Tender Negotiation Meetings
- iv. Agreed Minutes of the Tender Technical Meetings
- v. Priced Bill of Quantities
- vi. Technical Specifications/Scope of work
- vii. Tender document, including all Appendices and/or Addenda, Corrigendum, with precedence given to the most recent version.

In the event of any conflict between the above-mentioned documents, the more stringent requirement or conditions which shall be favourable to the company shall govern and the decision of the company/BYPL shall be final and binding upon the parties.

**APPENDIX I**

ANNEXURE – 1.01

**BID INDEX FOR PART-A (TECHNICAL BID)**

*(To be filled & submitted on Bidder Letter Head, Bidders document submission should have following main categories as outlined below and should have page numbers printed at the bottom of each page with this page as page number 1. The page number should be in "Page X of Y" format. Separator with document description shall be provided before each document)*

**NIT & RFX No.:**

**Bidder's Name:**

**Bidder's Bid Reference No. & Date:**

S. No.	Particulars	Bid Pdf Page No.	
		From	To
<b>A.1 Bid Details</b>			
1.	Bid Index for Part-A (Technical Bid) as per APPENDIX I ANNEXURE - 1.01	1	
2.	Cover Letter, If any		
3.	Bid Form (Unpriced) Duly Signed as per APPENDIX I ANNEXURE - 1.02		
4.	Tender Fee Details as per APPENDIX I ANNEXURE - 1.03		
5.	EMD Details as per APPENDIX I ANNEXURE - 1.04 & 1.05		
6.	Power-of-Attorney / Authorization Letter		
<b>A.2 Technical Bid</b>			
7.	Communication Details of the Bidder as per APPENDIX I ANNEXURE - 1.06		
8.	Manufacturer Authorization Form (as applicable) as per APPENDIX I ANNEXURE - 1.07		
9.	Technical Qualifying Criteria Compliance Index & Documents as per APPENDIX I ANNEXURE - 1.08, 1.09, 1.10		
10.	Schedule of Technical Deviations (along with soft editable Excel copy) as per APPENDIX I ANNEXURE - 1.11		
11.	Guaranteed Technical particulars (GTP) as per specification		
12.	All Drawings as per specification		
13.	Type Test Reports (Sequence of Tests shall be strictly in accordance with relevant IS/IEC) as per APPENDIX I ANNEXURE - 1.12		
14.	Sample Submission Details (If applicable as per Specification) as per APPENDIX I ANNEXURE - 1.13		
15.	Product Catalogue (If applicable)		
16.	Manufacturer's quality assurance plan (as applicable)		
17.	Other drawings/ documents mentioned in technical specification		
18.	Testing Facilities		
<b>A.3 Commercial Bid</b>			
19.	Company Profile/Organogram/Organization Chart & Manpower Details		
20.	Commercial Qualifying Criteria Compliance Index & Documents as per APPENDIX I ANNEXURE - 1.14		
21.	Undertakings as per APPENDIX I ANNEXURE - 1.15		
22.	Schedule of Commercial Deviations (along with soft editable Excel copy) as per APPENDIX I ANNEXURE - 1.16		
21.	Acceptance form for participation in reverse auction event as per APPENDIX I ANNEXURE - 1.17		
24.	Acceptance of Commercial Terms and Conditions as per APPENDIX II ANNEXURE - 2.05		
25.	Un Price Bid Duly Signed (Volume - II Price Bid Format)		
26.	NIT Document complete Signed & Stamped		

**BID FORM**

To

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Ltd  
Shaktikiran Building, Karkardooma,  
Delhi 110032

Sir,

1. We understand that BYPL is desirous of procuring.....  
for it's licensed distribution network area in Delhi.
2. Having examined the Bidding Documents for the above-named works, we the undersigned, offer to deliver the goods in full conformity with the Terms and Conditions and technical specifications for the sum indicated in the Price Bid or such other sums as may be determined in accordance with the terms and conditions of the contract. The amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.
3. If our Bid is accepted, we undertake to deliver the entire goods as per the delivery schedule mentioned in Section IV from the date of award of the purchase order/letter of intent.
4. If our Bid is accepted, we will furnish a performance bank guarantee for due performance of the Contract in accordance with the Terms and Conditions.
5. We agree to abide by this Bid for 120 days from the due date of bid submission and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. We declare that we have studied the provision of Indian Laws for the supply/services of equipments/materials and the prices have been quoted accordingly.
7. Unless and until Letter of Intent is issued, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
8. We understand that you are not bound to accept the lowest or any bid you may receive.
9. There is provision for Resolution of Disputes under this Contract, by the Laws and Jurisdiction of Contract.

Dated this..... day of..... 20XX

Signature..... In the capacity of .....

.....duly authorized to sign for and on behalf of

(IN BLOCK CAPITALS).....

**TENDER FEE DETAILS**

- a. Amount (Rs.) : **1,180/- (One Thousand One Hundred Eighty Only)**
- b. Mode of Payment : DD or online transfer through IMPS/NEFT/RTGS (select any one)
- c. DD /UTR No. (As applicable) : .....
- d. Dated : .....
- e. Bidders Bank Account No. : .....
- f. Name of the Bank : .....
- g. Address of the Bank : .....
- h. IFSC Code of the Bank : .....

**EMD DETAILS**

- a. EMD Amount (Rs.) : .....
- b. Mode of Payment : BG/FD/online transfer through IMPS/NEFT/RTGS (select any one)
- c. BG/FD/UTR No. (As applicable): .....
- d. Dated : .....
- e. BG valid up to : .....
- f. BG Claim period up to : .....
- g. Bidders Bank Account No. : .....
- h. Name of the Bank : .....
- i. Address of the Bank : .....
- j. IFSC Code of the Bank : .....

**(FORMAT FOR EMD BANK GUARANTEE)**

*(To be issued in a Non-Judicial Stamp Paper of Rs.50/-purchased in the name of the bank)*

Whereas [*name of the Bidder*] (hereinafter called the "Bidder") has submitted its bid dated [*date of submission of bid*] for the supply of [*name and/or description of the goods*] (hereafter called the "Bid").

KNOW ALL PEOPLE by these presents that WE [*name of bank*] at [*Branch Name and address*], having our registered office at [*address of the registered office of the bank*] (hereinafter called the "Bank"), are bound unto BSES Yamuna Power Ltd., with its Corporate Office at Shaktikiran Building, Karkardooma, Delhi - 110032, (hereinafter called - the "Purchaser") in the sum of Rs..... (Rupees..... only) for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its 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:

- 1 If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:
  - (a) fails or refuses to execute the Contract Form, if required; or
  - (b) fails or refuses to furnish performance security, In accordance with the Instructions to Bidders/Terms and Conditions;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including One Hundred Twenty (120) days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness

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**COMMUNICATION DETAILS OF THE BIDDER**

<b>S. No.</b>	<b>Designation</b>	<b>Name</b>	<b>Mobile No.</b>	<b>E-mail id</b>
1	CEO / MD			
2	Sales / Marketing Head			
3	Sales Representative / Key Account Manager (KAM)			
4	Technical Head			
5	Manufacturer Plant / Operations Head			
6	Post Order Execution In Charge			
7	Authorized contact person (Primary responsibility for the Bid)			
8	Authorized contact person (Secondary responsibility for the Bid)			

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

Date: .....  
Tender No.: .....

To

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Ltd  
Shaktikiran Building, Karkardooma,  
Delhi 110032

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 by the Conditions of the Contract or as mentioned elsewhere in the Tender Document, concerning 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 the same as defined in the contract issued to our channel partner against this tender.

Yours Sincerely,  
For .....

Authorized Signatory

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<b>QUALIFYING CRITERIA COMPLIANCE INDEX - TECHNICAL CRITERIA</b>				
<b>S No</b>	<b>Qualifying Criteria Description as per section 1 clause 2.00</b>	<b>Documentary Proof Description</b>	<b>Documentary Proof Enclosed on Bid Page No.</b>	
			<b>From</b>	<b>To</b>
1				
2				
3				
4				
5				

<b>LIST OF PURCHASE ORDERS EXECUTED &amp; DELIVERY DETAILS IN SUPPORT OF QUALIFYING REQUIREMENTS</b>													
S No	Item Details				PO & Execution Details					Customer Name	End User (shall be Utility/ SEB's/ PSU's) name and details	PO copy, MDCC /Delivery completion certificates/ Invoice Copies enclosed on Bid Page no.	
	Item	Model	Voltage Rating (kV)	Current Rating (A)	PO No	PO Date	PO Qty	Executed Qty	Execution Year			From	To
<b>Total</b>								Σ	Σ				

**Note – Only items relevant as per qualifying requirements should be included in the list.**

LIST OF PERFORMANCE CERTIFICATES IN SUPPORT OF QUALIFYING REQUIREMENT														
S No	Item Details				PO No	Supplied/ Commissioning		Performance Certificate Issue Date	Performance Certificate Issued By End User (Utility/SEB/Govt Org.)	Contact Details of Issuing Person			Enclosed on Bid Page No.	
	Item	Model	Voltage Rating (kV)	Current Rating (A)		Qty.	Date			Name	Email	Mobile	From	To
<b>Total</b>					$\Sigma$									

**Note –**

- 1. Only items relevant as per qualifying requirement should be included in the list.**
- 2. Only Performance certificates issued by End User (utilities/ SEB's/PSU's only) will be accepted as per qualifying requirement.**

**SCHEDULE OF DEVIATIONS - TECHNICAL**

Vendor shall refrain from taking any deviations on this TENDER. Still, in case of any deviations, all such deviations from this tender shall be set out by the Bidder, 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 BYPL's specifications:

**Technical Deviations:-**

S. No.	NIT Pdf Page No.	NIT Clause No.	NIT Clause Descriptions	Details of Clarification/deviation with justifications

**Note – Please enclose detailed GTP and drawings as per specification after the technical deviation sheet**

**Seal of the Bidder:**

**Signature:**

**Name:**

TYPE TEST REPORTS (SEQUENCE OF TESTS SHALL BE STRICTLY IN ACCORDANCE WITH RELEVANT IS/IEC)								
S No	Test Description	Reference Standard	Reference Standard Clause No.	Name of Testing Lab	Test Report Reference Number	Date of Issue of Report	Report Enclosed on Bid Page No	
							From	To
1								
2								
3								
4								
5								
6								
7								

BSE

<b>SAMPLE SUBMISSION DETAILS (IF APPLICABLE AS PER SPECIFICATION)</b>		
<b>S No</b>	<b>Description</b>	<b>Bidder's Response</b>
1	Samples submitted with the bid	Yes/No
1	Sample Type -1	
1.1	Model Number	
1.2	Number of samples	
2	Sample Type -2	
2.1	Model Number	
2.2	Number of samples	

BIDDERS

<b>QUALIFYING CRITERIA COMPLIANCE INDEX - COMMERCIAL CRITERIA</b>				
<b>S No</b>	<b>Qualifying Criteria Description as per section 1 clause 2.00</b>	<b>Documentary Proof Description</b>	<b>Documentary Proof Enclosed on Bid Page No.</b>	
			<b>From</b>	<b>To</b>
1				
2				
3				

BSEES

**UNDERTAKINGS**  
**(To be submitted on Bidders Letter Head)**

Date: .....

Tender No.: .....

To

Head of Department  
Contracts & Material Deptt.  
BSES Yamuna Power Ltd  
Shaktikiran Building, Karkardooma,  
Delhi 110032

Sir,

We M/s *[name of bidder]*, ..... do hereby undertake that

- *[name of bidder]* has "No Litigation" pending with the BYPL or its Group/Associates Companies as on the date of bid opening.
- *[name of bidder]* has not been blacklisted/debarred by any central/state government institution/Electricity utilities as on the date of bid opening.
- *[name of bidder]* shall comply with all the statutory compliances as per the laws/rules etc. before the start of the supply/work.

Yours Sincerely,

For .....

Authorized Signatory

**SCHEDULE OF DEVIATIONS - COMMERCIAL**

Vendor shall refrain from taking any deviations on this TENDER. Still, in case of any deviations, all such deviations from this tender shall be set out by the Bidder, 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 BYPL's specifications:

**Commercial Deviations:-**

S. No.	NIT Pdf Page No.	NIT Clause No.	NIT Clause Descriptions	Details of Clarification/deviation with justifications

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

**Seal of the Bidder:****Signature:****Name:**

**ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT**

(To be signed and stamped by the bidder)

BSES Yamuna Power Ltd (hereinafter referred to as **"BYPL"**) intends to use the reverse auction through the SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial 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. BYPL shall provide the user ID and password to the authorized representative of the bidder. (Authorization letter in lieu of the same be submitted along with the signed and stamped acceptance form)
2. BYPL will make every effort to make the bid process transparent. However, the award decision by BYPL would be final and binding on the bidder.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BYPL, bid process, bid technology, bid documentation, bid details, etc.
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 glitches, internet response issues, software or hardware hangs; power failure or any other reason shall not be the responsibility of BYPL.
6. In case of intranet medium, BYPL shall provide the infrastructure to bidders, further, BYPL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders from submitting the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid 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 to 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 outright rejected by BYPL.
8. The bidder shall be prepared with competitive price quotes on the day of the reverse auction 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 Landed Cost basis at the BYPL 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 BYPL.
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 the conclusion of the auction event to arrive at the contract amount.

Signature & seal of the Bidder

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## VENDOR CODE OF CONDUCT

Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives.

Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

### I. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

- . Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.

- . Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.

- . Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.

- . Prevention of Under Age Labor - Child labour is strictly prohibited. Vendors shall not employ children. The minimum /age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.

- . Juvenile Labor - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their health, safety, or morals, consistent with ILO Minimum Age Convention No. 138.

- . Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any Disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.

- . Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed maximum set by local law. Further, a work week should not be more than 60 hours per week, including overtime,

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except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.

- . Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions seek representation and or join worker's councils in accordance with local laws should be acknowledged.

## **II. Health and Safety**

Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education are essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

- . Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.

- . Emergency Preparedness - Emergency situations and events are to be identified and assessed, and their impact minimized by implementing emergency plans and response procedures, including emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.

- . Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) is to be controlled through proper design engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tagout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.

- . Machine Safeguarding - Production and other machinery are to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

- . Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

- . Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet, facilities potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided by the Participant or a labour agent, hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.

- . Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks, including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

## **III. Environmental**

Vendors should recognize that environmental responsibility is integral to producing world class products. In manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

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The environmental standards are:

- . Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.
- . Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement storage, recycling or reuse and disposal.
- . Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.
- . Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.
- . Wastewater and Solid Waste - Wastewater and solid waste generated from operations industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.
- . Environmental Permits and Reporting - All required environmental permits (e.g. discharge monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

#### **IV. Ethics**

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.

- . Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as a Vendor and in legal action.
- . Disclosure of Information - Vendors must disclose information regarding their business activities, structure financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.
- . No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.
- . Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in advertising, sales, and competition.
- . Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.
- . Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.
- . Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

#### **V. Management System**

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

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The management system should contain the following elements:

- . Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.
- . Management Accountability and Responsibility - Clearly identified company representative[s] responsible for ensuring implementation and periodic review of the status of the management systems.
- . Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.
- . Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.
- . Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, and targets an implementation plans including a periodic assessment of Vendor's performance against those objectives.
- . Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.
- . Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.
- . Worker Feedback and Participation - Ongoing processes to assess employees' understanding of and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.
- . Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.
- . Corrective Action Process - Process for timely correction of deficiencies identified by internal or external assessments, inspections, investigations and reviews.
- . Documentation and Records - Creation of documents and records to ensure regulatory compliance and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modelled on and contains language from Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information

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**GENERAL CONDITIONS OF CONTRACT  
(GCC-SUPPLY)**

GENERAL CONDITIONS OF CONTRACT(GCC)  
NIT NO: CMC/BY/24-25/RS/SkS/SV/58  
[RFx Number: 2200000103]

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Bidders seal & Signature

## **GENERAL CONDITIONS OF CONTRACT (GCC)-SUPPLY**

The General Condition of Contract shall form a part of specifications, contract document.

### **1.0 General Instructions**

- 1.01** All the Bids shall be prepared and submitted in accordance with these instructions.
- 1.02** Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case be responsible or liable for these costs.
- 1.03** The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred/sold to the other party.
- 1.04** The Purchaser reserves the right to request any additional information and also reserves the right to reject the proposal of any Bidder if, in the opinion of the Purchaser, the data in support of RFQ requirement is incomplete.
- 1.05** The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

### **2.0 Definition of Terms**

- 2.01** "Purchaser" shall mean BSES Yamuna Power Limited, on whose behalf this bid enquiry is issued by its authorized representative/officers.
- 2.02** "Bidder" shall mean the firm who quotes against this bid enquiry issued by the Purchaser. "Supplier" or "Supplier" shall mean the successful Bidder and/or Bidders whose bid has been accepted by the Purchaser and on whom the "Letter of Acceptance" is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.
- 2.03** "Supply" shall mean the Scope of Contract as described.
- 2.04** "Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Conditions, Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.
- 2.05** "Letter of Acceptance" shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The "Letter of Acceptance" issued by the Purchaser shall be binding on the "Supplier" The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.
- 2.06** "Month" shall mean the calendar month and "Day" shall mean the calendar day.
- 2.07** "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

- 2.08** "Offer Sheet" shall mean Bidder's firm offer submitted to BYPL in accordance with the specification.
- 2.09** "Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.
- 2.10** "Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".
- 2.11** "Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of the extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.
- 2.12** "Acceptance" shall mean and deemed to include one or more of the following as will be stipulated in the specification:
- a) The written acceptance of material by the inspector at suppliers works to ship the materials.
  - b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
  - c) Where the scope of the contract includes supply, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

**3.0 Contract Documents & Priority**

**3.01** Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet.

**4.0 Scope of Supply -General**

**4.01** The "Scope of Supply" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.

**4.02** Bidder shall have to quote for the Bill of quantities as listed in Section – IV of this RFQ.

**4.03** Quantity variation and additional requirements if any shall be communicated to successful bidder during project execution.

**4.04** All relevant drawings, data and instruction manuals.

**5.0 Quality Assurance and Inspection**

**5.01** Immediately on award of contract, the bidder shall prepare detailed quality assurance plan/test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance of standards/values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in-house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection, etc.

**5.02** Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier is to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BYPL.

**5.03** The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all the requirements

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of the procurement documents and also all the codes & reference documents mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

**5.04** On completion of manufacturing the items can only be dispatched after receipt of dispatch Instructions issued by the Purchaser.

**5.05** All in-house testing and inspection shall be done without any extra cost. The in-house inspection shall be carried out in presence of BSES/BSES authorized third-party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices.

**5.06** Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement/specification, the charges along with any other penalty that may be levied are to be borne by the bidder.

## **6.0 Inspection & Test Charges**

6.01 GOODS shall be inspected by BUYER and/or third-party inspection agency nominated by BUYER. Inspection shall carry out stage-wise/final inspection as per agreed QA /QC procedure. In addition, inspection of GOODS shall be carried out at our Site/stores. SELLER shall, however, repair/replace the damaged/rejected GOODS to the satisfaction of BUYER at no extra cost.

6.02 Inspection charges are included in total order value, however, BUYER will bear third-party inspection charges. In case of a futile/abortive visit of BUYER's inspector at SELLER'S works, the cost towards the same shall be debited from the SELLER's invoices.

6.03 GOODS covered by this PURCHASE ORDER shall not be dispatched in whole or in part until SELLER has received a written Release for Shipment Notice from BUYER or their designated representative.

6.04 Inspection call shall be raised a minimum of 7 (seven) days in advance from the delivery schedule mentioned in the PO and duly filled Format issued by BYPL.

## **7.0 Handling and Storage**

7.01 Material Safety Data Sheet (MSDS), detail handling & storage instruction sheet/manual, wherever applicable, to be furnished before the commencement of supply and one copy is to be submitted in store/site with First Lot.

## **8.0 Packing, Packing List & Marking**

8.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in crates/boxes/drums/containers/cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BYPL, Delhi/New Delhi stores/site without undue risk of damage in transit. All the packaging materials as prescribed shall be supplied preferably with bio-degradable packing- materials.

8.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width & weight) of each container/box/drum/carton, Item SAP Code, PO No & date. One copy of the packing list shall be enclosed in each package delivered.

## 9.0 Prices/Rates/Taxes

### 9.01 Price basis for supply of materials

- a) Bidder to quote their prices on Landed Cost Basis and separate price for each item for supply to BYPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of GST, Freight, and any other local charges. **Octroi is presently not applicable in Delhi and however if applicable shall be reimbursed at actuals.**
- b) The above supply prices shall also include unloading at BYPL Delhi/New Delhi stores/sites.
- c) Transit insurance will be arranged by Bidder.

## 10.0 Taxes & Duties

- 10.01 Prices for Goods are on Ex- Works basis. For the Goods covered under the GST laws, all taxes that are applicable under CGST, SGST, UGST, IGST and GST Compensation Cess shall be payable extra.
- 10.02 For the Goods not covered in the GST laws, the applicable ED, VAT / CST shall be payable extra at applicable rates.
- 10.03 GSTIN of BSES YAMUNA POWER LTD - 07AABCC8569N1Z0  
CST No of BSES YAMUNA POWER LTD -07740254593  
TIN NO of BSES YAMUNA POWER LTD - 07740254593  
PAN NO of BSES YAMUNA POWER LTD - AABCC8569N
- 10.04 At the end of each month, the SELLER must submit their detail of invoices and amount thereof to the concerned officer in charge, within 07 days after the close of the respective month to which supply relates. Non-submission of the said request would be treated as good as the SELLER has no requirement for reconciliation.

## 11.0 Invoicing Instructions

- 11.01 Invoices in triplicate [1) Original for recipient, 2) Duplicate for Transporter, 3) Triplicate for supplier] shall be made out and delivered to the following address: BSES YAMUNA POWER LIMITED, SHAKTI KIRAN BUILDING, KARKARDOOMA, DELHI-110032.  
MDCC will be released separately for Capex & Opex. Invoice will be submitted by the supplier as per the MDCC.
- 11.02 Vendor shall obtain GST registration in the State from where the supply will be carried out. Vendors supplying Goods to the Purchaser shall have a valid GST registration number and shall submit GST Tax Invoice and other documents as per SGST Act, CGST Act, IGST Act, UTGST Act, GST Compensation Cess Act and Rules made there under. Failure to submit GST Tax Invoice shall be liable for withholding SGST, CGST, IGST, UTGST, GST Compensation Cess amount charged by the vendor while releasing the payment.
- 11.03 Invoice will be in the name of BSES YAMUNA POWER LIMITED & address of the store/site mentioned in the MDCC. Invoice should contain all information as required under GST Invoice, Debit Note and Credit Rules. The government has notified rules of invoicing under GST along with a template of invoice(GST INV-01) covering the elements such as supplier's details, GSTIN No, HSN Codes, item details, GST tax rates, etc that need to be presented by the supplier.
- 11.04 Vendor to carefully examine and charge relevant CGST / SGST, UGST, IGST and GST compensation cess as applicable to the transactions.

11.05 Timely provision of invoices / Debit Notes / Credit Notes:

11.05.1 Vendor to timely provide invoice / Debit note / Credit note to enable Purchaser to claim tax benefit on or before stipulated time period. All necessary adjustment entries (Credit Notes, Purchase Returns, Debit Notes) shall be made within the timelines prescribed under the GST Laws.

11.05.2 In case of receipt of advance, the Vendor undertakes to raise the tax invoice. Purchaser, upon payment of advance, shall issue payment voucher as per applicable GST laws and rules. Four copies of the invoices need to be provided by suppliers and wherever the law requires, an Electronic Reference Number for each invoice.  
Documents and devices to be carried by a person in charge of a conveyance under.

11.05.3 Any Vendors / Contractors / Service providers 'shall' mention the following minimum requirements in 'invoice' while furnishing Invoices with us:

1. Invoice / Credit Note Number and Date.
2. Address of supplier/service provider and GSTN.
3. Customer Name and Address as per GST Registration Certificate and GST registration Number.
4. 'Shipped to' and 'Billed to' addresses.
5. Place of Supply.
6. Description of Goods/Service along with unit of measurements.
7. HSN / SAC Code.
8. Taxable value (Gross & deduct Discount separately if allowed)
9. Rate and amount of Tax separately for CGST, SGST and IGST as applicable.
10. Signature of Supplier. (For e-invoices physical signature is not required)
11. Whether Reverse Charge is applicable or not.

11.06 E Way Bills/transit documents for movement of Goods:

Wherever applicable, the Vendor shall be responsible for issuing required transit documents / E Way Bills for the movement of Goods and the logistic partner/transporter shall not be liable for any loss arising due to confiscation of goods by government agencies on account of lack of proper documents or any misdeclaration. The Supplier is responsible for complying with rules applicable to the E-way bill. Any violation in provision of E-way Bill will attract penalties and seizure of Transit Material. Any Penalty and Pre-Deposit due to violation of rules/provisions shall be paid and borne by the Supplier. Also, the Supplier is responsible for releasing goods from the Authority whether CGST/SGST. Delay in supply from the contractual date due to the seizure of goods shall also attract liquidated damages.

**12.0 Terms of Payment and Billing**

12.01 For Supply of equipment/item:

**Part 1)** 90% of basic value with 100% taxes and duties shall be made within 45 days from the date of receipt & acceptance of material at site on against submission of following documents against dispatch of each consignment at our Vendor Support Cell (VSC):

- a) Signed copy of accepted Purchase Order (for first payment)
- b) LR / RR / BL as applicable
- c) Challan as applicable
- d) Two (02) copies of Supplier's detailed Recipient Invoice showing Commodity description, quantity, unit price, total price and basis of delivery, and being 100% of the value of the consignment claimed.
- e) Two (02) copies of Supplier's transporter invoice duly receipted by BYPL Store & Original certificate issued by BYPL confirming receipt of the subject material at Store/Site and acceptance of the same as per the provisions of the contract.
- f) Two (02) copies Packing List / Detailed Packing List

- g) Approved Test certificates / Quality certificates, if applicable
- h) Certificate of Origin, if applicable
- i) Material Dispatch Clearance Certificate (MDCC)
- j) Insurance Policy / Certificate, if applicable
- k) Warranty / Guarantee Certificate, if applicable
- l) Check list for bill submission.

**Part 2)** Balance 10% of basic value shall be paid in 45 days from the date of successful testing, commissioning and handing over of individual Package Substation duly certified by BYPL Engineer-in-Charge.

In case of receipt of material at site/store and not erected or commissioned within 6 months from the date of receipt of material at site/store, Balance 10% of basic value shall also be released.

- 12.02 Purchaser has the right to recover tax loss, interest and penalty suffered due to any non-compliance of tax laws by the Vendor. In the event, Purchaser is not able to avail of any tax credit due to any shortcoming on the part of the Vendor (which otherwise should have been available to Purchaser in the normal course), then the Vendor at his own cost and effort will get the short coming rectified. If for any reason the same is not possible, then the Vendor will make 'good' the loss suffered by Purchaser due to the tax credit it lost. In such event, any amount paid to the Vendors shall be first attributable to the tax (GST) charged in the invoice and the balance shall be considered towards the 'value' of supply of goods/ services.
- 12.03 Purchaser shall deduct "Tax Deducted at Source" wherever applicable and at the rate prescribed under the GST Laws or any other Indian law and remit the same to the Government. Necessary TDS certificates as per law shall be issued by the purchase to the vendor.
- 12.04 Any liability arising out of dispute on the tax rate, classification under HSN, calculation and payment of tax to the Government will be to the Vendor's account.
- 12.05 Where the supply of Goods is liable to GST under reverse charge mechanism, then the supplier should clearly mention the category under which it has been registered and also that "the liability of payment of GST is on the Recipient of Supply".

### **13.0 Tax Indemnity Clause**

- 13.01 Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement) agrees that it will be solely responsible for performing all compliances and making payments of all taxes (direct tax or indirect tax including but not limited to income-tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability arising either out of laws/ regulations applicable in India and overseas or because of a demand/ recovery initiated by any revenue authority under laws/ regulations applicable in India or overseas.
- 13.02 In case any tax liability (including but not limited to income tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess, custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability becomes payable by Purchaser due to failure of the Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement, to comply with the relevant laws/ regulations applicable in India or overseas, Vendor undertakes to indemnify Purchaser for an amount equal to amount payable by Purchaser.

- 13.03 Further, Vendor undertakes to keep Purchaser indemnified at all times against and from all other actions, proceedings, claims, loss, damage, costs and expenses which may be brought against Purchaser or suffered or incurred by Purchaser and which shall have arisen either directly or indirectly out of or in connection with failure of The Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement, to comply with relevant obligations/ compliance under any law/ regulations applicable in India and overseas.
- 13.04 The parties agree to follow the following process in case any communication of demand, arising out of non-compliance by Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for this agreement), is received by Purchaser:
- 13.04.1 On Purchaser receiving any communication from a competent authority demanding tax liability (including but not limited to income tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability, Purchaser shall, within 5 common working days from the date of receipt of such communication (save where the period to respond to the relevant authority is less than five days, in which case, as soon as reasonably possible) inform Vendor in writing of such communication.
- 13.04.2 Pursuant to receiving communication from Purchaser, Vendor shall suggest to accept the communication and pay the demand amount to the competent authority. In such an event, Vendor shall reimburse such amount paid to Purchaser within 5 working days from the date of payment by Purchaser to the competent authority.
- 13.04.3 If Vendor advises in writing and Purchaser agrees to dispute the demand, then Purchaser shall dispute the matter with competent authority as per due process prescribed under the regulations and Purchaser shall not pay the Tax Demand. In such scenario, cost of litigation including but not limited to Counsel cost, filing fees, other related charges, should be reimbursed by Vendor to Purchaser. Additionally, If any coercive steps of recovery are initiated by the department, then Purchaser would pay such amount (including by way of adjustment of refunds due to it) and the same would be reimbursed by Vendor within 5 working days from date of such recovery from Purchaser. Purchaser will take all necessary steps to avoid such recovery measures.
- 13.04.4 On determination of the demand through an Order issued by a Tribunal or any other similar Authority, by whatever name called, under any law applicable in India or overseas, if the demand or any part thereof becomes payable and is paid by Purchaser, then Vendor undertakes to reimburse such amount to Purchaser within 10 days from the date of payment. Alternatively, if on determination of the demand through an Order, no amount is payable by Purchaser then any refund arising to Purchaser due to such an Order shall be passed on to Vendor within 10 days from the date of receipt of refund.

#### **14.0 The Micro, Small and Medium Enterprises (MSME)**

- 14.01 If the SELLERS establishment is covered under the purview of The Micro, Small and Medium Enterprises Development Act, 2006 and its amendments, he shall declare so within the bid of its status failing which it will be presumed that it is a non-MSME unit. Also, submit a copy of Udyog Aadhaar (UA) & Udyam Registration Number.

#### **15.0 Price Validity**

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15.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BYPL Delhi for 120 days from the due date of submission. For awarded suppliers, the prices shall remain valid till contract completion.

#### **16.0 Performance Guarantee**

16.01 To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/PO. Bidder shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for a period of 30 months from the date of last receipts at site/stores plus 3 months claim period.

16.02 Bank guarantee shall be drawn in favour of BSES Yamuna Power Ltd as applicable. The performance Bank guarantee shall be in the format specified by BYPL.

#### **17.0 Forfeiture**

17.01 Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BYPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition outlined in the Contract.

17.02 Each Performance BG established under will be automatically and unconditionally forfeited without recourse if BYPL in its sole discretion determines that supplier has failed to comply with any term or condition outlined in the contract.

#### **18.0 Release**

18.01 All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 16.0) except for the case outlined in Clause 22.0.

#### **19.0 Defects Liability Period/Guarantee/Warranty**

19.01 The bidder is to Guarantee the materials/items supplied against any defect or failure, which arises due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period for each unit shall be 60 months from the date of commissioning or 66 months from the date of delivery at store(s)/site(s), whichever is earlier.

19.02 If during the Defects Liability Period, any GOODS are found to be defective, they shall be promptly replaced or rectified by BIDDER at its own cost (including the cost of dismantling and (reinstallation) on the instructions of BUYER and if removed from SITE for such purpose, shall be removed and re-delivered to SITE by BIDDER at its own cost.

#### **20.0 Return, Replacement or Substitution**

20.01 BYPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BYPL may at its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BYPL or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case, BYPL shall furnish proof to Supplier of the cost of such substitute purchase. In either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BYPL may set off such

costs against any amounts payable by BYPL to the Supplier. Supplier shall reimburse BYPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid. BUYER at its sole discretion shall have the opinion to dispose of the material or GOODS so rejected and not taken back within forty-five days from the date of intimation of rejection.

### **21.0 Effective Date of Commencement of Contract**

21.01 The date of the issuance of the Letter of Acceptance/Purchase Order shall be treated as the effective date of the commencement of Contract.

### **22.0 Time – The Essence Of Contract**

22.01 The time and the date of completion of the "Supply" as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply.

### **23.0 The Laws and Jurisdiction of Contract**

23.01 The laws applicable to this Contract shall be the Laws in force in India.

23.02 All disputes arising in connection with the present Contract shall be settled amicably by mutual consultation failing which shall be finally settled as per the rules of Arbitration and Conciliation Act, 1996 at the discretion of Purchaser. The venue of arbitration shall be Delhi, India

### **24.0 Events of Default**

24.01 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

- (a) Supplier fails or refuses to pay any amounts due under the Contract;
- (b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof
- (c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;
- (d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BYPL.

### **25.0 Consequences of Default**

- (a) If an Event of Default shall occur and be continuing, BYPL may forthwith terminate the Contract by written notice.
- (b) In the event of an Event of Default, BYPL may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

- (i) present for payment to the relevant bank the Performance Bond;
- (ii) purchase the same or similar Commodities from any third party; and/or
- (iii) recover any losses and/or additional expenses BYPL may incur as a result of Supplier's default.

**26.0 Penalty for Delay**

- 26.01 If supply of items/equipments is delayed beyond the supply schedule as stipulated in the purchase order then the Supplier shall be liable to pay to the Purchaser as penalty for delay, a sum of 1% (one percent) of the basic (ex-works) price for every week delay of undelivered units or part thereof for individual milestone deliveries.
- 26.02 The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the basic (ex-works) price of total undelivered units.
- 26.03 The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier.
- 26.4 If the Penalty is levied as per the Order terms & conditions; BYPL will raise the Invoice for the penalty amount along with applicable GST rates. Accordingly, after setting off the penalty Invoice amount, net payment shall be made.

**27.0 Variation in Taxes, Duties & Levies**

- 27.1 The total order value shall be adjusted on account of any variations in Statutory Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period only. In case of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.
- 27.2 No other Taxes, Duties or levies other than those specified above will be payable by BUYER except in case of new Levies, Taxes or duties imposed by the Competent Authorities by way of fresh notification(s) after the issue of PURCHASE ORDER but within the stipulated delivery period.
- 27.3 Notwithstanding what has been stated above, changes in Taxes, Duties & Levies shall apply only to that portion of PURCHASE ORDER not executed on the date of notification by the Competent Authority. Further, changes in Taxes, Duties & Levies after the due date of Delivery shall not affect PURCHASE ORDER Terms and Value.
- 27.4 PURCHASE ORDER value shall not be subject to any variation on account of variation in Exchange rate(s).

**28.0 Taxes & Duties on raw materials & bought out components**

- 28.01 Taxes & Duties on raw materials & bought-out components are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.
- 28.02 Taxes & Duties on raw materials & bought-out components procured indigenously are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

## 29.0 Force Majeure

### 29.01 General

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

- (i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.
- (ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.
- (iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.
- (iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken to comply with the above clause.

29.02 Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements :

- (i) The following events and circumstances :
  - a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.
  - b) Explosions or fires
- (ii) War declared by the Government of India.
- (iii) Dangers of navigation, perils of the sea.

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

29.03 Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

- i) Immediately notify the other party in writing of the force majeure events within 7(seven) working days of the occurrence of the force majeure event
- ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event.
- iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable
- iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.
- v) Provide prompt notice of the resumption of full performance or obligation to the other party.

29.04 Mitigation of Events of Force Majeure Each Party shall:

- (i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;
- (ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and
- (iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

- 29.05 Burden of Proof In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the Parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.
- 29.06 Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30 days and neither Party shall be liable to the other for any consequences arising on account of such termination. The Purchaser may terminate the contract after giving 7 (seven) days' notice if any of the following occurs:
- i. Bidder fails to complete the execution of works within the approved schedule of works, terms and conditions.
  - ii. In case the Bidder commits any Act of Insolvency, or is adjudged insolvent
  - iii. Has abandoned the contract
  - iv. Has failed to commence work or has suspended the progress of works
  - v. Has failed to proceed with the works with due diligence and failed to make such due progress
- 29.07 Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because the cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.
- 29.08 Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.
- 29.09 Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed between the Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as the failure to perform such obligations shall be due to an event of Force Majeure."
- 29.10 Severability  
If any provision of this Agreement is or becomes invalid or unenforceable by the courts of any jurisdiction to which it is subject, such invalidity or unenforceability shall not prejudice the remaining provisions of this Agreement, which shall continue in full force and effect.

### **30.0 Transfer and Sub-Letting**

- 30.01 The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

### **31.0 Recoveries**

- 31.01 Whenever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

### **32.0 Waiver**

- 32.01 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

**33.0 Indemnification**

33.01 Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

**34.00 Termination for convenience of Purchaser**

34.1 Purchaser at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Supplier. Purchaser shall pay the Supplier for all the supplies/ services rendered till the actual date of contract termination against submission of invoice by the Supplier to that effect.

34.2 Payment of such compensation is the sole and exclusive remedy of the supplier for termination of this Agreement by Purchaser hereunder and the supplier shall not be entitled to, and hereby waives, claims for lost profits and all other damages and expenses.

34.3 Supplier hereby agrees that substantiation for settlement of any claims submitted by supplier shall be complete and in sufficient detail to allow Purchaser's evaluation. Terminate all sub-contracts except those that have been/ to be assigned to the Purchaser all rights, titles and benefits of the Suppliers/Vendor as the case may be.

**35.00 Documentation**

35.01 The Bidder shall procure all equipment from BYPL-approved sources as per the attached specifications. The Bidders shall submit copies of Material/Type Test Certificates, O&M Manuals, and Approved & As-built drawings, related to various equipment (as applicable). The Bidder shall ensure strict compliance with the specifications and Field Quality Procedures issued by BYPL.

**36.0 Transit Insurance**

36.01 Transit Insurance shall be arranged by the Bidder.

36.02 DAMAGE / LOSS OF CARGO IN TRANSIT: The vendor shall be solely responsible for coordinating with the concerned insurance company for procuring insurance for material and/or Goods, processing claims lodgment and settlement. Notwithstanding the insurance cover, in case of loss/damage to material and/or Goods, in any manner and for any cause whatsoever, Vendor shall cause the damaged cargo to be replaced and delivered to the Purchaser with new material and/or Goods within 30 days of such loss/damage. The Vendor shall be solely responsible for all expenses in relation to the replacement and delivery in such circumstances.

**37.0 Limitation of Liability**

**37.01** Except for willful misconduct or gross negligence, neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or any other indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract. The total liability of the Supplier to the Purchaser under the Contract shall not exceed the Contract Value. Except that this Clause shall not limit the liability of the Supplier:

(a) In cases of fraud, willful misconduct or illegal or unlawful acts, or

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(b) In cases of acts or omissions of the Supplier that are contrary to the most elementary rules of diligence that a conscientious Supplier would have followed in similar circumstances.

### **38.0 Liability of Suppliers**

38.1 Subject to the due discharge of its obligations under the Contract and except in case of gross negligence or willful misconduct on the part of the Supplier or on the part of any person acting on behalf of the Supplier, with respect to any loss or damage caused by the Supplier to the Purchaser's property or the Site, the Supplier shall not be liable to the Purchaser for the following:

- (a) For any indirect or consequential loss or damage; and
- (b) For any direct loss or damage that exceeds:
  - (i) The total payments made and expected to be made to the Supplier under the Contract including reimbursements, if any; or
  - (ii) The insurance claim proceeds that the Supplier may be entitled to receive from any insurance purchased by the Supplier to cover such a liability, whichever is higher.

38.2 This limitation of liability shall not affect the supplier's liability, if any, for damage to third-party property or injury or death of a person due to negligence of the Contractor or any Person or firm acting on behalf of the supplier in executing the order.

38.3 Notwithstanding anything contained in the Contract, the Supplier shall not be liable for any gross negligence or willful misconduct on the part of the Purchaser or any of its affiliates, any vendor, or any party, other than Supplier and/or, its directors, officers, agents or representatives or its affiliates, or SubSupplier, or the vendor or any third party engaged by it.

38.4 Notwithstanding anything contained in the Contract, including but not limited to approval by the Purchaser of any drawings, documents, vendor list, supply of information or data or the participation of the Purchaser in any meeting and/or discussion or otherwise, shall not absolve the Supplier from any of its liabilities or responsibilities arising in relation to or under the Contract.

### **39.0 Intellectual Property Rights and Royalties**

39.1 The Supplier shall indemnify the Purchaser and the Purchaser's Representative from and against all claims and proceedings on account of infringement (or alleged infringement) of any patent rights, registered designs, copyright, design, trademark, trade name, know-how or other intellectual property rights (hereinafter collectively referred to as "**Intellectual Property Rights**") in respect of the Works, Supplier's Equipment, machines, Works method, Plant, Materials, or anything whatsoever required for the execution of the Works and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. In the event of an infringement of any Intellectual Property Rights of any third party as a result of the execution of the Works (or any part thereof) by the Supplier, the Supplier shall rectify, modify or replace, at its own cost, the Works, Plant or Materials or anything whatsoever required for the Works so that infringement ceases to exist or, in the alternative, the Supplier shall procure necessary rights/ licenses from the affected third party so that there is no infringement of Intellectual Property Rights.

39.2 The Supplier shall be promptly notified of any claim made against the Purchaser. The Supplier shall, at its cost, conduct negotiations for the settlement of such claim, and any litigation or arbitration that may arise from it. The Purchaser or the Purchaser's Representative shall not make any admission that might be prejudicial to the Supplier unless the Supplier has failed to take over the conduct of the negotiations, litigation or arbitration within a reasonable time after having been so requested. In the event of the Supplier failing to act at the Purchaser's Representative's notice, the Purchaser shall

be at full liberty to deduct any such amount of pending claim from any amount due to the Supplier under the Contract or any other contract and the balance portion of claim shall be treated as debt due from the Supplier.

- 39.3 All Intellectual Property Rights in respect of any Plant, Materials, Drawings and Designs, plans, documents, specifications, data, materials, know-how, charts, information, etc., provided to the Supplier by the Purchaser pursuant to this Contract for the execution of the Works, belongs to and shall continue to belong to the Purchaser and the Supplier shall not have any rights in the same other than the limited right for its use for the purpose of execution of the Works.
- 39.4 Intellectual Property Rights in respect of any Plant, Materials, Drawings and Designs, plans, calculations, drawings, documents, know-how and information relating to the Works which are proprietary to the Supplier and/ or its third-party licensors ("**Supplier's IPR**") shall continue to vest with the Supplier and/ or its third-party licensors and the Supplier shall grant and/ or procure from its third party licensors, at its own cost, a worldwide, perpetual, royalty-free, non-exclusive license (along with the right to sub-license) to use and reproduce such Supplier's IPR for the use, operation, maintenance and repair of the Works.
- 39.5 If any patent, trademark, trade name, registered design or software is developed by the Supplier or its SubSupplier specifically for the execution of the Works, then all Intellectual Property Rights in respect of such design, trademark, trade name or software shall be the absolute property of the Purchaser and shall not be utilized or retained by the Supplier (or its SubSuppliers) for any purpose other than with the prior written consent of the Purchaser.
- 39.6 If the Supplier uses proprietary software (whether customized or off the shelf) for the purpose of storing or utilizing records in relation to the Works, the Supplier shall obtain at its own expense, the grant of a worldwide, royalty-free, perpetual licence or sublicense (including the right to sublicense) to use such software, in favour of the Purchaser provided that the use of such software under the licence or the sublicense may be restricted to use any such software only for the design, construction, reconstruction, manufacture, installation, completion, reinstatement, extension, repair and operation of the Works or any part thereof.
- 39.7 If any software is used by the Supplier for the execution of the Works over which the Supplier or a third party holds pre-existing title or other rights, the Supplier shall obtain for the Purchaser, a worldwide, royalty-free, perpetual license for the right to use and apply that software (together with any modifications, improvements and developments thereof).

#### **40.0 Acceptance**

- 40.01 Vendor confirms to have gone through the Policy of BYPL on legal and ethical code required to be followed by vendors encapsulated in the "Vendor Code of Conduct" displayed on the official website of BYPL ([www.bsesdelhi.com](http://www.bsesdelhi.com)) also, which shall be treated as a part of the contract/PO/WO. The vendor undertakes that he shall adhere to the Vendor Code of Conduct and also agrees that any violation of the Vendor Code of Conduct shall be treated as breach of the contract/PO/WO. In the event of any such breach, irrespective of whether it causes any loss/damage, Purchaser (BYPL) shall have the right to recover loss/damage from Vendor. The Contractor/Vendor hereby indemnifies and agrees to keep indemnified the Purchaser (BYPL) against any claim/litigation arising out of any violation of Vendor Code of Conduct by the Contractor/Vendor or its officers, agents & representatives etc.
- 40.02 Acceptance of the CONTRACT implies and includes acceptance of all terms and conditions enumerated in the CONTRACT in the technical specification and drawings made available to

Contractor consisting of general conditions, detailed scope of work, detailed technical specification, detailed equipment drawing and complete scope of work.

40.03 Contractor and Company contractual obligations are strictly limited to the terms set out in the CONTRACT. No amendments to the concluded CONTRACT shall be binding unless agreed to in writing for such amendment by both parties.

40.04 We expect your services and supplies to be aligned to our Vision, Mission and Values. Please refer to the following link to know about our Vision, Mission and Values;  
<https://www.bsesdelhi.com/web/bypl/about-bses>.

BSES

**GENERAL CONDITIONS OF CONTRACT  
(GCC - INSTALLATION, TESTING, &  
COMMISSIONING)**

# **GENERAL CONDITIONS OF CONTRACT (GCC) - INSTALLATION, TESTING, & COMMISSIONING**

The General Condition of Contract shall form a part of specifications, contract document.

## **1. DEFINITIONS and INTERPRETATION:**

The following terms shall have the following meanings:

1.1 "Company": means BSES Yamuna Power Ltd, a company incorporated under the Companies Act 1956 and having its office at BSES Yamuna Power Limited having its office at Shaktikiran Building, Karkardooma, Delhi -110032, which expression shall include its authorized representatives, agents, successors and assigns.

1.2 "Contractor": shall mean the successful Tenderer / vendor to whom the contract has been awarded

1.3 "Rate": The unit rates for the work to be carried out at site shall be as per finalized unit rates through tender. The finalized rates shall be firm for the entire duration of work to be carried out by the Contractor under the work order and are not subject to escalation for any reason whatsoever.

1.4. CONTRACT SPECIFICATION: The terms "CONTRACT Specification" shall mean the Technical specification of the work as agreed by you and description of work as detailed in Annexure-I enclosed herewith and all such particulars mentioned directly/referred to or implied as such in the contract.

1.5 SITE: The terms "Site" shall mean the working location in BYPL area. Under this tender, working location shall be as mentioned elsewhere.

1.6 ENGINEER IN CHARGE: "Engineer In-charge" means the Company's authorized representative to carry out the work.

## **2. EXAMINATION OF SITE AND LOCAL CONDITIONS:**

The contractor is deemed to have visited the site of the work and ascertained therefore all site conditions and information pertaining to his work. The company shall not accept any claim whatsoever arising out of the difficult site/terrain/local conditions, if any.

## **3. LANGUAGE AND MEASUREMENT:**

The CONTRACT issued to the contractor by the company and all correspondence and documents relating to the CONTRACT placed on the Contractor shall be written in English language.

Metric System shall be followed for all dimension, units etc.

## **4. SCOPE OF WORK:**

The scope of work shall be "Installation Testing and commissioning of PMSS at site(s), Delhi.

### **SCOPE OF WORK**

Installation, Testing & Commissioning of each Pad Mounted Substation (PMSS) Includes:

- 1) Construction of RCC foundation/plinth. The foundation height should be 600 mm (minimum) from the Finished Ground Level (FGL).

- 2) Installation, Testing & Commissioning of PMSS at site along with interconnection of all components DI/DO/AI signals, status monitoring signals and wireless sensors signals to FRTU. Integration of FRTU with SCADA.
- 3) Connection of PMSS body with substation earth mesh at two independent points using 50 x 10 mm GI Strip.
- 4) Transformer neutral connection with substation earth mesh at two independent points using 50 x 10 mm GI strip.
- 5) The vendor's scope of work includes all labor, cranes, tools, tackles, testing instruments/kit, and technical supervision.
- 6) Submission of necessary testing reports.
- 7) Obtaining approval from the Electrical Inspector (BSES) is the bidder's responsibility. The supplier must provide all relevant documents, including drawings, test reports, and any other required documentation.
- 8) The cost of transit insurance, freight, loading/unloading of materials/equipments during its handling/erection at site is included in the vendor scope of work.
- 9) The involvement of cranes, hydras, tractors, and trailers for this work is part of the vendor's scope.
- 10) For this contract, individual framework orders or site intimations will be issued, and work must be completed within 30 days from the date of the order or site intimation.
- 11) Transportation of PMSS from the store to the site, including loading, transportation, and unloading, is required if needed.

A Separate order will be placed for supply & ETC which inter-alia includes the Scope of Work as mentioned/required for satisfactory operation of the Scheme shall be in Bidder's scope. Bidder(s) must provide goods and services that conform to these specifications for the entire term of the agreement.

All labor, cranes, tools, tackles, and technical supervision are included in your scope of work. The contractor must ensure that an adequate number of engineers, supervisors, and laborers are stationed at the site. A list of these personnel, along with the qualification certificates of the technical staff, should be submitted to the Engineer In Charge for verification of adequacy within seven days of the contract award.

#### **5. RATES:**

The rates finalized for this order shall be firm for the entire duration of work carried out by the Contractor under the order and are not subject to any variation and escalation for any reason whatsoever.

Rate for all the extra items shall be mutually negotiated and fixed based on cost of materials, consumables, labour and T&P expenses plus overhead expenses and profit upto maximum 10%.

The cost of insurance during loading/unloading of materials/ equipments during its storage and handling/erection at site for installation is included in the contractor's scope and value is included in the unit rates finalized.

#### **6. TAXES AND DUTIES:**

Prices are inclusive of all taxes and duties including labour cess and GST as applicable. However, IT as per applicable rate will be deducted from your bills as Tax Deduction at Source (TDS).

The total order value shall remain **FIRM** and shall only be adjusted on account of any variations in Statutory Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period.

#### **7. BILL SUBMISSION PROCEDURE:**

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All bills shall be submitted to the Engineer In charge / Package Engineer for certification. Bills shall be complete in all respect including ESI / HR compliance, Quality compliance, HSE compliance, Store compliance, Finance compliance etc. An established procedure is followed at site. Incomplete bills / invoices will not be considered for processing payments.

**8. TERMS OF PAYMENT:**

Payment shall be made as under (PMSS wise):

i) 100% payment shall be due after 45 days of submission of your bills, from the date of successful testing, commissioning and handing over of the entire installation along with work completion certificate at our office. The work completion certificate shall be issued by Engineer-In-Charge by certifying that the work has been completed to full satisfaction.

**9. COMPLETION PERIOD:**

Each site completion within 30 days from the date of issue or order / intimation of site.

The rates of E/T/C shall be valid for the quantity ordered against this tender only.

**10. CLEANLINESS:**

All debris shall be removed and disposed of at assigned areas on daily basis. Surplus excavated earth shall be disposed of in an approved manner. In short, you shall be fully responsible for keeping the work site clean at all times. In case of non-compliance, company shall get the same done at Contractor's risk and costs.

**11. COMMISSIONING & ACCEPTANCE TEST:**

After completion of the work, the Contractor shall conduct trial run/ operation in the presence of the Engineer In charge. During such trial run the system shall be operated under the supervision of the Contractor. If any rectification/modification is required during this period the Contractor shall do all necessary measures.

On satisfactory completion of the above, the system shall be deemed to have energized and placed in commercial operation. The Engineer In Charge will issue an acceptance certificate.

**12. WORK COMPLETION CERTIFICATION, HANDING OVER:**

The work carried out by the Contractor under this order has to be certified by Engineer In-charge for satisfactory completion of work allotted to the contractor with respect to specifications / Field Quality Procedures as per applicable standards. In case of modification/correction to be carried out, contractor shall carry out the said modifications/correction without additional cost. The Contractor shall remain in close contact with Engineer In-Charge at site to report the general findings of the fieldwork during the initial as well as later stages of the work at the site.

**13. PENALTY AND LIQUIDATED DAMAGES:**

14.1 Penalty: A penalty of 2.5% of bill amount shall be levied in each case of non-compliance of safety practices and site cleanliness.

14.2 Liquidated Damages: In the event of any delay in completion of the work beyond the stipulated time given by in order due to reasons solely attributable to the Contractor, the Contractor shall pay the Company liquidated damages.

If the Contractor failed to perform the services within the period specified in the order, the Company shall, without prejudice to its other remedies under the contract, deduct liquidated damages a sum equivalent to 1% of the basic order value for each week or part thereof delay until the actual date of completion up

to a maximum deduction of 10% of basic order value. Once the maximum is reached to Company may consider termination of the contract without any liabilities to the Company.

Engineer In charge should specifically mention the amount of LD levied on the bill of contractor.

#### **14. SAFETY CODE:**

The Contractor shall ensure adequate safety precautions at site as required under the law of the land and shall be entirely responsible for the complete safety of their workman as well as other workers at site and premises. The contractor shall not deploy any worker below the age of 18 years.

Safety-related requirements as mentioned in our safety Manual put on the Company's website which can be accessed at <https://www.bsesdelhi.com>

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

The contractor shall observe the safety requirements as laid down in the safety manual/contract and in case of sub-contract (only after written approval of company), it shall be the responsibility of main contractor that all safety requirements are followed by the employees and staff of the sub-contractor.

The contractor employing two hundred employees or more, including contract workers, shall have a safety coordinator to ensure the implementation of safety requirements of the contract and a contractor with lesser number of employees, including contract workers, shall nominate one of his employees to act as safety co-ordinator who shall liaise with the safety officer on matters relating to safety and his name shall be displayed on the notice board at a prominent place at the work site.

The contractor shall be responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidents.

In case of any accident, the contractor shall immediately submit a statement of the same to the owner and the safety officer, containing the details of the accident, any injury or casualties, the extent of property damage and remedial action is taken to prevent recurrence and in addition, the contractor shall submit a monthly statement of the accidents to the owner at the end of each month.

#### **15. STATUTORY OBLIGATIONS:**

The Contractor shall take all steps as may be necessary to comply with various Acts, Rules, including but not limited to The Child Labour (Prohibition & Regulation) Act, 1986, The Contract Labour (Regulation & Abolition) Act, 1970. The Employees Pension Scheme, The Employees Provident Funds and miscellaneous provisions Act, 1952, The Employees State Insurance Act, 1948, The Equal Remuneration Act, The Industrial Dispute Act, 1947, The Maternity Benefit Act, 1961, The Minimum Wages Act, 1948, The payment of Bonus Act, 1965, The Payment of Gratuity Act, 1972, The Payment of wages Act, 1936, The Shops & Establishment Act, The Workmen's Compensation Act, 1923, Building and Other Construction Workers (Employment and Regulations) Act 1996, Building and Other Construction Workers (Cess) Act 1996, The Employers Liability Act, 1938, Indian Electricity Act, 2003 and Indian Electricity Rules, VAT and Service tax etc., and all other applicable laws as amended and rules framed there under including any statutory approval required from the Central/State Govt. Ministry of Labour. Broadly, the compliance shall be as detailed below, but not limited to:

- a) An Electrical license.
- b) PF Code No. and all employees to have PF A/c No. under PF every Act, 1952.
- c) All employees to have a temporary or permanent ESI Card as per ESI Act.
- d) ESI Registration No.
- e) Sales Tax registration number, if applicable.
- f) PAN No.

- g) Work Contract Tax Registration Number/ VAT Registration.
- h) Labour License under Contract Labour Act (R & A) Act 1970.
- i) Delhi Building and Other Construction Worker (Regulation of Employment and Conditions of Services) Rules, 2002(B.O.C.W.)

(Bidder responsible for execution of the job should obtain a copy of Labour License before start of the work by the contractor.)

The Contractor must follow:

- a) Third party Insurance Policy before start of work.
- b) To follow Minimum Wages Act prevailing in the state.
- c) The Salary/wages to all deployed manpower is to be distributed through ECS only into the bank accounts of all individuals and not later than 7th of succeeding month. In case of unavoidable circumstances the payment may be made through crossed cheques in the name of the individual and information of all such cases need to be submitted to HR(CMC).
- d) To maintain Wage- cum - Attendance Register.
- e) To maintain First Aid Box at Site.
- f) Latest P.F. and E.S.I. challans pertaining to the period in which work was undertaken along with a certificate mentioning that P.F. and E.S.I. applicable to all the employees has been deducted and deposited with the Authorities within the time limits specified under the respective Acts.
- g) Workman Compensation Policy. {If applicable}.
- h) Labour license before start of work. {If applicable}.

Before commencing the work it would be mandatory for the Contractor to furnish the Company the permanent PF code no and ESI of the employees.

**16. WORKMAN COMPENSATION:**

The Contractor shall take insurance policy under the Workman Compensation Act to cover such workers who are not covered under ESI and PF by the Contractor however engaged to undertake the jobs covered under this order and a copy of this insurance policy will be given to Company for reference and records. This insurance policy shall be kept valid at all times. In case there are no worker involve other than those who are covered under ESI and PF by the Contractor, the Contractor shall certify for the same.

The contractor shall keep the company indemnified at all times, against all claims of compensation under the provision of Workmen Compensation Act 1923 and as amended from time to time or any compensation payable under any other law for the time being workman engaged by the contractor/sub-contractor/sub-agent in carrying out the job involved under this work order and against costs and expenses, if any, incurred by the company in connection therewith and without prejudice to make any recovery.

The company shall be entitled to deduct from any money due to or to become due to the Contractor, moneys paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and the Contractor shall abide by the decision of the Company as to the sum payable by the Contractor under the provisions of this clause.

**17. STAFF AND WORKMAN:**

(I) It shall be responsibility of contractor:

- (a) To obtain Contract Labour License from the concerned authorities and maintain proper liaison with them. Necessary Forms for obtaining Labour License would be issued by the company. However you will bear all expenses for obtaining Labour license and registration in PF Department for your scope of work. You will deposit PF of your staff/laborer each month and all related documents should be furnished to us.

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(b) To obtain workman insurance cover against deployment of workers etc.

(II) To maintain, proper records relating to workmen employed, in the form of various Registers, namely.

- (a) Register of workmen.
- (b) Register of muster roll.
- (c) Register of overtime.
- (d) Register of wages.
- (e) Any other register as per latest amendment Labour Act.

(III) To disburse monthly wages to your workers/ supervisors in time and in the presence of Company representatives or as directed by the Labour authorities.

(IV) To maintain proper liaison with the Project authorities, local police and all other government and local bodies.

(V) To pay your workmen at least not less than the minimum prescribed wages as per state/Central Labour laws as may be, applicable. The contractor shall, be responsible for compliance of all the provisions of Minimum Wages Act, PF, ESIC Act workmen Compensation Act and Contract Labour Regulation & Abolition Act the rules made there under. In case of non- Compliance of the statutory requirements. The company would take necessary action at the risk and cost of the Contractor.

(VI) To employ required number of skilled/semi-skilled and unskilled workmen as per site requirement to complete the entire project as per schedule. To provide safety shoes, safety helmets, safety belts, gloves etc. to your worker/staff as per requirement during erection work.

(VII) To employ necessary engineering and supervisory staff for completion of the Project in time. While day-to-day management of the site and supervision of the works shall be the responsibility of your Engineer - In charge, he will report to the our Engineer in charge to assist him to discharge the overall responsibility of the execution of the project.

### **18. THIRD PARTY INSURANCE:**

Before commencing the execution of the work the Bidder shall take third party insurance policy to insure against any damage or loss or injury which may occur to any property / public property or to any person or any employee or representative of any outside Agency/ the company engaged or not engaged for the work of the company, by or arising out of the execution of the work or temporary work or in carrying out of this Agreement. For third party insurance policies, the Bidder shall be responsible for settlement of claims with the underwriters without any liability on the purchaser / owner and will arrange replacements / rectification expeditiously without a waiting settlement by insurance claim at Bidder's own cost.

### **19. ENVIRONMENTAL, HEALTH & SAFETY PLAN:**

Contractor will make ensure that the Environment, Health & Safety (EHS) requirements are clearly understood and faithfully implemented at all levels at site as per instruction of Company. Contractors must comply with these requirements:

- a) Comply with all of the elements of the EHS Plan and any regulations applicable to the work.
- b) Comply with the procedures provided in the interests of Environment, Health and Safety.
- c) Ensure that all of their employees designated to work are properly trained and competent.
- d) Ensure that all plant and equipment they bring on to site has been inspected and serviced in accordance with legal requirement and manufacturer's or suppliers' instructions.
- e) Make arrangements to ensure that all employees designated to work on or visit the site present themselves for site induction before the commencement of work.
- f) Provide details of any hazardous substances to be brought onsite.
- g) Ensure that a responsible person accompanies any of their visitors to site.

All contractor's staff are accountable for the following:

1. Use the correct tools and equipment for the job and use safety equipment and protective clothing supplied, e.g. helmets, goggles, ear protection, etc. as instructed.
2. Keep tools in good condition.
3. Report to the Supervisor any unsafe or unhealthy condition or any defects in plant or equipment.
4. Develop a concern for safety for themselves and for others.
5. Prohibit horseplay.
6. Not to operate any item of plant unless they have been specifically trained and are authorized to do so.

**20. TEST CERTIFICATE & QUALITY ASSURANCE:**

The Contractor shall procure all equipment from genuine sources as approved by the Company and as per Company specifications. The Contractor shall submit all the test certificates and joint inspection reports related to major equipment wherever applicable. The contractor shall ensure for the strict compliance with the specifications and Field Quality Procedures issued by company / Engineer in-charge.

**21. SUB-CONTRACTING / SUBLETTING:**

CONTRACTOR shall not assign or transfer the whole or any part of this Work Order or any other benefits accruing there from nor shall it subcontract / sublet the whole or any part of the Works without the prior written consent of COMPANY.

In the event the contractor assigns this work order, contractor's assignees shall be bound by the terms and conditions of this work order and shall , if deemed necessary by COMPANY at the time of such assignment, undertake in writing to be so bound by this Work Order.

Notwithstanding the subletting / subcontracting of any portion of the works, contractor shall remain wholly responsible for the carrying out, completion and satisfactory execution of Works in all respects in accordance with this Work Order, specification, approved drawings and data sheets.

**22. INDEMNITY:**

Contractor shall indemnify and save harmless COMPANY against and from any liabilities, claims, damages, losses or expenses arising due to or resulting from:

- a) Any breach non-observance or non-performance by contractor or its employees or agents of any of the provisions of this Work Order.
- b) Any act or omission of contractor or its employees or agents.
- c) Any negligence or breach of duty on the part of contractor, its employees or agents including any wrongful use by it or them of any property or goods belonging to or by COMPANY.

Contractor shall at all times indemnify COMPANY against all liabilities to other persons, including he employees or agents of COMPANY or contractor for bodily injury, damage to property or other loss which may arise out of or in consequence of the execution or completion of Works and against all costs charges and expenses that may be occasioned to COMPANY by the claims of such person.

**23. EVENTS OF DEFAULTS:**

COMPANY may, without prejudice to any of its other rights or remedies under the Work Order or in law, terminate the whole or any part of this Work Order by giving written notice to the Contractor, if in the

opinion of COMPANY, contractor has neglected to proceed with the works with due diligence or commits a breach of any of the provisions of this work order including but not limited to any of the following cases.

- a) Failing to complete execution of work within the terms specified in this work order.
- b) Failing to complete works in accordance with the approved schedule of works.
- c) Failing to meet requirements of specifications, drawings, and designs as approved by COMPANY.
- d) Failing to comply with any reasonable instructions or orders issued by COMPANY in connection with the works.
- e) Failing to comply with any of the terms or conditions of this work order.

In the event COMPANY terminates this work order, in whole or in part, on the occurrence of any event of default, COMPANY reserves the right to engage any other subcontractor or agency to complete the work or any part thereof, and in addition to any other right COMPANY may have under this work order or in law including without limitation the right to penalize for delay under clause 15.0 of this work order, the contractor shall be liable to COMPANY for any additional costs that may be incurred by COMPANY for the execution of the Work.

**24. RISK & COST:**

If the Contractor fails to execute the work as per specification / as per the direction of Engineer's In-charge within the scheduled period and even after the extended period, the contract shall get cancelled and company reserves the right to get the work executed from any other source at the Risk & Cost of the Contractor. The Extra Expenditure so incurred shall be debited to the Contractor.

**25. ARBITRATION:**

To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with this LOA. If the same remain unresolved within thirty (30) days of the matter being raised by either party, either party may refer the dispute for settlement by arbitration. The arbitration to be undertaken by two arbitrators, one each to be appointed by either party. The arbitrators appointed by both the parties shall mutually nominate a person to act as presiding arbitrator before entering upon the reference in the event of a difference between the two arbitrators and the award of the said presiding arbitrator in such a contingency shall be conducted in accordance with this provisions of the Indian Arbitration & Conciliation Act, 1996 and the venue of such arbitration shall be in the city of New Delhi only.

**26. FORCE MAJEURE:**

27.1 General:

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance, despite the exercise of reasonable diligence, could not have been prevented, avoided or reasonably foreseen by such Party;

(ii) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected parties ability to perform its obligations under this Contract and to mitigate the consequences thereof. For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract; and

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause

#### 27.2 Specific Events of Force Majeure:

Subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements: The following events and circumstances:

(i) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters, and

(ii) Explosions or fires

(iii) Declaration of the Site as war zone

Any order, regulation, directive, requirement from any Governmental, legislative, executive or judicial authority.

#### 27.3 Notice of Events of Force Majeure:

If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

(i) Immediately notify the other party in writing of the force majeure events within 2 working days of the occurrence of the force majeure event

(ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event

(iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

(iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.

(v) Provide prompt notice of the resumption of full performance or obligation to the other party.

#### 27.4 Mitigation of events of force majeure:

The Contractor shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure, including applying other ways in which to perform the Contract;

(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and

(iii) Keep the Company informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

27.5 Burden of proof:

In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Contract. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

27.6 Terminations for certain events of force majeure:

If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 1 (one) month during the Term of the Contract the Contract shall be terminated at the discretion of the Company and neither Party shall be liable to the other for any consequences arising on account of such termination.

**27. SECRECY CLAUSE:**

The technical information, drawing and other related documents forming part of work order and the information obtained during the course of investigation under this work order shall be the Company's executive property and shall not be used for any other purpose except for the execution of the work order. The technical information drawing, records and other document shall not be copied, transferred, or divulged and/ or disclosed to third party in full/part, not misused in any form whatsoever except to the extent for the execution of this work order.

This technical information, drawing and other related documents shall be returned to the Company with all approved copies and duplicates including drawings/plans as are prepared by the Bidder during the executions of this work order, if any, immediately after they have been used for agreed purpose.

In the event of any breach of this provision, the Bidder shall indemnify the Company against any loss, cost or damage or claim by any party in respect of such breach.

**28. TERMINATION:**

During the course of the execution, if at any time BSES observe and form an opinion that the work under the order is not being performed in accordance with the terms of this Agreement, BSES reserves its right to cancel this Agreement giving 30 days notice mentioning the reason for the termination of the agreement and BSES will recover all damages including losses occurred due to loss of time from Contractor.

**29. QUALITY:**

Contractor shall ensure that strict quality is maintained and execution of works under this Work Order and Works are executed in conformity with the Specification.

All tools, tackles, instruments and other equipments used in the execution of the Works shall be duly calibrated as required and Contractor shall maintain proper records of such tools, tackles, instruments and / or equipment.

**30. MEASURES RELATED TO THE TREE PRUNING, EXCAVATION NEAR TREE AND CONSTRUCTION & DEMOLITION:**

Notwithstanding anything stated in the tender document, work contract or any other communication issued related to the performance of the work order awarded, it is clarified that the vendor and its associate/employees/worker, during the performance of work under this tender, shall ensure full compliance of the provisions of all environment laws/rules/directions by any authority including judicial authority/ regulation related to excavation near tree and construction & demolition activity, and shall mandatorily comply the following instructions:

**A. Tree Pruning, Planning, Installation and Maintenance of Utility Apparatus in proximity to trees shall be done mandatorily by ensuring the following prescribed measures:**

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- 1) No excavation work shall be done within two (2) meters of the Tree Trunk.
- 2) Any exposed roots beyond 2 meters of the tree trunk, should be protected with dry sacking and backfilling must be done with a suitable manure mixture and/or the compost material mix as soon as possible on the completion of the works.
- 3) For any excavation to be carried out beyond the **prescribed distance of 2 meters but within 3 meter** from the tree trunk, **manual methods (by use of hand)** or by using trenchless techniques shall be preferred over use of a mechanical excavation.
- 4) No roots shall be cut during the excavation work.
- 5) Not to lean any materials against or chain mechanical plants to the trunk of the trees.
- 6) Avoid any soil contamination from oil, gasoline, paint and paint thinner or other chemicals.
- 7) No concrete or construction or repairing work shall be done at least within two (2) meter radius of the trunk of trees.
- 8) All the electric wires and high tension cables and other apparatus relating to supply of electricity shall permanently be removed from the trees branches.

**Records to be maintained by the supervisor to demonstrate adherence to the guidelines for excavation in Proximity to the Trees:**

- 1) Ensure pre and post photography and videography of the site demarcated for the excavation work and the same shall not be deleted/removed until securing the prior permission of the Circle head O&M.
- 2) While digging and upon exposure to the roots– take immediate photographs of the same and report the matter to senior officers for further guidance.  
If any unauthorized layering of other cables is being carried out at the digging site by some other agency/person, then immediately capture photographs of the same and inform the seniors, who shall take suitable legal actions, if required, which includes intimating to tree officer about such unauthorized laying of wires by such agency.

**B. DUST MITIGATION MEASURES FOR CONSTRUCTION & DEMOLITION ACTIVITIES**

**Any construction/demolition/excavation related activity performed in furtherance of the performance of work under award, be undertaken only after ensuring the Dust Mitigation Measures prescribed as follows:**

- 1) Dust/wind breaking walls of appropriate height around the periphery of the construction site.
- 2) Installation of Anti Smog Gun(s) (for >20,000 m2 built up area).
- 3) Tarpaulin or green net on scaffolding around the area under-construction and the building.
- 4) All vehicles including carrying construction material and construction debris of any kind should be cleaned and wheels washed.
- 5) All vehicles carrying construction material and construction debris should be fully covered and protected.
- 6) All construction debris and construction material of any kind should be stored on the site and not dumped on public roads or pavements.
- 7) No loose soil or sand or Construction & Demolition Waste or any other construction material which may cause dust, shall not be left uncovered.
- 8) No grinding and cutting of building materials in open area. Wet jet should be used in grinding and stone cutting.
- 9) Unpaved surfaces and areas with loose soil should be adequately sprinkled with water to suppress dust.

- 10) Roads leading to or at construction sites must be paved and blacktopped i.e., metallic roads (for >20,000 m2 built up area).
- 11) Construction and demolition waste should be recycled on-site or transported to authorized recycling facility and due record of the same should be maintained.
- 12) Every worker working on construction site and is involved in loading, unloading and carriage of construction material and construction debris should be provided with dust-mask to prevent inhalation of dust particle.
- 13) Arrangement should be provided for medical help, investigation and treatment to workers involved in the construction of building and carry of construction material and debris relating to dust emission.
- 14) Dust mitigation measures shall be displayed prominently at the construction site for easy public viewing.
- 15) Ensure the compliance of all dust control measure.

It is clarified that BYPL has zero tolerance with respect to the non-compliance/breach of environment laws/rules/directions by any authority including judicial authority/ regulation. Accordingly, in case of breach by the vendor/its associate/employee/worker to the laws/rules as detailed above, shall be termed as serious breach to the terms of work order and BYPL shall be free to take all actions against vendor for such breach of contract including the termination of the said contract. Additionally, the vendor shall also be liable to indemnify BYPL/its Directors/Officers/Employees/Associates in full including the payment of all loss/penalties/compensation including environment compensation as imposed by any judicial/quasi-judicial citing/alleging such breach.

**The vendor shall also be under a mandate to provide an Undertaking to BYPL**, which includes that the excavation, tree pruning, construction and demolition work, if performed by such vendor, the same shall be in strict adherence of all environment laws/rules/directions by any authority including judicial authority/ regulation and all the measures provided in work order/tender under the head/title "**Measures related to the Tree Pruning, excavation near tree and construction & demolition**".

**30. ACCEPTANCE:**

Acceptance of this work order implies and includes acceptance of all terms and conditions enumerated in this work order in the technical specification and drawings made available to you consisting of general conditions, detailed scope of work, detailed technical specification & detailed equipment, drawing. Complete scope of work and the Bidder's and Company's contractual obligation are strictly limited to the terms set out in the work order. No amendments to the concluded work order shall be binding unless agreed to in writing for such amendment by both the parties.

However, during the course of the execution of the work order, if at any time the Company's representative observe and form an opinion that the work under the work order is not being performed in accordance with the terms of this work order, the company reserves its right to cancel this work order forthwith without assigning any reason and the Company will recover all damages including losses occurred due to loss of time from the Bidder.

We request you to please sign the duplicate copy of this work order as a token of your acceptance and return to us.

GENERAL CONDITIONS OF CONTRACT(GCC) NIT NO: CMC/BY/24-25/RS/SkS/SV/58 [RFx Number: 2200000103]	Page <b>30</b> of <b>31</b>	Bidders seal & Signature
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## QUANTITY AND DELIVERY REQUIREMENTS

Sl. No.	Description	Specification	Total Qty. (Nos)	Tentative Delivery Schedule	Destination
1	Supply, Installation, Testing & Commissioning of 11 KV Pad Mounted Substation (PMSS)	SP-PMSS-207-R0	10	Delivery shall be completed within 05 Months from the LOI/PO date or completion as per the schedule provided by BYPL. ITC at each site shall be completed within 30 days from the date of issue or order / intimation of site	BYPL Stores/Sites Delhi

The delivery schedule shown above is tentative. PO(s) will be released as per the actual requirement. However, the supplier has to deliver the material within the delivery schedule provided.

Schemes may be executed in a phased manner.

## APPENDIX II

**ANNEXURE – 2.01**

**FORMAT OF PERFORMANCE BANK GUARANTEE**  
**(To be executed on a Non-Judicial Stamp Paper of appropriate value)**

This Guarantee made at \_\_\_\_\_ this [\_\_\_\_] day of [\_\_\_\_] 20XX

1. WHEREAS M/s BSES Yamuna Power Limited, a Company incorporated under the provisions of Companies Act, 1956 having its Registered Office at Shaktikiran Building, Karkardoa, Delhi 110032, India hereinafter referred to as the " Owner ", (which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns).
2. AND WHEREAS the Owner has entered into a contract for \_\_\_\_\_ (Please specify the nature of contract here ) vide Contract No. \_\_\_\_\_ dated \_\_\_\_\_ (hereinafter referred to as the "Contract") with M/s. \_\_\_\_\_, (hereinafter referred to as "the Supplier", which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include each of their respective successors and assigns) for providing services on the terms and conditions as more particularly detailed therein.
3. AND WHEREAS as per clause \_\_\_\_ of Conditions of Contract, the Suppliers are obliged to provide to the Owners an unconditional bank guarantee for an amount equivalent to ten percent (10%) of the total Contract Value for the timely completion and faithful and successful execution of the Contract from [ \_\_\_\_\_ ] *pl. specify the name of Bank*) having its head/registered office at [ \_\_\_\_\_ ] through its branch in \_\_\_\_\_ (*pl. specify the name of Branch through which B.G is issued*) hereinafter referred to as "the Bank", (which expression shall unless it be repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns).
4. NOW THEREFORE, in consideration inter alia of the Owner granting the Suppliers the Contract, the Bank hereby unconditionally and irrevocably guarantees and undertakes, on a written demand, to immediately pay to the Owner any amount so demanded (by way of one or more claims) not exceeding in the aggregate [Rs. ].....(*in words*) without any demur, reservation, contest or protest and/or without reference to the Supplier and without the Owner needing to provide or show to the Bank, grounds or reasons or give any justification for such demand for the sum/s demanded.
5. The decision of the Owner to invoke this Guarantee and as to whether the Supplier has not performed its obligations under the Contract shall be binding on the Bank. The Bank acknowledges

that any such demand by the Owner of the amounts payable by the Bank to the Owner shall be final, binding and conclusive evidence in respect of the amounts payable by the Supplier to the Owner. Any such demand made by the Owner on the Bank shall be conclusive and binding, notwithstanding any difference between the Owner and the Supplier or any dispute raised, invoked, threatened or pending before any court, tribunal, arbitrator or any other authority.

6. The Bank also agrees that the Owner at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor without proceeding against the Suppliers notwithstanding any other security or other guarantee that the Owner may have in relation to the Supplier's liabilities.
7. The Bank hereby waives the necessity for the Owner first demanding the aforesaid amounts or any part thereof from the Suppliers before making payment to the Owner and further also waives any right the Bank may have of first requiring the Owner to use its legal remedies against the Suppliers, before presenting any written demand to the Bank for payment under this Guarantee.
8. The Bank's obligations under this Guarantee shall not be reduced by reason of any partial performance of the Contract. The Bank's obligations shall not be reduced by any failure by the Owner to timely pay or perform any of its obligations under the Contract.
9. The Bank further unconditionally and unequivocally agrees with the Owner that the Owner shall be at liberty, without the Bank's consent and without affecting in any manner its rights and the Bank's obligation under this Guarantee, from time to time, to:
  - (i) vary and/or modify any of the terms and conditions of the Contract;
  - (ii) Forebear or enforce any of the rights exercisable by the Owner against the Suppliers under the terms and conditions of the Contract; or
  - (iii) Extend and/or postpone the time for performance of the obligations of the Suppliers under the Contract;

and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of the Owner or any indulgence shown by the Owner to the Suppliers or any other reason whatsoever which under the law relating to sureties would, but for this provision, have the effect of relieving the Bank of its obligations under this Guarantee.

10. This Guarantee shall be a continuing bank guarantee and shall not be discharged by any change in the constitution or composition of the Suppliers, and this Guarantee shall not be affected or

discharged by the liquidation, winding-up, bankruptcy, reorganization, dissolution or insolvency of the Suppliers or any of them or any other circumstances whatsoever.

11. This Guarantee shall be in addition to and not in substitution or in derogation of any other security held by the Owner to secure the performance of the obligations of the Suppliers under the Contract.
12. NOTWITHSTANDING anything herein above contained, the liability of the BANK under this Guarantee shall be restricted to \_\_\_\_\_ (*insert an amount equal to ten percent (10%) of the Contract Value*) and this Guarantee shall be valid and enforceable and expire on \_\_\_\_\_ (*pl. specify date*) or unless a suit or action to enforce a claim under this Guarantee is filed against the Bank on or before the date of expiry.
13. On termination of this Guarantee, all rights under the said Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities hereunder.
14. The Bank undertakes not to revoke this Guarantee during its validity except with the prior written consent of the Owner and agrees that any change in the constitution of the Bank or the Suppliers shall not discharge our liability hereunder.
15. This Guarantee shall be governed by the laws of India. Any suit, action, or other proceeding arising out of, connected with, or related to this Guarantee or the subject matter hereof shall be subject to the exclusive jurisdiction of the courts of **Delhi**, India.

Dated this ..... day of ..... 20XX at .....

(Signature)

.....  
(Name)

.....  
(Designation with Bank Stamp)

Attorney as per

Power of Attorney No.....

Date.....

**BYPL BANK DETAIL WITH IFSC CODE:**

1. Name of the Bank: Axis Bank Limited
2. Branch Name & Full Address: C-58, Basement & Ground Floor, Preet Vihar, Main Vikas Marg,  
New Delhi 110092
3. Branch Code: 055
4. Bank Account No: 911030003596085
5. IFSC Code: UTIB0000055
6. Swift Code: AXISINBB055

BIDDER

**ANNEXURE – 2.03**

**FORMAT OF WARRANTY/GUARANTEE CERTIFICATE**

BSES YAMUNA POWER LIMITED Shaktikiran Building, Karkardooma, Delhi -110032.

Ref. Purchase Order No. :

Dear Sir,

We hereby confirm that the.....dispatched to BSES YAMUNA POWER LTD vide invoice no.....  
DT.....is exactly of the same nature and description as per above mentioned Purchase Order.

We further confirm that we will replace/repair our.....free of cost if any manufacturing defect  
during.....months from the date of dispatch of material or.....months from the date of commissioning  
whichever is earlier.

Vendor Name & Signature

**ANNEXURE – 2.04**

**UNDERTAKING GST**

The Vendor shall give an undertaking in the following words on each invoice in the absence of which tax  
payment as on the Vendor's invoice may be withheld.

"The tax component as mentioned in the invoice shall be deposited with the GST Department as per law  
by way of actual payment or by way of legal set off as per law. The turnover billed shall be duly declared  
in my GST returns a copy of which shall be filed with the Purchaser. Should the input tax credit to the  
Purchaser be denied by way of any lapse on the part of the Vendor, the same shall be paid on demand and  
in any case the Purchaser is authorized to deduct the tax equivalent amount from the amount payable to  
the Vendor"

APPENDIX II NIT NO: CMC/BY/24-25/RS/SkS/SV/58 [RFx Number: 2200000103]	Page <b>5</b> of <b>6</b>	Bidders seal & Signature
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**SUMMARY OF COMMERCIAL TERMS AND CONDITIONS – SITC**

SL NO	PARTICULARS	AS PER TENDER	BIDDER'S CONFIRMATION
1	Validity	120 days from the date of submission of bid	
2	Price Basis	<b>"Firm"</b> , FOR Delhi store(s)/site(s) basis. Prices shall be inclusive of all taxes & duties, freight upto Delhi store(s)/site(s).	
3	Unloading	Unloading at stores/sites shall be in vendor's scope	
4	Transit Insurance	Transit insurance in Bidders scope	
5	Payment Terms	<p><b>Supply:</b>  <b>Part 1)</b> 90% of the basic value with 100% taxes and duties shall be paid in 45 days from the date of receipt and acceptance of GOODS at the store(s)/site(s) against submission of documents.  <b>Part 2)</b> Balance of 10% of basic value shall be paid in 45 days from the date of successful testing, commissioning and handing over duly certified by BYPL Engineer-in-Charge.</p> <p><b>Services:</b>  100% payment shall be due after 45 days of submission of your bills, from the date of successful testing, commissioning and handing over of the entire installation along with work completion certificate at our office.</p>	
6	Project Schedule	<p>Transmittal Approval Documents (GTP/Drawings/QAP/etc) to be submitted within 15 days to the concern official in BYPL for approvals. BYPL shall approve/provide comments on the submitted drawings within 7 days of first submission. In case resubmission is required, it shall be completed by the supplier within next 5 days. The timelines for approval by BYPL shall be 5 days in case of every resubmission. However, repetitive submissions are not desirable.</p> <p>Delivery shall be completed within 05 Months from the LOI/PO date or completion as per the schedule provided by BYPL.</p> <p>ITC at each site shall be completed within 30 days from the date of issue or order / intimation of site</p>	
7	Defect Liability Period	60 months after commissioning or 66 months from the last date of dispatch, whichever is earlier.	
8	Penalty for Delay	1% (One) of the basic value (ex-works value) of undelivered units per week of delay or part thereof, subject to maximum of 10% (Ten) of the total basic value (ex-works value) of undelivered units.	
9	Performance Bank Guarantee (Against Supply Order only)	<p>To be submitted within twenty-eight (28) days from the date of issuance of the Letter of Intent/Award/RC. Thereafter Supplier shall submit PBG on Purchase Order (PO) basis equivalent to 10% of the PO value (including GST) valid for 24 months after commissioning or 30 months from the last date of receipt, whichever is earlier plus 3 months towards claim period.</p> <p>Upon receipt of the PBG by BYPL against RC, the EMD shall be released.</p>	
10	Reverse Auction	Acceptance for participation in Reverse Auction event	

**Seal of the Bidder:****Signature:****Name:**

**BIDDERS**

**VOLUME – II**

**PRICE BID FORMAT**

<p>PRICE BID FORMAT NIT NO: CMC/BY/24-25/RS/SKS/SV/58 [RFx Number: 2200000103]</p>	<p>Page <b>1</b> of <b>4</b></p>	<p>Bidders seal &amp; Signature</p>
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**ALL PRICES IN INR (₹)**

<b>Package Name</b>	<b>Total Supply Prices (A)</b>	<b>Total Installation, Testing and Commissioning Prices (B)</b>	<b>Total Package Cost (C=A+B)</b>
Supply, Installation, Testing & Commissioning of 11 KV Pad Mounted Substation (PMSS) of Various Types			
In words .....			

**NOTE: Cost of all tests as per technical specification is to be included. No separate/extra charges will be paid.**

The Un-priced bid should be marked as **"Quoted"** and be submitted with Part – A

We declare that the following are our quoted prices in INR for the entire package.

Date:

Bidders Name:

Place:

Bidders Address:

Signature: .....

Designation: .....

Printed Name: .....

Common Seal: .....

**SUPPLY (A)****ALL PRICES IN INR (₹)**

S. No.	DESCRIPTION OF GOODS	HSN CODE (8 Digit Mandatory)	UoM	QTY (A)	UNIT BASIC PRICE INCL FREIGHT (₹) (B)	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST) (₹) (C)		UNIT LANDED RATE (All Inclusive) (₹) (D = B+C)	TOTAL LANDED VALUE (₹) (E = DXA)
						%	AMT		
1	Supply of 11 KV Pad Mounted Substation (PMSS) Type-1		Nos	1					
2	Supply of 11 KV Pad Mounted Substation (PMSS) Type-2		Nos	1					
3	Supply of 11 KV Pad Mounted Substation (PMSS) Type-3		Nos	2					
4	Supply of 11 KV Pad Mounted Substation (PMSS) Type-4		Nos	5					
5	Supply of 11 KV Pad Mounted Substation (PMSS) Type-5		Nos	1					
GRAND TOTAL LANDED VALUE (₹)									
In words .....									

**I/T/C (B)****ALL PRICES IN INR (₹)**

S. No.	DESCRIPTION OF SERVICES	SAC CODE (8 Digit Mandatory)	UoM	QTY (A)	UNIT BASIC PRICE (₹) (B)	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST) (₹) (C)		UNIT LANDED RATE (All Inclusive) (₹) (D = B+C)	TOTAL LANDED VALUE (₹) (E = DXA)
						%	AMT		
1	I/T/C of 11 KV Pad Mounted Substation (PMSS) Type-1		Nos	1					
2	I/T/C of 11 KV Pad Mounted Substation (PMSS) Type-2		Nos	1					
3	I/T/C of 11 KV Pad Mounted Substation (PMSS) Type-3		Nos	2					
4	I/T/C of 11 KV Pad Mounted Substation (PMSS) Type-4		Nos	5					
5	I/T/C of 11 KV Pad Mounted Substation (PMSS) Type-5		Nos	1					
GRAND TOTAL LANDED VALUE (₹)									
In words .....									

**Optional Rate:**

S. No.	DESCRIPTION OF SERVICES	SAC CODE (8 Digit Mandatory)	UoM	QTY (A)	UNIT BASIC PRICE (₹) (B)	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST) (₹) (C)		UNIT LANDED RATE (All Inclusive) (₹) (D = B+C)	TOTAL LANDED VALUE (₹) (E = DXA)
						%	AMT		
1	Transportation of PMSS from stores to site may also be furnished in case the site is not ready (i.e., Loading, Transportation & Unloading)		01	PU					

**NOTE**

- 1) Item-wise cost for Installation, erection, testing & Commissioning for the items indicated in BOQ-SUPPLY and as per Scope of Work
- 2) In addition, Unit Rates shall be submitted as indicated in BOQ-ERECTION

**VOLUME – III**  
**TECHNICAL SPECIFICATIONS**

BSIS



**Technical Specification**  
**of**  
**11 KV Pad Mounted Substation**  
**(Specification no – SP-PMSS-207-R0)**

Rev:	0	
Pages	61	
Date:	21.03.2025	
Prepared by	Jeena Borana	 b8b1c444-d6e3-4459-b793-d46d1e00a2fc
Reviewed by	Srinivas Gopu	 5d32525e-ed3a-4f41-b1c7-b8a5e77d1519
Approved by	Gaurav Sharma	 23dc2de2-95de-4472-99a7-dea873f472b6

**Technical Specification of 11 KV Pad Mounted Substation****Index**

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**Record of Revision**

<b>S. No.</b>	<b>Revision No</b>	<b>Item/Clause No.</b>	<b>Nature of change</b>	<b>Approved by</b>

**Technical Specification of 11 KV Pad Mounted Substation****1.0 Scope**

- 1.1 Design, manufacture, testing at manufacturer works before dispatch, packing, and delivery of Pad Mounted Substation (PMSS) as per this specification.
- 1.2 Supply of commissioning spares and accessories for PMSS.
- 1.3 FRTU Licensed software for programming, configuration, troubleshooting and diagnosis of FRTU shall be provided.
- 1.4 Any item not specifically mentioned in scope but necessary for successful operation of substation shall be deemed to be included in bidder's scope.

**2.0 Codes & standards**

Materials, equipment and methods used in manufacture of 11kV Pad mounted Substation shall conform to the latest edition of following:

<b>S. No.</b>	<b>Standard</b>	<b>Title</b>
2.1	Indian Electricity Rules	With latest amendments
2.2	Indian electricity act	IE act 2003
2.3	CBIP manual	CBIP manual on transformers
2.4	IEC 60076	Power transformers
2.5	IEC:60616	Terminal and Tapping Markings for Power Transformers
2.6	IEC: 60529	Degrees of Protection Provided by Enclosures (IP Code).
2.7	IEC 60694	Specification for high voltage switchgear
2.8	IEC 61439-1	Low voltage switchgear & control gear assemblies
2.9	IEC 60664-1	Insulation coordination for low voltage systems
2.10	IEC 62262	Degree of protection provided by enclosure against mechanical shocks
2.11	IEC 62271-202	High voltage switchgear & control gear - prefabricated substation
2.12	IEC 60044	Instrument transformers - Current & voltage transformers
2.13	IEC 60225	Electrical relays
2.14	IEC 60625	High voltage switches
2.15	IEC 60502	Power cables
2.16	IEC 60947-2	Low-voltage switchgear and control gear : Circuit-breakers
2.17	IS 1180 part 3	Outdoor type oil immersed distribution transformer

**Technical Specification of 11 KV Pad Mounted Substation**

<b>S. No.</b>	<b>Standard</b>	<b>Title</b>
		upto and including 2.5MVA, 33kV. Part 3 Natural/Synthetic Organic Ester oil Liquid Immersed
2.18	IS 2026	Power transformers
2.19	IS 2026-7	Loading of power transformers
2.20	IS 13947	Low voltage switchgear & control gear
2.21	IS 2099	Bushings for voltages above 1000V
2.22	IS 16227	Instrument transformers
2.23	IS 1554	PVC cables
2.24	IS 7098	XLPE cables
2.25	IS 2629	Recommended Practice for Hot-Dip Galvanizing of Iron and Steel
2.26	IS 4759	Hot-dip zinc coatings on structural steel and other allied products
2.27	IS 3043	Code of practice for Earthing
2.28	IS 16081/IEC 61099	Specifications for Unused Synthetic Organic Esters for Electrical purposes
2.29	IS 8130	Conductors for insulated cables
2.30	IS 5	Ready mixed paints

In the event of direct conflict between various order documents, the precedence of authority of documents shall be as follows -

- a) Guaranteed Technical Particulars (GTP)
- b) Specification including applicable codes & standards
- c) Approved Vendor Drawings
- d) Other documents

### **3.0 Service Conditions**

The Pad mounted substation shall be designed & tested to operate satisfactorily under following conditions:

<b>S. No.</b>	<b>Description</b>	<b>Data by purchaser</b>
3.1	Location	Delhi
3.2	Reference design ambient temperature	40°C for Delhi
3.3	Maximum ambient temperature	50°C for Delhi

**Technical Specification of 11 KV Pad Mounted Substation**

S. No.	Description	Data by purchaser
3.4	Relative humidity	85% for Delhi
3.5	Seismic zone	Zone IV for Delhi

**4.0 Electrical Distribution System Data**

4.1	HT supply System	3 phase AC, 3 wire
4.2	Voltage	11000 volt $\pm$ 10%
4.3	Frequency	50 Hz $\pm$ 5%
4.4	Fault level	350MVA – 18.5kA
4.5	System neutral	Earthed at upstream 11kV source
4.6	LT supply system	3 phase AC, 4 wire
4.7	Rated voltage	415V +/-10%
4.8	Rated frequency	50 Hz $\pm$ 5%
4.9	Fault level	35MVA – 50kA

**5.0 Configuration**

S N	PMSS Type	DT Rating (kVA)	RMU	LV Panel				Recommended Dimensions – L x B x H (mm)
				Incomer ACB		Outgoing MCCB		
				Rating (A)	Qty (Nos)	Rating (A)	Qty (Nos)	
5.1	Type-1	630	3 Way	1250	1	800	3	2400 x 1800 x 2400
5.2	Type-2	1000	3 Way	2000	1	800	3	2400 x 2000 x 2400
5.3	Type-3	1000	3 Way	2000	1	800	5	3000 x 2000 x 2400
5.4	Type-4	1600	3 Way	3200	1	800	5	3000 x 2500 x 2400
5.5	Type-5	1600	3 Way	3200	1	800	6	3400 x 2500 x 2400
5.6	Type-6	2000	3 Way	3200	1	800	5	3000 x 2500 x 2400
5.7	Type-7	2000	3 Way	3200	1	800	6	3400 x 2500 x 2400

**Technical Specification of 11 KV Pad Mounted Substation**

Note: Dimensions are indicative and subject to optimization during detailed engineering to meet operational requirements and ensure compliance with relevant standards. Any change in dimensions is subject to BYPL approval.

**6.0 Construction**

6.1	Assembly	<ul style="list-style-type: none"> <li>a) Substation shall be factory assembled on a common base frame.</li> <li>b) Transformer, RMU and LV panel should be mounted on base frame using nuts, bolts, washers and spring washers so that each equipment can be removed from base frame at site for replacement. Welding of any equipment on base frame is not acceptable.</li> <li>c) Base frame shall be capable of withstanding load of the complete substation with safety factor of 1.5.</li> <li>d) Base frame bottom support pads to be provided for fixing by bolt to foundation</li> <li>e) Substation should be suitable for outdoor installation.</li> <li>f) Analysis/Simulation for strength of complete structure through STAAD Pro software to be submitted during detailed engineering.</li> </ul>
6.2	Layout	<ul style="list-style-type: none"> <li>a) RMU and LV panel shall be coupled on same side of transformer for ease of operation and optimization of footprint.</li> <li>b) Please refer Layout Drawing in Annexure-A</li> </ul>
6.3	Transformer to RMU Coupling	<ul style="list-style-type: none"> <li>a) Coupling through 11kV, 3CX150 sqmm XLPE insulated armored Cable.</li> <li>b) Cable termination shall be done through 11 kV heat shrinkable termination kit</li> <li>c) Cable box to be provided on transformer HV side for coupling with RMU. The cable box shall be openable and accessible from top and side of the transformer for easily accessing transformer side cable connections. Cable box shall be IP 55 with rain canopy on all joints to completely prevent entry of rain water.</li> </ul>
6.4	Transformer to LV Panel Coupling	<ul style="list-style-type: none"> <li>a) Connection between Transformer LV terminals and LV panel busbar shall be through flexible tinned copper braid with terminal lug.</li> <li>b) Copper braid shall be suitable for carrying rated continuous current depending upon the incomer rating. Max. current density should be 2.5 A per sqmm.</li> <li>c) All connections shall be done using minimum 02 no's nut bolts, plain washer and spring washer.</li> <li>d) The Coupling busbar should be of aluminum with max. current density of 1 A per sqmm.</li> <li>e) Length of overlap for connection shall not be less than the width of Busbar</li> <li>f) Bimetallic strip to be provided for connection with tinned copper braid with Aluminum busbar.</li> </ul>

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		<p>g) Connection chamber should be IP 55 with rain canopy on all joints to completely prevent entry of rain water.</p> <p>h) Connection chamber should be openable from top and sides for access to transformer and LV panel connections.</p>
6.5	Energy meter box	To be provided in LV Panel for DT metering
6.6	FRTU	FRTU should be mounted in LV compartment on top of LV panel or RMU based on space availability.
6.7	Lifting Arrangement	<p>a) Cradle type Lifting Arrangement with spreader bar and metallic channels to be provided for lifting of complete assembly from bottom.</p> <p>b) Metallic channels should be detachable and should have provision for connection to base frame through nut and bolts when not in use.</p> <p>c) Lifting arrangement shall maintain the balance and prevent toppling of substation during lifting</p> <p>d) Lifting hooks to be provided on each equipment for individual lifting of Transformer, RMU and LV panel.</p>

**7.0 11 kV Ring Main Unit**

7.1	RMU Configuration	
7.1.1	RMU Configuration	3 Way RMU with all VCB modules with three position disconnecter
7.1.1.1	Ring Feeder 1	Motorized VCB with manual operation facility. FPI and CBCT
7.1.1.2	Ring Feeder 2	Motorized VCB with manual operation facility. FPI and CBCT
7.1.1.3	Transformer Feeder	Motorized VCB with manual operation facility. Dual Powered relay with protection CTs to be provided.
7.1.2	Extensibility	Non extensible type
7.1.3	Circuit breaker, disconnecter & earth switch in RMU panel	All shall be non-draw out type, fixed position
7.1.4	Insulation Medium	
7.1.4.1	For panel	SF6 gas in sealed metallic tank
7.1.4.2	For Breakers	SF6 gas or Vacuum type (with disconnecter & earth switch)
7.1.5	Arc interruption chamber for breaker	Arc interruption chamber of breakers shall be separate from the main insulated tank.
7.2	RMU Panel Construction	
7.2.1	Panel type	Metal enclosed, framed, Compartmentalized panel construction
7.2.2	Service Location	Outdoor, non air conditioned environment

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7.2.3	Mounting	Free Standing type mounted on common base channel of pad mounted substation.
7.2.4	Overall Enclosure Protection	IP54 minimum, vermin proof
7.2.5	Doors	Front access with internal anti-theft hinge arrangement with minimum opening angle of 120°, minimum three hinges (desirable)
7.2.6	Covers	a) Bolted for rear access, with handles. Support for handle shall be provided at suitable place on RMU body. b) All the accessible bolts / screws shall be vandal proof. c) One set of required Special tools per RMU (if any) shall be in the scope of supply
7.2.7	Construction	2.5mm thick Galvanized sheet with 275GSM
7.2.8	Base frame	Raised frame of 300 mm height
7.2.9	HDPE clits	Shall be provided as cable supporting clamps for each power cable (to suit the cable size from 150 to 400 sqmm XLPE cable. Exact size shall be provided during drawing approval stage.)
7.2.10	Lifting lugs	Four numbers
7.2.11	Cable Entry	Bottom
7.2.12	Gland plate	a) Separate for control cable & power cable 3mm metallic b) Removable type & split type in two parts, with 1 no,90mm diameter knockout punch/ hole in the centre
7.2.13	Cable termination	
7.2.13.1	Cable type & size	3C X150 / 300 / 400sqmm Aluminum conductor XLPE with armor & PVC outer sheath
7.2.13.2	Terminals for 11kV cable termination	With right angled cold applied boots, set of required size of Brass Nut bolt – M16 size & Bimetallic washers.
7.2.13.3	Termination type	Suitable for heat shrinkable type
7.2.13.4	Termination height	700mm minimum, from gland plate
7.2.14	Bus bar	Tinned copper with insulated sleeve (Sizing Calculation to be submitted in support of its Guaranteed S.C. rating / Capability)
7.2.14.1	Bus bar continuous rated current	630amp
7.2.14.2	Bus bar short time withstand capacity	20 kA for 3 sec
7.2.14.3	Bus bar support insulator material	SMC / DMC resin

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7.2.14.4	Maximum temperature rise above reference ambient	In line with Table 3 of IEC 62271-207
7.2.15	Earth bus bar	Aluminum / Tinned Copper sized for rated fault duty for 1 sec
7.2.15.1	Earth bus internal connection to all noncurrent carrying metal parts	By 2.5 sqmm copper flexible wire, Earth connection point maximum 1 meter away from cable test facility
7.2.15.2	Earth bus external connection to owners earth	Studs on both sides with holes for M10 bolt + hardware to readily receive purchaser earth connection
7.2.16	Cooling arrangement	By natural air without fan
7.2.17	Panel internal wiring	<ul style="list-style-type: none"> <li>a) Multi strand flexible color coded PVC insulated Cu wire 1 sqmm (SCADA) / 2.5 sqmm(for CT's)</li> <li>b) 1100 V grade with ferrules at both ends.</li> <li>c) R phase - Red, Y phase – Yellow, B phase – Blue, AC- black, DC – grey, Earth – green</li> <li>d) All the internal control / auxiliary wiring shall be routed through proper conduit.</li> </ul>
7.2.18	Hardware (Nut, bolts & handle)	Stainless steel (Except termination nut-bolts which are Brass / Tinned Copper)
7.2.19	Gasket	Neoprene rubber
7.2.20	Marshalling terminal blocks	<ul style="list-style-type: none"> <li>a) 1 sqmm, Nylon 66 material, screw type + 20% spare in each row of TB.</li> <li>b) Disconnecting type Terminal block to be provided for CT connections.</li> </ul>
7.2.21	Panel cover fixing bolts	<ul style="list-style-type: none"> <li>a) Allen head 6mm with hexagonal slot.</li> <li>b) Seals shall be provided between the Panel and removable covers to avoid theft. The seals shall be opened/broken by using specific equipment.</li> </ul>
7.2.22	Padlock facility	Required for all earth switches & all handles
7.2.23	Internal Arc classification	
7.2.23.1	Explosion vents	<ul style="list-style-type: none"> <li>a) To ensure operator's safety, design should ensure that gases / flames generated during flash over / blast in any of the compartment, must not come out from the front of RMU and shall not go to adjacent cable compartment.</li> <li>b) Internal arc test report (for Cable compartment &amp; other compartments) must be submitted to support above, along with RMU GA drawing indicating these vents.</li> <li>c) There shall not be any type of holes, gaps etc on the walls of cable termination compartment.</li> </ul>
7.2.23.2	Internal Arc rating	20 kA for 1s
7.2.23.3	Internal arc classification	IAC AFL
7.2.24	SF6 Gas Annual Loss	< 0.1% of total mass. Pressure of SF6 gas shall be

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		above the operating limit throughout the life of the equipment.
7.2.25	Voltage Presence Indicator System (VPIS)	<ul style="list-style-type: none"> <li>a) VPIS to be provided for all feeders.</li> <li>b) VPIS shall be provided conforming to IEC62271-213 standard.</li> <li>c) VPIS shall be provided with terminals facility for phasing purpose.</li> <li>d) VPIS sensor shall be installed on screened bushing.</li> <li>e) NO/NC Contact shall be provided with VPIS for taking the Live line indication status to remote SCADA through FRTU.</li> </ul>
7.2.26	Push Buttons	On/Off PBS shall be shrouded/covered to prevent accidental operation.
7.3	Circuit breaker	
7.3.1	Type	Three pole, operated simultaneously by a common shaft
7.3.2	Arc interruption medium	Vacuum Bottle
7.3.3	Operating mechanism	Motorized spring charged stored energy type with facility for manual charging
7.3.4	Motor rated voltage	24V DC
7.3.5	Emergency trip / open push button	On panel front with Protective flap to prevent any accidental tripping of breaker.
7.3.6	Continuous rating	630amp
7.3.7	Short time withstand capacity	20 kA for 3 sec
7.3.8	Minimum number of operations at rated current (as per IEC 62271-100)	<ul style="list-style-type: none"> <li>a) Mechanical Endurance – Class M1(2000 operations)</li> <li>b) Electrical Endurance – Class E2</li> </ul>
7.3.9	Fault making capacity	50 kA peak
7.3.10	Fault breaking capacity	20 kA Minimum
7.3.11	Maximum number of operations at rated Fault current (as per IEC 62271-100)	Electrical Endurance – Class E2. To be guaranteed by manufacturer with authorized lab test reports
7.3.12	Breaker status auxiliary contact	2NO + 2NC wired to terminal block
7.4	Disconnecter with Earth switch	
7.4.1	Type	Three phase, three position suitable for <ul style="list-style-type: none"> <li>a) Connecting</li> <li>b) Disconnecting</li> <li>c) Earthing</li> </ul>
7.4.2	Dielectric medium	SF6 gas
7.4.3	Operating mechanism for close & open	Manual

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7.4.4	Fault making capacity	50 kA
7.4.5	Auxiliary contacts	1NO+1NC wired to terminal block
7.4.6	Location of disconnect switch	located on purchaser cable connection side of vacuum bottle
7.4.7	Minimum number of operations at no load (as per IEC 62271-102)	Mechanical Endurance – Class M0 (1000 operations)
7.4.8	Making capacity endurance of earth switch (as per IEC IEC 62271-102 )	Class E2 (Min 10 operations)
7.5	For Cable Feeder circuit breaker module (Module 1&Module 2)	
7.5.1	Self-powered relay	Not required
7.5.2	Fault passage indicator (FPI)	<ul style="list-style-type: none"> <li>a) To be provided on each cable feeder for RMU. FPI shall be earth fault protection type.</li> <li>b) Digital type and shall operate as the current exceeds the set value.</li> <li>c) Flash indication for identifying faults with red LED with one flash for every one sec. Test &amp; reset button 1 NO + 1 NC potential free contact for remote indication FPI power supply unit shall use lithium battery with minimum life of 1000 blinking hours, so that FPI shall continue to function even after main feeder has tripped.</li> <li>d) FPI shall be powered with 24V DC</li> </ul>
7.5.2.1	CBCT	CBCT – Split open type suitable for mounting without disconnection of cable for Earth Fault.
7.5.2.2	Connection of CBCT with FPI	Cable connection of FPI with CBCT shall be of pre moulded type on the CBCT side. Cable shall be 2.5 sqmm cu cable or fiber cable.
7.5.2.3	Earth Fault setting	
7.5.2.3.1	Sensing Current	50 to 400A
7.5.2.3.2	Sensing Time	30 to 100 ms in steps of 10ms.
7.5.2.3.3	Reset Time	0.5 -1-2-3-4 hr
7.5.2.3.4	Resetting Facility	<ul style="list-style-type: none"> <li>a) Self reset after reset time</li> <li>b) Self reset after restoration of voltage</li> <li>c) Manual</li> <li>d) Remote resetting</li> </ul>
7.5.2.3.5	Contact Rating	1A at 230 V
7.5.2.3.6	Degree of Protection	IP 54
7.5.2.3.7	Mounting Arrangement	Surface or Flush Mounting
7.5.3	Data by purchaser	

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7.5.3.1	System Fault Level	18.5 kA
7.5.3.2	Type of Grounding	Solidly Grounded
7.5.3.3	Fault clearing time	100ms
7.5.3.4	Cable Type	XLPE , 70 sqmm to 400 sqmm
7.6	For Transformer circuit breaker module (Module 3)	
7.6.1	Current transformer	<ul style="list-style-type: none"> <li>a) 75-150/ 1 amp</li> <li>b) Resin Cast Ring type</li> <li>c) Considering three core cable terminations, mounting flexibility shall be provided for CT's (in horizontal &amp; vertical direction both). Additionally, CAUTION marking (by sticker/ paint) shall be provided to avoid CT's installation above the screen of cable. (i.e. earth potential point.)</li> <li>d) Disconnecting type terminal block shall be provided for CT Circuit.</li> <li>e) Change in CT ratio shall be possible from the disconnecting type TB. Any change in CT ratio from CT secondary will not be acceptable.</li> </ul>
7.6.2	CT accuracy class	5P10 minimum
7.6.3	CT burden	Rated CT burden should be 20% higher than the connected relay burden.
7.6.4	Protection relay	<ul style="list-style-type: none"> <li>a) Dual-powered (Self powered and Auxiliary 24V DC powered), Microprocessor based Numerical relay with backlit LCD display, manual reset type, flush mounted on panel front</li> <li>b) IDMT over current and earth fault protection with high set element</li> <li>c) The relay should record atleast 10 faults on FIFO basis</li> <li>d) In addition to faults, relay should have event recorder</li> <li>e) RS-485 Port to be provided on the Relay for communication with SCADA through FRTU on Modbus RTU protocol. All relay parameters including fault records should be accessible from SCADA. Necessary internal wiring also shall be done between Relay and FRTU.</li> <li>f) Licensed software for programming shall be provided for Relay communication.</li> </ul>
7.6.4.1	Protections Required	Over current, Instantaneous & earth fault
7.6.4.2	Tripping characteristic	Inverse definite minimum time characteristics for Over current and earth fault protection
7.6.4.5	Over current relay setting	10% - 250% of $I_n$ , steps of 1%.

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7.6.4.6	Overcurrent Setting time delay	25ms – 1500ms in steps of 10 ms
7.6.4.7	Instantaneous Over current setting	100% - 2500% of In & OFF
7.6.4.8	Instantaneous over current Setting time delay	0 ms- 100 s in steps of 10 ms
7.6.4.9	Earth fault setting	5%- 250 % of In, steps of 10%
7.6.4.10	Earth fault setting time delay	25 ms – 1500 ms in steps of 10 ms
7.7	Battery	
7.7.1	Battery type	Li-ion battery
7.7.2	Rating	24V DC, 26AH
7.7.3	Location	Battery shall be kept in shielded compartment in FRTU panel and fixed with rivet and nut bolt. Individual battery terminal shall be wired upto terminal blocks mounted in FRTU cabinet.
7.8	Battery Health Monitoring Unit (BHMU)	<ul style="list-style-type: none"> <li>a) BHMU will have Auto / Manual test facility. In Auto Mode it ensures battery automatic discharge at preset period with 100W discharge resistor along with suitable algorithm to check the healthiness based on rate of discharge.</li> <li>b) In manual Mode PB to be provided for battery testing.</li> <li>c) Provision for Bypass mode of BHMU shall also be provided.</li> <li>d) Output contacts :230V/24V DC -5A <ul style="list-style-type: none"> <li>• Battery Fail: 1 CO</li> <li>• Test in process</li> </ul> </li> <li>e) Indications: <ul style="list-style-type: none"> <li>• BHMU healthy</li> <li>• Battery Fail</li> <li>• Battery Low</li> <li>• Test On</li> </ul> </li> <li>f) Remote monitoring of Battery voltage and current on Modbus RTU protocol</li> </ul>
7.9	Battery charger	2 no's chargers with auto change over using 10A diodes.
7.9.1	Fuse at charger input & output supply	<ul style="list-style-type: none"> <li>a) 2no's fuse for AC Incoming supply.</li> <li>b) Fuse location shall be preferably away from Battery charger location.</li> </ul>
7.9.2	Charger temperature rise at heat sink at full load for 2 hours	Maximum 55 deg C above ambient of 40 deg C
7.9.3	Battery charger cooling method	Natural without any fans
7.9.4	Individual CBs DC control	Required with fuse
7.10	FRTU	a) FRTU shall be provided and integrated with RMU and LV compartment with completely

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		wired along with modem suitable for communicating over GSM network and also have facility to communicate with fiber network. b) Bidder shall demonstrate the data communication of FRTU modem with MCC/BCC for the proposed modem for approval of owner in the Pre Order technical evaluation stage. c) For detailed specification of FRTU, I/O requirements, refer standard specification of Annexure E.
7.11	Modem	a) Modem should be dual sim 4G and shall also have compatibility of 3G/2G network. b) For detailed technical specification of modem, please refer Annexure D.
7.12	Requirements of sealed housing live parts (RMU SF6 gas chamber)	
7.12.1	Enclosure	Stainless steel enclosure suitable for IP67
7.12.2	SF6 gas pressure low alarm	To be provided
7.12.3	Provision for SF6 gas filling	To be given (For 'sealed for life' design of RMU, this is not applicable)
7.12.4	Provision for SF6 gas pressure indication	Manometer with non-return valve
7.12.5	Arc interruption method for SF6 breaker / Load break switch	Puffer type / rotating arc type
7.12.6	Potential free contacts for SF6 gas pressure low	1NO +1NC
7.13	RMU operation interlocks	
7.13.1	Circuit breaker & respective earth switch	Only one in 'close' condition at a time
7.13.2	Prevent the removal of respective cable covers if circuit breaker is 'ON'	Electrical / Mechanical
7.13.3	Prevent the closure of circuit breaker if respective cable cover is open	Electrical / Mechanical
7.13.4	Cable test plug for CB accessible only if Earth switch connected to earth	Mechanical
7.13.5	Prevent motorized operation of CB during manual operation	a) Electrical / Mechanical b) Electrical signal shall cut-off completely during manual operation. If CB fail to operate, the supply to motor shall be disconnected after certain time period to prevent burning of motor due to continuous supply.
7.13.6	Prevent motorized operation of	Necessary feature (Electrical)

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	more than one CB at a time	
7.14	Indication & signals	Local
7.14.1	Operation counter on front / Inside the RMU LT chamber	To be provided for each Circuit breaker, with minimum four digits & non resettable type
7.14.2	Cable charge status indication for all CB	Capacitor type voltage indicators with LED on all the phases (Shall be clearly visible in day light)
7.14.3	Spring charge status indication	On front for breaker
7.14.4	Circuit breaker On/OFF indication	Green for OFF / Red for ON
7.14.5	Earth switch closed indication (For Each CB)	On front
7.14.6	Circuit breaker protection relay operated on fault	Flag
7.14.7	Fault passage indication on CB	Flag
7.14.8	Status signals to SCADA-to be wired to marshalling terminal block	2NO + 2NC
7.14.8.1	CB close / open	potential free contacts
7.14.8.2	CB Earth Switch close /open	potential free contacts
7.14.8.3	Battery charger Fail	potential free contacts
7.14.8.4	CB close / open	potential free contacts
7.14.8.5	Protection relay operated	potential free contacts
7.14.8.6	FPI operated	potential free contacts
7.14.8.7	SF6 gas pressure low	potential free contacts
7.14.8.8	Ready to close signal to control centre to indicate all interlocks are OK	a) Potential free contacts b) Signal to indicate Ready for remote operation from SCADA required for entire closing and entire tripping circuit with all interlocks accounted for.
7.14.8.9	Local / Remote Switch	a) A manual Local / Remote selector switch shall be provided for each FRTU to disable all control outputs by breaking the power supply connection to the control outputs. b) When in the "Local" position, the Local/remote switch shall allow testing of all the control outputs of FRTU without activating the control outputs to field devices. A status input indication shall be provided for the Local/ Remote switch to allow the SCADA system to monitor the position of the switch. c) The status of Local/ Remote switch should be wired and configured in FRTU.

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7.14.8.10	Commands from SCADA- to be wired to marshalling terminal block	a) Cable feeder close / open b) FPI Reset c) Transformer feeder close / open
7.15	Mimic diagram, labels & finish	a) Mimic diagram (Shall not be accepted with Stickers) b) On panel front with description of function & direction of operation of handles/buttons
7.15.1	Operating Instructions	Operating instruction chart and Do's & Don'ts in Hindi / local language to be displayed on left/front side of panel enclosure on anodized Al Sheet 16SWG, duly affixed on panel.
7.15.2	Name plate on panel front	Fixing by rivet only
7.15.2.1	Material	Anodized aluminum 16SWG / SS
7.15.2.2	Background	Satin Silver
7.15.2.3	Letters, diagram & border	Black
7.15.2.4	Process	Etching
7.15.2.5	Name plate details	a) Month & year of manufacturing b) equipment type c) Input & output rating d) Purchaser name & order number e) Guarantee period
7.15.3	Labels for meters & indications	Anodized aluminum with white character on black background or 3 ply lamicoid
7.15.4	Danger plate on front & rear side	As per IS 2551
7.15.6	Pre-treatment of GI sheet of Enclosure	GI sheet shall be pre-treated before powder coating to avoid rusting and corrosion
7.15.6.1	Pre-treatment process	Seven tank process (Pre-galvanization shall remain intact)
7.15.6.2	Primer	Two coats of zinc rich primer shall be applied at welded and punched areas
7.15.6.3	Finish	Powder Coating
7.15.6.4	Painting external finish	a) Powder coated epoxy polyester base grade A b) Shade -RAL 632 c) Uniform thickness 85 micron minimum
7.15.6.5	Painting internal finish	a) Powder coated epoxy polyester base grade A b) Shade -white c) Uniform thickness 60 micron minimum

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### 8.0 Oil Type Hermetically Sealed Distribution Transformer

8.1	Major Design criteria	
8.1.1	Voltage variation on supply side	+/- 10 %
8.1.2	Frequency variation on supply side	+/- 5 %
8.1.3	Combined variation of voltage and frequency	- 20 % or + 10 %
8.1.4	Service Condition	Refer Table 3.0
8.1.5	Insulation level	
8.1.5.1	One minute power frequency withstand voltage	3 kV for 415V system & 28 kV for 11 kV system
8.1.5.2	Lightning impulse withstand voltage	75 kV peak for 11 kV system
8.1.6	Short Circuit withstand level	Three phase dead short circuit at secondary terminal with rated voltage maintained on the other side for 3 sec
8.1.7	Overload capability	As per IS 2026 part 7
8.1.8	Noise level	Shall not exceed limits as per NEMA TR-1 with all accessories running measured as per IEC 551 / NEMA standard
8.1.9	Harmonic currents	Transformer to be designed for suppression of 3rd, 5th, 7th harmonic voltages and high frequency disturbances.
8.1.10	Partial Discharges	Transformer to be free from partial discharge up to 120% of rated voltage as the voltage is reduced from 150% of rated voltage i.e. there shall be no significant rise above background level.
8.1.11	Parallel operation with existing transformer z= 5%	Shall be designed to operate in parallel
8.2	Major Parameters	
8.2.1	Rating	630/1000/1600/2000 KVA
8.2.2	Voltage Ratio	11kV / 415 volts
8.2.3	Vector Group	Dyn11
8.2.4	Impedance at 75 deg C	4.5% for 630 kVA 5% for 1000 kVA 6.25% for 1600/2000 kVA (tolerance as per IS)
8.2.5	Losses at 75 deg C	With KNAN Cooling
8.2.5.1	Total Loss –Max in kW at 50% Load	630kVA      1000kVA      1600kVA      2000 kVA

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		1.86	2.790	4.2	5.05
8.2.5.2	Total Loss –Max in kW at 100% Load	630kVA	1000kVA	1600kVA	2000 kVA
		5.3	7.7	11.8	15
8.2.6	Temperature rise top oil	55 Deg C max over ambient 40 Deg C			
8.2.7	Temperature rise winding	60 Deg C max over ambient 40 Deg C			
8.2.8	Flux density	1.7 Tesla at 100% rated voltage 1.9 Tesla at 112.5% rated voltage			
8.2.9	Current density	3 amp / sqmm for HV & LV winding			
8.2.10	Tapping on HV winding	Off circuit + 10% to -10% in 2.5% step			
8.2.11	Design Clearances	Phase – phase		Phase – earth	
8.2.11.1	11kV system	180mm		120mm	
8.2.11.2	415V system	25mm		25mm	
8.3	Transformer construction				
8.3.1	Type	Double Copper wound, three phase, oil immersed, with KNAN cooling			
8.3.2	Tank	Type tested design			
8.3.2.1	Design	<ul style="list-style-type: none"> <li>a) Hermetically sealed type with corrugated fins and without conservator</li> <li>b) Oil filled with N2 cushion at top filled with positive pressure. N2 shall be technical grade in accordance with IS:1747</li> <li>c) With bolted top cover</li> </ul>			
8.3.2.2	Plate / Corrugated fin / tank features	<ul style="list-style-type: none"> <li>a) Adequate for meeting mechanical &amp; electrical withstand requirements, as per applicable standard.</li> <li>b) The tank and its sealing (gaskets, O-rings, etc.) shall be of adequate strength to withstand positive and negative pressures built-up inside the tank while the transformer is in operation. The maximum pressure generated inside the tank should not exceed 40kPa, positive or negative.</li> <li>c) Corrugated fins shall be built up of CRCA sheets of minimum 1.2mm thick.</li> <li>d) The corrugated tank wall shall ensure sufficient cooling of the transformer and compensate for the changes in the oil volume during operation.</li> <li>e) The transformer shall be capable of giving continuous rated output, without exceeding the specified temperature rise.</li> <li>f) Internal clearance of tank shall be such that, it shall facilitate easy lifting of core with coils from the tank and HV &amp; LV bushings mounted on Top cover.</li> <li>g) All joints of tank and fittings shall be oil tight. The</li> </ul>			

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		<p>tank design shall be such that the core and windings can be lifted freely with cover. The tank plate shall be of such strength that the complete transformers when filled with oil may be lifted bodily by means of lifting lugs.</p> <p>h) Tanks with corrugations &amp; without conservator shall be tested for leakage at a pressure as per the applicable standard.</p>
8.3.2.3	Material of Construction	Mild steel plate with low carbon
8.3.2.4	Plate Thickness	To meet the requirements of pressure and vacuum type tests as per IS 1180.
8.3.2.5	Welding features	<p>a) All seams and joints shall be double welded</p> <p>b) All welding shall be stress relieved for sheet thickness greater than 35 mm</p> <p>c) All pipes, stiffeners, welded to the tank shall be welded externally</p> <p>d) All corrugated fins or expansion bellows provided shall be double welded.</p>
8.3.2.6	Tank features	<p>a) Bottom with stiffeners &amp; adequate space for collection of sediments</p> <p>b) No external pocket in which water can lodge</p> <p>c) Tank bottom with welded skid base</p> <p>d) Strength to prevent permanent deformation during lifting, jacking, transportation with oil filled.</p> <p>e) Minimum disconnection of pipe work and accessories for cover lifting</p> <p>f) Tank to be designed for oil filling under vacuum</p> <p>g) Tank cover fitted with lifting lug</p>
8.3.3	Inspection cover for bushing & Core / Wind	As per manufacturer standard
8.3.4	Fittings and accessories on main tank	As per clause 8.8
8.3.5	Core	
8.3.5.1	Material	High grade , non ageing, low loss, high permeability, grain oriented, cold rolled silicon steel lamination
8.3.5.2	Grade	Minimum M3 or better

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8.3.5.3	Core Design Features	<ul style="list-style-type: none"> <li>a) Magnetic circuit designed to avoid short circuit paths within core or to the earthed clamping structures.</li> <li>b) Magnetic circuit shall not produce flux components at right angles to the plane of lamination to avoid local heating.</li> <li>c) Least possible air gap and rigid clamping for minimum core loss and noise generation.</li> <li>d) Adequately braced to withstand bolted faults on secondary terminals without mechanical damage and damage/displacement during transportation and positioning.</li> <li>e) Percentage harmonic potential with the maximum flux density under any condition limited to avoid capacitor overloading in the system.</li> <li>f) All steel sections used for supporting the core shall be thoroughly sand blasted after cutting, drilling, welding.</li> <li>g) Provision of lifting lugs for core coil assembly.</li> <li>h) Supporting framework designed not to obstruct complete drainage of oil from transformer</li> </ul>
8.3.6	Winding	
8.3.6.1	Material	Electrolytic Copper
8.3.6.2	Maximum Current Density allowed	Maximum 3 amp / sqmm
8.3.6.3	Winding Insulating material	Thermally Upgraded Paper (TUP) on winding conductor of Insulation Class B (130 Deg C)
8.3.6.4	Winding Insulation	Uniform
8.3.6.5	Design features	<ul style="list-style-type: none"> <li>a) Stacks of winding to receive adequate shrinkage treatment.</li> <li>b) Connections braced to withstand shock during transport, switching, short circuit, or other transients.</li> <li>c) Minimum out of balance force in the winding at all voltage ratios.</li> <li>d) Conductor width on edge exceeding six times its thickness.</li> <li>e) Transposed at sufficient intervals.</li> <li>f) Coil assembly shall be suitably supported between adjacent sections by insulating spacers + barriers.</li> <li>g) Winding leads rigidly supported, using guide tubes if practicable.</li> <li>h) Winding structure &amp; insulation not to obstruct free flow of oil through ducts.</li> <li>i) Delta connection shall be done using Flexible cable.</li> </ul>
8.3.7	Transformer Oil	<ul style="list-style-type: none"> <li>a) Synthetic Ester oil</li> <li>b) Oil should be in accordance with specification as per Annexure C of this document.</li> <li>c) One sample of oil drawn from every lot of</li> </ul>

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		transformer offered for inspection should be tested at CPRI/ERDA for tests as listed in IS 16081/IEC 61099. The cost of this testing should be included within the cost of transformer.
8.3.8	HV cable Compartment for coupling with RMU	Required
8.3.8.1	Material of Construction	Sheet Steel min. 2.5 mm thick
8.3.8.2	Type of HV side bushing	Porcelain type, 12kV rated voltage
8.3.8.2.1	Minimum creepage distance of all bushings and support insulators.	31mm/kV
8.3.8.2.2	Protected creepage distance	At least 50% of total creepage distance
8.3.8.2.3	Continuous Current rating	Minimum 20% higher than the current corresponding to the minimum tap of the transformer
8.3.8.2.4	Rated thermal short time current	26.3 kA for 3 sec
8.3.8.2.5	Bushing terminal lugs in oil and air	Tinned copper
8.3.8.3	Connection on HV phase	a) 50x10 mm Tinned copper Bus bar b) 12 kV Insulated sleeve to be provided on busbar
8.3.8.4	Cable gland for HV	Nickel plated brass double compression weatherproof cable gland suitable for 3CX150 sqmm cable
8.3.8.5	Cable lug for HV	Single hole Aluminum lugs, suitable for 3CX150 sqmm cable
8.3.8.6	Support insulators inside HV cable box	Epoxy type, 12KV rated voltage
8.3.8.7	Cable entry	Bottom
8.3.8.8	Detachable Gland Plate material and thickness	3 mm MS
8.3.8.9	Termination height required for cable termination	1000mm, Minimum
8.3.8.10	Terminal Clearances	a) Phase - phase -180 mm b) Phase - earth -120 mm
8.3.8.11	Essential parts for HV cable box	a) Flange type removable top and side cover with handle for cable termination, inspection and maintenance. b) Earthing boss for the cable box c) Earthing link for the gasketed joints at two point for each joint d) Earthing provision for cable Armour/Screen e) Drain plug f) Rainhood on gasketed vertical joint

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		g) Danger / caution plate
8.3.9	LV connection compartment for coupling with LV panel	Required
8.3.9.1	Material of Construction	a) Sheet Steel min. 2.5 mm thick b) LV busbar coupling chamber/duct shall be IP55
8.3.9.2	Type of LV side bushing	a) Porcelain type, 1.1kV rated voltage b) It shall be complete with brass palm
8.3.9.2.1	Minimum creepage distance of all bushings and support insulators.	31mm/kV
8.3.9.2.2	Protected creepage distance	At least 50% of total creepage distance
8.3.9.2.3	Continuous Current rating	Minimum 20% higher than the current corresponding to the minimum tap of the transformer
8.3.9.2.4	Rated thermal short time current	26.3kA for 3 sec
8.3.9.2.5	Bushing terminal lugs in oil and air	Tinned copper.
8.3.9.3	Coupling with LV panel	a) Refer clause 9.1.2.1 b) Bus bar shall be provided with color coded insulating heat shrinkable sleeves rated for 1.1 kV
8.3.9.4	Essential provision for LV side additional neutral connection Box for Grounding	a) Additional neutral bushing of porcelain type with brass palm connector (as per IS 3347) shall be provided. b) The rating of additional neutral bushing should be same as phase bushing. c) Connection between the main neutral and additional neutral shall be provided. d) Protection box shall be provided in order to prevent ingress of water
8.3.10	Atmospheric protection for clamp and fitting of iron and steel	Hot dip galvanizing as per IS 2633
8.3.11	Off Circuit tap Switch	On HV winding
8.3.11.1	Range /Step	+ 10 % to -10% in steps of 2.5 %
8.3.11.2	Type	Rotary type, 3 pole gang operated,
8.3.11.3	Operating Voltage	11kV
8.3.11.4	Rated Current for tap Switch	100 amps for 630kVA/1000 kVA 150 amp for 1600 kVA/2000 kVA
8.3.11.5	Operating Handle	External at suitable height to be operated from ground level.
8.3.11.6	Tap position indicator	With direction changing facility, locking arrangement, caution plate metallic fixed by rivet.

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8.3.12	Pressure Relief Device	Required
8.4	Hardware	
8.4.1	External	a) Stainless Steel- for size up to 12 mm b) Hot dip galvanized- for size greater than 12 mm
8.4.2	Internal	Cadmium plated except special hardware for frame parts and core assembly as per manufacturer's design
8.5	Gasket	
8.5.1	For Transformer, surfaces interfacing with oil like inspection cover etc.	Gaskets shall be Type III as per IS 11149/Type C as per IS 4253 (Part 2) and shall be compatible with temperature thermal class of 130°C
8.5.2	For Cable boxes, Marshalling box, etc.	Neoprene rubber
8.6	Valves	
8.6.1	Material of construction	Brass / gun metal
8.6.2	Type	Both end flanged gate valve / butterfly valve depending on application
8.6.3	Size	As per manufacturer's standard
8.6.4	Essential provision	Position indicator, locking rod, padlocking facility, valve guard, cover plate.
8.7	Painting of transformer	
8.7.1	Surface preparation	By shot blasting method
8.7.2	Finish on internal surfaces of the transformer	Bright Yellow heat resistant and oil resistant paint two coats. Paint shall neither react nor dissolve in hot transformer insulating oil.
8.7.3	Finish on outer surface of the transformer-frame parts	a) Primary coat of epoxy polyester base grade A of shade RAL 632 as per IS 5 b) Final coat of Poly urethane paint of shade RAL 632 as per IS 5 c) 50 mm wide horizontal strip of paint shade green 218, as per IS 5 around DT tank in the middle of it. d) Minimum thickness 85 microns
8.8	Fittings & accessories	
8.8.1	Rating and Diagram Plate	Required
8.8.1.1	Material	Anodized aluminum 16SWG
8.8.1.2	Background	Satin Silver
8.8.1.3	Letters, diagram & border	Black
8.8.1.4	Process	Etching
8.8.1.5	Rating and Diagram Plate details	Following details shall be provided on rating and diagram plate: a) Type/kind of transformer with winding material b) IS/IEC standard to which it is manufactured c) Manufacturer's name d) Transformer serial number e) Month and year of manufacture f) Rated frequency in Hz

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		<ul style="list-style-type: none"> <li>g) Rated voltages in kV</li> <li>h) Number of phases</li> <li>i) Rated power in kVA</li> <li>j) Type of cooling (KNAN)</li> <li>k) Oil type Synthetic Ester oil</li> <li>l) Rated currents in Amp</li> <li>m) Vector group connection symbol</li> <li>n) 1.2/50<math>\mu</math>s wave impulse voltage withstands level in KV</li> <li>o) Power frequency withstands voltage in KV</li> <li>p) Impedance voltage at rated current and frequency in percentage at principal, minimum and maximum tap</li> <li>q) Load loss at rated current.</li> <li>r) No-load loss at rated voltage and frequency</li> <li>s) Continuous ambient temperature at which ratings apply in deg c</li> <li>t) Top oil and winding temperature rise at rated load in deg c</li> <li>u) Winding connection diagram with taps and table of tapping voltage, current and power</li> <li>v) Transport weight of transformer</li> <li>w) Weight of core and windings</li> <li>x) Total weight</li> <li>y) Volume of oil</li> <li>z) Weight of oil</li> <li>aa) Name of the purchaser</li> <li>bb) PO no and date</li> <li>cc) Guarantee period</li> </ul>
8.8.2	Terminal marking Plate for Bushing	Anodized aluminum black lettering on satin silver background, both inside cable boxes near termination and on cable box cover (all fixed by rivet)
8.8.3	Company Monogram Plate fixed by rivet	Required
8.8.4	Lifting Lug to lift complete transformer with oil	Required
8.8.5	Lifting lug for top cover	Required
8.8.6	Lashing Lug	Required
8.8.7	Jacking Pad with Haulage hole to raise or lower complete transformer with oil	Required
8.8.8	Detachable Bidirectional flat roller Assembly	Required
8.8.9	Pockets for ordinary thermometer on tank cover with metallic identification plate fixed by rivet.	Required
8.8.10	Drain valve (gate valve) for the main tank with cork	As per manufacturer design

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	above ground by 150mm minimum with padlocking and valve guard with metallic identification plate fixed by rivet.	
8.8.11	Filter valve (gate valve) at top with padlocking and valve guard with metallic identification plate fixed by rivet.	As per manufacturer design
8.8.12	Air Release Plug on tank cover with metallic identification plate fixed by rivet.	As per manufacturer design
8.8.13	Oil level indicator with low level switch	As per manufacturer design
8.8.14	Earthing pad on tank for transformer earthing complete with non-ferrous nut bolt, washers, spring washers etc. with metallic identification plate fixed by rivet	Required
8.8.15	Rain hood for vertical gasket joints	Required
8.8.16	Earthing bridge by copper strip jumpers on all gasket joints at at least two points for electrical continuity	Required
8.8.17	Skid base welded type with haulage hole	Required
8.8.18	Core Frame to tank Earthing	Required
8.8.19	Danger plate on Transformer, cable boxes (all fixed by rivet)	Required , as per IS 2551
8.8.20	Caution plate for Off Circuit tap changer fixed by rivet.	Required
8.8.21	Pressure Relief Device	Required
8.8.22	Protection relay for internal parameters that is pressure, temperature, liquid level and gas detection	Required
8.8.23	Oil filling hole having (1-1/4" nominal size thread) with cover	Required
8.8.24	An extended pipe connection on upper end with welded cover. Pipe shall be suitably threaded over a sufficient	Required

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	length to enable use of refilling /siphon connection after removing the welded connection or any other similar arrangement capable of reuse.	
8.8.25	User manual for Hermetically Sealed Transformers must be provided for review as a part of the technical proposal. The manual must be provided with, but not limited to, maintenance schedule, frequency & method of oil-sampling, procedures for oil-filling & oil-filtration, etc.	Required

**9.0 Low Voltage Panel**

9.1	Low voltage system configuration	Configuration shall be as per the clause 5.0
9.1.1	General construction	<p>a) It shall be dust-tight and vermin-proof sheet steel cabinet suitable for Outdoor installation.</p> <p>b) Panel shall be of modular construction with separate metal enclosed compartment for the following:</p> <ul style="list-style-type: none"> <li>• Each Incomer - Switchgear</li> <li>• Busbar</li> <li>• Each Outgoing - Switchgear</li> <li>• Each Outgoing - Cable Termination</li> <li>• Energy meter</li> <li>• FRTU based on space availability</li> </ul> <p>c) Each compartment shall be such that the fault in one compartment does not impact the functioning of adjacent compartments.</p>
9.1.1.1	Incomer- Switchgear Compartment	<p>a) It should be provided on the front of the panel.</p> <p>b) Withdrawable type ACB to be provided for easy replacement at site.</p> <p>c) ACB shall be operable from front of the panel.</p> <p>d) Front cover shall be provided over each compartment such that it is possible to operate the ACB with front cover in place.</p> <p>e) Switchgear operating handles shall be totally flushed with the compartment cover. ACB shall have rotary type handles for ON/OFF positions. Mechanical interlocking to be provided such that switchgear door cover shall not open unless ACB is in 'OFF' position.</p> <p>f) All indications and instruments shall be mounted on the front cover and fully wired through terminal</p>

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		<p>blocks of appropriate size.</p> <p>g) Operation height for switchgear and instruments shall not be more than 1600 mm.</p> <p>d) Each compartment shall have adequate space for carrying out the required operation and maintenance work.</p>
9.1.1.2	Outgoing- Switchgear Compartment	<p>a) Outgoing compartment should be provided on the front of the panel.</p> <p>b) MCCB shall be mounted on the base plate in such a manner that they can be easily replaced at site.</p> <p>c) MCCB shall be operable from front of the panel.</p> <p>d) Bakelite/FRP sheet to be provided for segregation between phase to phase, phase to neutral, phase to panel body and neutral to panel body.</p> <p>e) MCCB shall have rotary type handles for ON/OFF positions. Mechanical interlocking to be provided such that switchgear door cover shall not open unless MCCB is in 'OFF' position.</p> <p>f) All indications and instruments shall be mounted on the front cover and fully wired through terminal blocks of appropriate size.</p> <p>g) Operation height for switchgear and instruments shall not be more than 1600 mm.</p> <p>h) Compartment shall have adequate space for carrying out the required operation and maintenance work.</p>
9.1.1.3	Outgoing Cable Termination Compartment	<p>a) Cable Termination should be provided on front side of the panel</p> <p>b) Cable entry should be from bottom</p> <p>c) Detachable 3mm MS gland plate with appropriate arrangement for sealing unused cable entries</p> <p>d) Bakelite/FRP sheet to be provided for segregation between phase to phase, phase to neutral, phase to panel body and neutral to panel body</p> <p>e) Front Cover shall be provided on the compartment</p> <p>f) Cable termination shall be suitable for 2R x 4C x 400 sqmm cable. Back to back cable termination on one busbar dropper is not acceptable. Two separate busbar dropper shall be provided in each phase and neutral for cable termination. Busbar Droppers shall be of 100 mm (minimum) in length. Busbar droppers shall be staggered such that the bottom dropper shall be atleast 100mm longer than the top dropper. Appropriate clearances shall be maintained between droppers for ease of cable termination. Please refer annexure B for details.</p> <p>g) Appropriate clamping arrangement shall be provided in base frame for all outgoing cables to avoid any stress on the switchgear assembly. Shape of cable clamps shall be such that clamping should not damage the outer sheath of cable.</p>

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		<ul style="list-style-type: none"> <li>h) Material of Cable Clamps shall be Nylon/HDPE.</li> <li>i) Cable termination height should be 450 mm from gland plate of the compartment</li> <li>j) Aluminum lugs suitable for 2R x4Cx400 Sqmm cable to be provided for each MCCB connection. 10% lugs shall be provided as spare.</li> <li>k) Termination Nut, bolt, plain washer and spring washer shall be provided for two hole lug.</li> </ul>
9.1.1.4	Busbar compartment	<ul style="list-style-type: none"> <li>a) Busbars shall be housed in totally enclosed busbar chambers.</li> <li>b) Incoming connections from the busbar to various feeders shall be designed so as not to disturb cable connections.</li> <li>c) Busbar arrangement should ensure safety of the operation/maintenance personnel and facilitate working on any outgoing module without the need for switching off infeed to the adjacent modules, as far as possible.</li> </ul>
9.1.1.5	Doors	<ul style="list-style-type: none"> <li>a) Doors shall be provided on front of the panel. This is in addition to the cover provided on individual compartments. Switchgear should be accessible for operation only after opening the front door of the panel.</li> <li>b) Width of each door shall not exceed 600 mm.</li> <li>c) All panel doors shall open by 120 degrees.</li> <li>d) The doors shall be fitted with double lipped gaskets.</li> <li>e) Doors shall be lockable with 3 pin locking arrangement. Two L Drop shall be provided for padlocking of each door.</li> <li>f) All doors shall have antitheft hinges such that it is not possible to remove the door from outside in closed position</li> </ul>
9.1.1.6	Energy Meter Compartment	To be provided for installation of DT Energy meter
9.1.1.6.1	Energy meter box Size	650 mm height x 450 mm width x 275 mm depth.
9.1.1.6.2	Cover	Bolted cover with transparent glass window shall be provided.
9.1.1.6.3	Fixing of energy meter within box	On slotted horizontal channel 40 x 12 mm size, channel shall be movable on vertical slotted angle 40 x 40 mm size at two ends.
9.1.1.6.4	Meter reading window	Front door shall be with acrylic sheet for viewing the energy meter.
9.1.1.6.5	Sealing arrangement	02 no's sealing arrangement shall be provided on meter box's door.
9.1.1.6.6	Data downloading port	Slot shall be provided on door of meter box for fixing 9 pin DB connector.
9.1.1.6.7	Test Terminal Block	No Test terminal block shall be provided.
9.1.1.6.8	Cables and wires	PVC insulated, extruded PVC inner sheathed, armored, extruded PVC outer sheathed 1100 V

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		grade control cable as per latest edition of IS 1554 part 1 minimum 2.5 sqmm for PT and 4 sqmm for CT with multi strand copper conductor.
9.1.1.6.9	Cable Glands	Nickel plated brass double compression weatherproof cable gland.
9.1.1.6.10	Wiring diagram	To be fixed on the back of door along with CT spec. etched on Anodised Aluminum plate fixed by rivet.
9.1.1.6.11	CT Secondary/VT wires	All CT secondary wire and VT wires shall be routed through metallic conduit. All secondary wires shall be bunched and kept for termination without any terminal/ TTB in between.
9.1.2	Busbar and Inter connection	
9.1.2.1	ACB to Main busbar Connection	<ul style="list-style-type: none"> <li>a) Flexible tinned copper braid / flexible strips with terminal lug to be provided for connection of ACB terminal with aluminum dropper/riser of main busbar.</li> <li>b) Copper braid shall be suitable for carrying rated continuous current depending upon the incomer rating. Max. current density should be 2.5 A per sqmm.</li> <li>c) Current density for aluminum dropper/riser from main busbar should be 1A/sqmm.</li> <li>d) All connections shall be done using minimum 02 no's nut bolts, plain washer and spring washer.</li> <li>e) Bimetallic strip to be provided for connection with tinned copper braid with Aluminum busbar</li> </ul>
9.1.2.2	Main Bus bar	<ul style="list-style-type: none"> <li>a) High conductivity electrolytic grade aluminum</li> <li>b) Suitable for carrying rated continuous current depending upon the incomer rating.</li> <li>c) Current density should be 1A per sqmm</li> <li>d) Busbars shall be continuous throughout the panel Size of neutral busbar should be same as phase busbar</li> </ul>
9.1.2.3	Vertical/Dropper Busbar for MCCB	<ul style="list-style-type: none"> <li>a) High conductivity electrolytic grade aluminum</li> <li>b) Busbar rating should be same as the rating of MCCB, Current density should be 1A per sqmm.</li> <li>c) Size of neutral busbar should be same as phase busbar</li> <li>d) Bus bars shall be color coded with heat resistant color tapes</li> </ul>
9.1.2.4	Busbar Joints	<ul style="list-style-type: none"> <li>a) Bimetallic connectors shall be provided for connection between copper and Aluminum joints</li> <li>b) Length of overlap of joint shall not be less than the width of Busbar</li> <li>c) All connections should be done using two nuts, bolts, washers and spring washers. Copper braids should be used where appropriate connection using busbars is not possible.</li> </ul>

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9.1.2.5	Temperature Rise	As per Table 6 - Temperature-rise limits of IS 61439
9.1.2.6	Insulation	a) Bus bar shall be provided with color coded insulating heat shrinkable sleeves rated for 1.1 kV b) Insulating shroud should be provided on all joints.
9.1.2.7	Insulator	a) Non-hygroscopic, Flame retardant, Track resistant, high creepage (25mm/kV), epoxy resin insulators to be provided for adequate bus bar support b) Support insulators have to be provided for all busbars including main busbars, tee offs, termination busbars etc.
9.1.2.8	Phase sequence shall be RYB	a) Left to Right, when viewing from Front b) Top to bottom c) Front to rear
9.1.3	Ingress Protection	a) Complete panel shall be IP54 b) Louvers may be provided subject to compliance with IP requirement c) Canopy of appropriate size shall be provided at both front and rear of the panel.
9.1.4	Enclosure Sheet material and thickness	a) Minimum 3 mm GI sheet (120 GSM minimum) for load bearing members b) Minimum 2.5 mm GI sheet (120 GSM minimum) for doors and covers c) Minimum 2.5 mm GI sheet (120 GSM minimum) for compartment walls. d) No welds, rivets, hinges or bolts shall be visible from outside.
9.1.5	Minimum clearances	25mm between phases and phase to earth for the entire run of horizontal and vertical bus bars
9.1.6	Earthing and Earth Busbar	a) The earth bus of 50X6 mm Aluminum shall run throughout the length of the panel. b) All non-current carrying metal work of the distribution board shall be effectively bonded to the earth bus. c) Hinged doors shall be earthed through flexible earthing braid. d) Two earthing terminals shall be provided on the panel for connection with substation earthing. One terminal should be provided on each side of the panel. e) Provision for connection of earthing braids of all incoming and outgoing cables shall be made.
9.1.7	Temperature Rise of Panel	As per Table-6 (Temperature rise limits) of IS 61439
9.1.8	Lifting hooks	a) Suitable lifting hooks and pads shall be provided on each panel for ease of lifting of panel. b) All lifting hooks shall be of heavy duty only. c) Lifting hooks shall be so placed that there shall be no damage to powder coating during transportation. Wherever lifting hooks are provided and welded with the sheet, the sheet shall have plates welded

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		to prevent any wrapping.
9.2	Air Circuit Breaker	
9.2.1	Rated Current	Rating of ACB as per configuration table 4.0. No De-rating upto 50 deg C
9.2.2	General Features	
9.2.2.1	Number of Phases	Three Phase & neutral
9.2.2.2	No. of Poles	4 pole ACB
9.2.2.3	ACB mounting	Withdrawable type
9.2.2.4	Line-Load Reversibility	Required
9.2.2.5	Terminals	Suitable for connection with aluminum busbars with phase barriers & shrouds
9.2.2.6	Operating mechanism	Manual spring charging, stored energy type
9.2.2.7	Operation counter	4 digit minimum, non-reversible
9.2.2.8	Operating handle	Required for manual spring charging
9.2.2.9	Local control	ON / OFF push buttons or lever with transparent shutter & locking facility
9.2.2.10	Closing coil	Continuous rated Closing coil shall operate correctly at all values of voltage between 85% & 110% of the rated voltage.
9.2.2.11	Tripping coil	Continuous Shunt trip coil shall operate correctly at all values of supply voltage between 70% & 110% of rated voltage.
9.2.2.12	ACB auxiliary contacts	6 NO + 6 NC minimum
9.2.2.13	ACB operating knob sealing	Possible in OFF condition
9.2.2.14	CT Requirement	All phase and neutral
9.2.2.15	Access to releases, coils & add on type replaceable parts to ACB	From front only
9.2.2.16	ACB indications	a) Separate ON / OFF / TRIP b) Spring charge status
9.2.2.17	ACB ingress protection (without enclosure)	IP2X minimum
9.2.2.18	Pollution degree as per IS 60947/IEC 60664-1	Degree 4: The pollution generates persistent conductivity caused
9.2.2.19	ACB temperature rise limits	As per table 2 & 3 of IS/IEC 60947-1
9.2.3	Operation Features	
9.2.3.1	Rated Operational Voltage(V)	415V
9.2.3.2	Rated Insulation Voltage (V)	1000V
9.2.3.3	Rated Impulse Voltage	8 kV for main circuit
9.2.3.4	Category of utilization	B
9.2.3.5	Rated Ultimate breaking capacity at rated voltage	a) Icu = 50kA minimum (up to 2000A rating ACB) b) Icu = 65kA minimum (above 2000A rating ACB)
9.2.3.6	Rated Service breaking capacity at rated voltage Ics	Ics =100% Icu
9.2.3.7	Rated short term withstand	Icw = 100% Icu

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	current for 1 sec at rated voltage - I <sub>cw</sub>	
9.2.3.8	Rated making current capacity - I <sub>cm</sub>	I <sub>cm</sub> = 220% I <sub>cu</sub>
9.2.3.9	Number of operating cycles at rated current (open + close) without changing arcing contact	Min 5000
9.2.3.10	Number of mechanical operating cycles (open + close)	Min 20000
9.2.3.11	Product Information marking on ACB	As per clause 5 of IS/IEC 60947 Part-I. In addition name of purchaser shall be marked on front of device
9.2.4	Measurement and Protection Requirement	
9.2.4.1	Microprocessor release	a) Microprocessor based release with true RMS based sensing. b) Selfpowered, tapped from incoming side of supply, setting panel with locking arrangement
9.2.4.2	Protections Required	Overload, short-circuit, Instantaneous & earth fault
9.2.4.3	Tripping characteristic	Inverse definite minimum time characteristics for Short circuit and earth fault protection
9.2.4.4	Overload setting	40% - 100% I <sub>n</sub> , steps of 10%.
9.2.4.5	Overload setting time delay	2.5 s to 40 s minimum three settings
9.2.4.6	Short Circuit Setting	50% - 800% of I <sub>n</sub> , steps of 10%.
9.2.4.7	Short Circuit Setting time delay	50 ms - 400 ms in steps of 50ms
9.2.4.8	Instantaneous setting	200% - 1500% of I <sub>n</sub> & OFF
9.2.4.9	Earth fault setting	20- 100 % of I <sub>n</sub> , steps of 10%
9.2.4.10	Earth fault setting time delay	50ms - 400ms in steps of 50ms
9.2.4.11	Neutral unbalance	Earth fault function should not operate during neutral unbalance. Same will be verified during inspection.
9.2.4.12	Measurements required in release	a) Phase wise current and neutral current b) Phase wise voltage c) Frequency d) Power factor e) Instantaneous Power: Active, Reactive and apparent power f) Energy: Active, Reactive and apparent Energy g) Maximum current demand with date and time (configurable in 5/15/30 minutes duration) h) Max Power Demand (configurable in 5/15/30 minutes duration) i) Fault record
9.2.4.13	Metering measurement accuracy	a) 1.5% for current b) 0.5% for voltage c) 2% for Power and energy
9.2.4.14	Other release requirements	a) Release should have digital LCD display.

**Technical Specification of 11 KV Pad Mounted Substation**

		<ul style="list-style-type: none"> <li>b) Release should be plug-in type and easily replaceable in field.</li> <li>c) Separate fault indication shall be provided for each protection stage i.e. overload, short circuit and earth fault and internal fault</li> <li>d) Release should store 10 fault records on FIFO basis with date and time stamp.</li> <li>e) Release should have 2 Digital Inputs. CB On and Off status shall be wired to DIs through auxiliary switch.</li> <li>f) Release should have Modbus communication as per communication architecture given in Annexure E. All digital, analog and fault record parameters monitored by the release shall be communicable to SCADA through FRTU.</li> <li>g) Remote time synchronization through SCADA should be possible.</li> </ul>
9.3	Moulded Case Circuit Breaker (MCCB)	
9.3.1	Rated Current	Rating of MCCB as per configuration table 5.0. No De-rating upto 50 deg C
9.3.2	General Features	
9.3.2.1	Construction	All the parts shall be enclosed in a moulded insulating material housing
9.3.2.2	Poles	4 pole
9.3.2.3	Type	The MCCBs shall be trip free type with quick make and double-break type
9.3.2.4	Terminals	Suitable for connection with aluminum busbars with phase barriers & shrouds
9.3.2.5	MCCB auxiliary contacts	2 N/O + 2 N/C minimum
9.3.2.6	Access to releases, coils & add on type replaceable parts to MCCB	From front only
9.3.2.7	Indications	MCCBs shall be provided with mechanical position indicator with shrouded terminals. MCCB's shall have ON/OFF/trip indications.
9.3.2.8	Operating handle	Extended rotary type
9.3.2.9	MCCB ingress protection (without enclosure)	IP2X minimum
9.3.2.10	Pollution degree as per IS 60947/IEC 60664-1	Degree 4 : The pollution generates persistent conductivity caused
9.3.2.11	MCCB temperature rise limits	As per table 2 & 3 of IS/IEC 60947-1
9.3.3	Operation Features	
9.3.3.1	Number of phases	Three phase & neutral
9.3.3.2	Rated Operational Voltage(V)	415V
9.3.3.3	Rated Insulation Voltage (V)	1000V
9.3.3.4	Rated Impulse Voltage	8 kV for main circuit

**Technical Specification of 11 KV Pad Mounted Substation**

9.3.3.5	Category of utilization	B
9.3.3.6	Rated Ultimate breaking capacity at rated voltage	Icu = 50kA minimum
9.3.3.7	Rated Service breaking capacity at rated voltage Ics	Ics =100% Icu
9.3.3.8	Rated short term withstand current for 1 sec at rated voltage – Icw	Icw = 100% Icu
9.3.3.9	Rated making current capacity –Icm	Icm = 220% Icu
9.3.3.10	Number of operating cycles at rated current (open + close) without changing arcing contact	5000
9.3.3.11	Number of mechanical operating cycles (open + close)	20000
9.3.3.12	Product Information marking on MCCB	As per clause 5 of IS: 13947 Part-I. In addition name of purchaser shall be marked on front of device
9.3.4	Measurement and Protection Requirement	
9.3.4.1	Microprocessor release	a) Microprocessor based release with true RMS based sensing. b) Self powered, tapped from incoming side of supply, setting panel with locking arrangement
9.3.4.2	Protection	Overload, short-circuit, Instantaneous & earth fault
9.3.4.3	Tripping characteristic	Inverse definite minimum time characteristics for Short circuit and earth fault protection
9.3.4.4	Overload setting	40% -100% In, steps of 10%.
9.3.4.5	Overload setting time delay	2.5 s to 40 s minimum three settings
9.3.4.6	Short Circuit Setting	50% - 800% of In, steps of 10%.
9.3.4.7	Short Circuit Setting time delay	50 ms - 400 ms in steps of 50ms
9.3.4.8	Instantaneous setting	200% - 1500% of In & OFF
9.3.4.9	Earth fault setting	20- 100 % of In, steps of 10%
9.3.4.10	Earth fault setting time delay	50ms - 400 ms in steps of 50ms
9.3.4.11	Neutral unbalance	Earth fault function should not operate during neutral unbalance. Same will be verified during inspection.
9.3.4.12	Measurements required in release and available on communication	a) Phase wise current b) Phase wise voltage c) Power factor d) Frequency e) Maximum current with date and time (configurable in 5/15/30 minutes duration) f) Max Power Demand (configurable in 5/15/30 minutes duration) g) Instantaneous Power: Active, Reactive and

**Technical Specification of 11 KV Pad Mounted Substation**

		<p>apparent power</p> <p>h) Energy: Active, Reactive and apparent Energy</p> <p>i) Fault record</p>
9.3.4.13	Metering accuracy measurement	<p>a) 1.5% for current</p> <p>b) 0.5% for voltage</p> <p>c) 2% for Power and energy</p>
9.3.4.14	Other release requirements	<p>a) Release should have digital LCD display.</p> <p>b) Release should be plug-in type and easily replaceable in field.</p> <p>c) Separate fault indication shall be provided for each protection stage i.e. overload, short circuit and earth fault on release display.</p> <p>d) Release should store 10 fault records on FIFO basis with date and time stamp.</p> <p>e) Release should have 2DIs for MCCB On and Off status shall be wired to DIs through auxiliary switch.</p> <p>f) Release should have Modbus communication as per communication architecture given in Annexure E. All digital, analog and fault record parameters monitored by the release shall be communicable to SCADA through FRTU.</p> <p>g) Remote time synchronization through SCADA should be possible</p>
9.4	Metering Current Transformers	
9.4.1	Type	Cast-resin type, Class-E insulation, rated for 120% current continuous
9.4.2	Provision	Shall be provided in Incomer ACB for DT metering
9.4.3	ISF	10
9.4.4	Metering CT Class	0.5s
9.4.5	Burden	5 VA
9.4.6	CT ratio (For all phases and neutral)	<p>a) 630 kVA- 1000/5 amp</p> <p>b) 1000kVA -1600/5 amp</p> <p>c) 1600kVA -2500/5 amp</p> <p>d) 2000kVA -3000/5 amp</p>
9.5	LV compartment illumination	By 36w CFL fixture controlled through SPMCB & door limit switch
9.6	Finishing of Enclosure	
9.6.1	Pre-treatment of GI sheet of Enclosure	GI sheet shall be pre-treated before powder coating to avoid rusting and corrosion
9.6.2	Pre-treatment process	Seven tank process (Pre-galvanization shall remain intact)
9.6.3	Primer	Two coats of zinc rich primer shall be applied at welded and punched areas
9.6.4	Finish	Powder Coating

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9.6.5	Painting external finish	a) Powder coated epoxy polyester base grade A b) Shade -RAL 632 c) Uniform thickness 85 micron minimum
9.6.6	Painting internal finish	a) Powder coated epoxy polyester base grade A b) Shade –white c) Uniform thickness 60 micron minimum

**10.0 Earthing & Grounding Provision**

10.1	Earth Bus	a) Common Earth bus should be provided for whole assembly. b) Four Earthing pads should be provided on earth bus, one on each corner for substation earthing. All earthing pads shall be easily accessible for inspection and maintenance purposes. c) Size of earth bus should be 75 x 10mm.
10.2	Grounding	a) Neutral should be connected to earth bus at two separate points b) Connections shall be accessible for inspection and maintenance purposes. c) Provision for connecting neutral directly with earth mesh laid in ground shall also be given. d) Size of each connection should be 50 x 10mm.
10.3	Equipment Earthing	a) Each equipment including RMU, transformer and LV panel should have two separate earthing pads. These earthing pads shall be connected to common earth bus at two separate points. b) All earth connections shall be accessible for inspection and maintenance purposes. c) Size of each connection should be 50 x 10mm
10.4	Earth connection of all covers, doors & structural parts	By braided copper flexible connection to earth bus
10.5	Earth bus identification	Shown by letter 'E'

**11.0 Labels**

11.1	Name plate on enclosure	Fixing by rivet only
11.1.1	Material	Anodized aluminum 16SWG / Stainless Steel (SS)
11.1.2	Background	Satin Silver
11.1.3	Letters, diagram & border	Black
11.1.4	Process	Etching

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11.1.4	Name plate details	<ul style="list-style-type: none"> <li>a) Month &amp; year of manufacture</li> <li>b) Transformer rating</li> <li>c) RMU details</li> <li>d) LT panel details</li> <li>e) Purchaser name</li> <li>f) Purchase order number and date</li> <li>g) Guarantee period</li> <li>h) Manufacturer contact details</li> <li>i) Ref. IS / IEC No.</li> </ul>
11.2	Labels for meters & indications	Anodized aluminum with white character on black background OR 3 ply Lamicoid
11.3	Danger plate on doors of RMU compartment, LV panel and Transformer HT and LT side	As per IS 2551
11.4	BSES Logo	<ul style="list-style-type: none"> <li>a) 01 no's</li> <li>b) LV panel</li> <li>c) Shall be etched on anodized aluminum 16SWG / SS plate.</li> <li>d) Details shall be finalized during drawing approval.</li> </ul>

**12.0 Approved makes**

12.1	RMU	ABB/Schneider/Siemens/Lucy Electric/Eaton
12.2	Oil type transformer	Schneider/Danish/MEI
12.3	ACB	Siemens/ ABB/Schneider/Lauritz-Knudsen
12.4	MCCB	Siemens/ ABB/Schneider/Lauritz-Knudsen
12.5	FPI	EMG/Schneider/Siemens
12.6	Protection Relay	Ashida / Schneider/Siemens/ABB
12.7	Pressure relief valve	Sukrut / VIAT
12.8	Bushings make	Baroda bushing / CJI / Jaipur glass
12.9	Winding Temperature Indicator	Precimeasure/ Pecon
12.10	Winding Insulating material	3M/DUPont/Delfort
12.11	Switch	ABB/Schneider/Siemens
12.12	AC Contactors	ABB/Schneider/Siemens
12.13	Push buttons / Actuator	Teknic/Siemens
12.14	Indicating Lamps	Vaishno/Binay/Teknic/Siemens/Mimic/C&S
12.15	Terminal Blocks	Connectwell/Elmex/Phoenix
12.16	Termination kits	3M/ Raychem/ Denson
12.17	Insulating Sleeve	3M/ Raychem/ Denson

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12.18	Cold applied cable boots	3M/ Raychem/KD Joshi
12.19	Synthetic Ester oil	Cargil/Midel
12.20	FRTU	ABB/Schneider/Siemens
12.21	Meters	Rishabh/Schneider/Secure
12.22	Modem	Niseva/Lantronix/Phoenix
12.23	GI Sheet	TATA/SAIL/JINDAL
12.24	Battery Charger	Allan/Gogate
12.25	Battery Health Monitoring Unit	Allan/Gogate
12.26	Protection relay for transformer internal parameters	VIAT/IDEF Systems

Note – Any other make of component offered by the bidder is subject to BYPL approval.

**13.0 Quality assurance, Inspection and Testing**

13.1	Type test as per IS / IEC	<ul style="list-style-type: none"> <li>a) Only type tested equipment shall be offered.</li> <li>b) Type test certificates from CPRI/ERDA shall be submitted along with offer for scrutiny.</li> <li>c) The test report should not be more than 10years old.</li> </ul>
13.1.1	11kV RMU	Complete type test for RMU as per relevant IS/ IEC 62271-200to be submitted.
13.1.2	Transformer	Complete type and special test for transformer as per IS 1180 part 3 to be submitted.
13.1.3	LV Panel	Complete type test for LV Panel as per IS/IEC 61439 to be submitted.
13.1.4	Complete Pad Mounted Substation Assembly	<p>In event of order, following type tests have to be conducted on one complete Pad Mounted Substation of highest rating from CPRI/ERDA as per IS/IEC 62271-202</p> <ul style="list-style-type: none"> <li>a) Lightning Impulse Voltage Test</li> <li>b) Short time withstand current test</li> <li>c) Temperature Rise Test</li> </ul>
13.2	Routine tests	
13.2.1	Routine tests of PMSS	As per IS/IEC 62271-202
13.2.2	Routine tests of transformer, RMU, LT panel	As per relevant IS/ IEC mentioned in 13.1.
13.3	Inspection and acceptance testing	<ul style="list-style-type: none"> <li>a) Purchaser reserves the right to inspect /witness all tests on the Pad mounted substation at</li> </ul>

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		<p>manufacture's works at any time, prior to dispatch, to verify compliance with the specification/standards.</p> <p>b) Manufacturer should have all the facilities/equipment to conduct all the acceptance tests during inspection. All the testing equipment should be calibrated.</p> <p>c) Stage and final inspection call intimation shall be given at least 15 days in advance to the purchaser.</p>
13.3.1	Stage inspection of transformer	Purchaser shall inspect transformers at the core and coil assembly stage at the manufacturer's premises.
13.3.2	Final inspection of transformers	<p>The sequence of testing shall be as follows:</p> <p>a) Visual and dimension check for completely assembled transformer.</p> <p>b) Measurements of voltage ratio.</p> <p>c) Measurements of winding resistance at principal tap and two extreme taps.</p> <p>d) Vector Group and polarity test.</p> <p>e) *Measurements of insulation resistance and polarization index.</p> <p>f) Separate sources voltage withstand test.</p> <p>g) Measurement of iron losses and exciting current at rated frequency and 90%, 100% and 110% rated voltage.</p> <p>h) Induced voltage withstand test.</p> <p>i) Load losses measurement.</p> <p>j) Impedance measurement of principal tap (HV and LV) of the transformer.</p> <p>k) Measurement of Iron loss (to be repeated if type test are conducted).</p> <p>l) Measurement of capacitance and Tan Delta for HV and LV bushings and Tan Delta for transformer oil (for all transformers).</p> <p>m) Oil leakage test on assembled transformer</p> <p>n) Magnetic balance test.</p> <p>o) Power frequency voltage withstand test on all auxiliary circuits</p> <p>p) Measure of zero seq. impedance</p> <p>q) Measurement of acoustic noise level</p> <p>r) Measurement of harmonic level on no load current.</p> <p>*Insulation resistance measurement shall be carried out at 5kV for HV and 1kV for LV. Value of IR should not be less than 1000 Mohms. Polarization Index (PI = IR10min/IR1min) should not be less than 1.5</p>
13.3.3	Temperature rise test on Transformer	Temperature rise test shall be carried out on 01 no transformer of each rating randomly selected from the offered lot.

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13.3.4	Acceptance Test of RMU	<ul style="list-style-type: none"> <li>a) Physical inspection, BOM &amp; wiring checks</li> <li>b) Insulation Resistance test</li> <li>c) HV Test for one minute</li> <li>d) Operation &amp; Interlock check</li> <li>e) Measurement of resistance of main circuit</li> <li>f) Voltage indication check of VPI</li> <li>g) Functional testing of FPI for alarm</li> <li>h) Primary current injection test for circuit breaker feeder on both ratios of all CT's with relay</li> <li>i) Breaker closing and opening time measurement</li> </ul>
13.3.5	Acceptance Test of LT Panel	<ul style="list-style-type: none"> <li>a) Visual, dimension, wiring &amp; BOM check</li> <li>b) Operational check</li> <li>c) IR Test</li> <li>d) HV Test</li> </ul>
13.3.6	Final Inspection after complete assembly of PMSS	<p>As per IEC 62271-202 and relevant IS/IEC of equipment.</p> <ul style="list-style-type: none"> <li>a) Visual check</li> <li>b) Dimensional and sheet thickness check</li> <li>c) Verification of Wiring &amp; BOM</li> <li>d) Paint thickness inside and outside of enclosure.</li> <li>e) Functional test <ul style="list-style-type: none"> <li>• Operation of switchgear and control gear</li> <li>• Mechanical operation and alignments of doors</li> <li>• Fixing of insulating barriers</li> <li>• Voltage indication check</li> <li>• Checking of temperature and liquid level of the transformer</li> <li>• Fitting of earthing devices</li> <li>• Cable testing</li> <li>• Replacement of LTCT</li> <li>• Operation of transformer tap changer</li> <li>• Operation of illumination system</li> <li>• Trip function of HV switchgear</li> </ul> </li> <li>f) IR test</li> <li>g) HV test on power circuit</li> <li>h) HV test on auxiliary circuits</li> <li>i) Operational and interlocks check</li> </ul>
13.4	Vendor quality plan	To be submitted for purchaser approval. For transformer, RMU & LV panel sub vendor quality plan to be submitted.
13.5	Field quality plan	Bidder to submit field quality plan along with the bid
13.6	Maintenance manual	Bidder to submit maintenance manual along with the bid
13.7	Right to waive off tests	Reserved by Purchaser

**Technical Specification of 11 KV Pad Mounted Substation****14.0 Shipping, Handling and Site support**

14.1	Packing Protection	Against corrosion, dampness, heavy rains, breakage and vibration
14.2	Packing for accessories and spares	Robust wooden non-returnable packing case with all the above protection & identification Label
14.3	Packing Identification Label (Anodized Aluminum Plate)	On each packing case, following details are required: a) Individual serial number b) Purchaser's name c) PO number (along with SAP item code, if any) & date d) Equipment Tag no. (if any) e) Destination f) Manufacturer / Supplier's name g) Address of Manufacturer / Supplier / it's agent h) Description of PMSS i) Country of origin j) Month & year of Manufacturing k) Case measurements l) Gross and net weights in kilograms m) All necessary slinging and stacking instructions
14.4	Shipping	The seller shall be responsible for all transit damage due to improper packing
14.5	Handling and Storage	a) Manufacturer instruction shall be followed b) Detail handling & storage instruction sheet/manual to be furnished before commencement of supply.

**15.0 Training and Demonstration**

15.1	In event of order, Supplier shall arrange training for 2 batches of BSES team at BSES site or training centre for erection, commissioning, maintenance troubleshooting of complete PMSS including Transformer, RMU, FRTU and LV Panel.
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**16.0 Deviations**

16.1	Deviations from this Specification shall be stated in writing with the tender by reference to the Specification clause/GTP/Drawing and a description of the alternative offer. In absence of such a statement, it will be assumed that the bidder complies fully with this specification.
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**Technical Specification of 11 KV Pad Mounted Substation****17.0 Document Submission Matrix**

Document submission shall be as per the matrix given below. All documents/drawing shall be provided in soft copy. Language of the documents shall be English only. Deficient/improper drawing submission may liable for rejection.

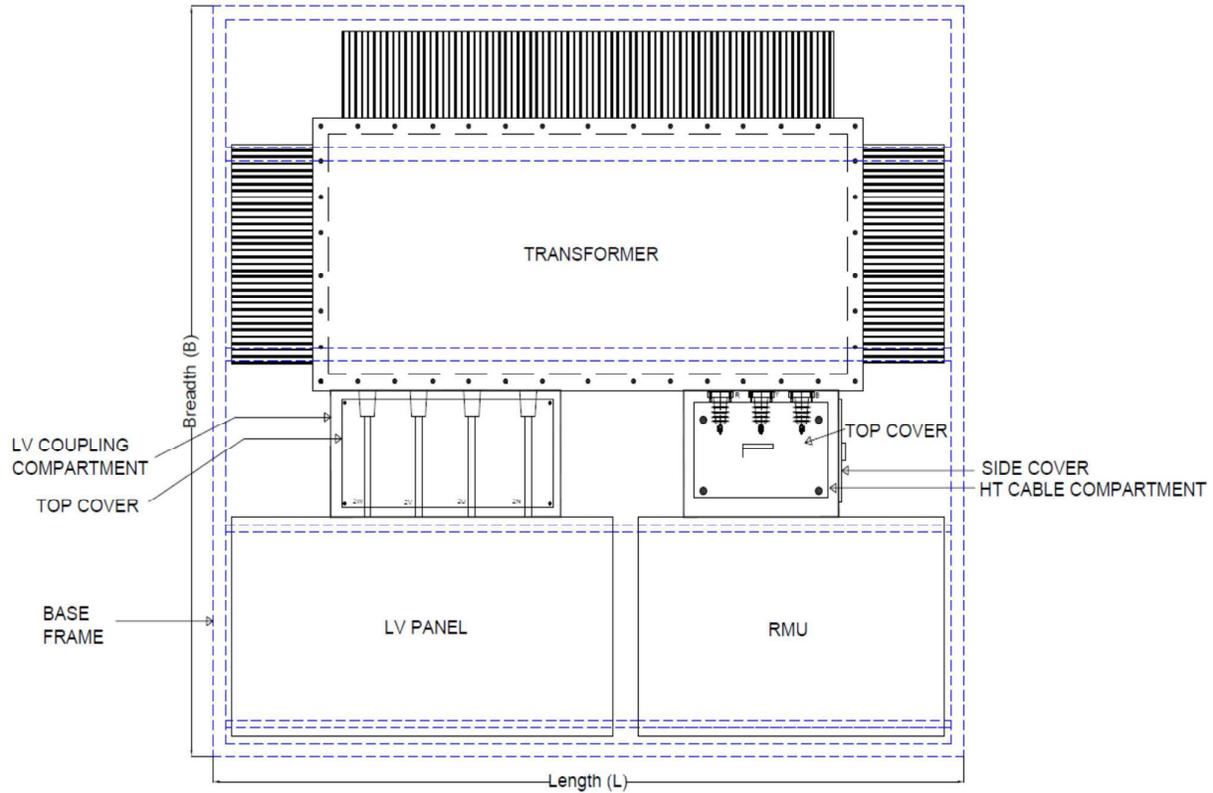
<b>S. No.</b>	<b>Description</b>	<b>Bid</b>	<b>For Approval</b>	<b>Pre Dispatch</b>
17.1	Copy of specification along with company seal & signature on each page.	Required		
17.2	Reference list of clients/suppliers list for last 7 years	Required		
17.3	Performance certificates of orders executed in last 7 years	Required		
17.4	Complete Type test reports for the type, size & rating of product /equipment offered	Required	Required	
17.5	Deviation Sheet (if any)	Required	Required	
17.6	Transformer BIS license	Required	Required	
17.7	Communication architecture			
17.8	Duly filled GTP as per BSES specification	Required	Required	
17.9	Complete PMSS Assembly			
17.9.1	GA drawing (Complete assembly including RMU, transformer, LV panel + other items)	Required	Required	
17.9.2	PMSS Foundation drawing	Required	Required	
17.9.3	Coupling and interconnection drawing of between RMU and transformer	Required	Required	
17.9.4	Coupling and interconnection drawing of between LT Panel transformer	Required	Required	
17.9.5	BOM of Pad mounted substation	Required	Required	
17.9.6	Overall SLD	Required	Required	
17.9.7	PMSS rating plate		Required	
17.10	RMU			
17.10.1	RMU GA and sectional view drawing	Required	Required	

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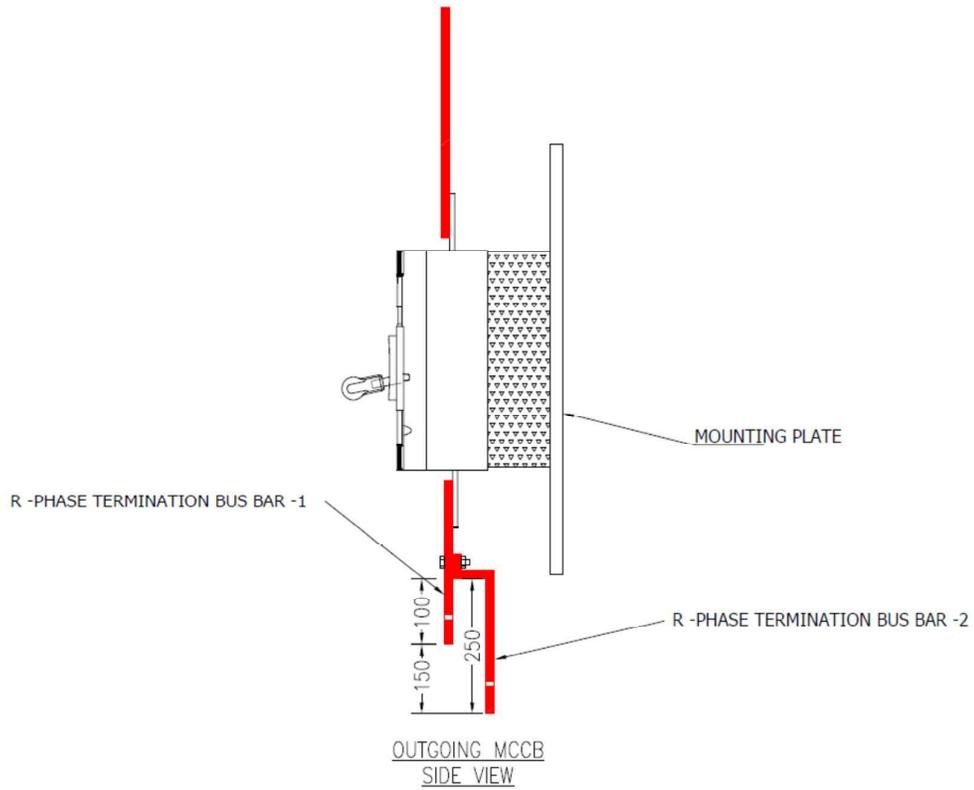
<b>S. No.</b>	<b>Description</b>	<b>Bid</b>	<b>For Approval</b>	<b>Pre Dispatch</b>
17.10.2	RMU component list	Required	Required	
17.10.3	RMU SLD	Required	Required	
17.10.4	Mimic drawing indicating all component	Required	Required	
17.10.5	Schematic wiring diagram	Required	Required	
17.10.6	RMU rating plate drawing		Required	
17.10.7	RMU cable box with termination arrangement	Required	Required	
17.10.8	RMU BOM		Required	
17.10.9	FRTU GA drawing	Required	Required	
17.10.10	Schematic wiring drawing FRTU	Required	Required	
17.10.11	DI/DO/AI/Modbus List	Required	Required	
17.11	Transformer			
17.11.1	Transformer GA drawing	Required	Required	
17.11.2	Transformer component list	Required	Required	
17.11.3	Foundation plan		Required	
17.11.4	Transformer rating plate		Required	
17.11.5	Transformer Calculations		Required	
17.12	LV panel			
17.12.1	LV Panel GA and sectional view drawing	Required	Required	
17.12.2	LV panel component list	Required	Required	
17.12.3	LV panel SLD	Required	Required	
17.12.4	LV panel Incoming termination arrangement	Required	Required	
17.12.5	LV Panel Outgoing termination arrangement	Required	Required	
17.12.6	Sizing Calculation of busbar in support of its Guaranteed S.C. rating / Capability	Required		
17.13	Catalogues & manuals for RMU + Transformer + LV switchgear items		Required	Required
17.14	User manual for Hermetically Sealed Transformers. The manual must be provided			Required

**Technical Specification of 11 KV Pad Mounted Substation**

<b>S. No.</b>	<b>Description</b>	<b>Bid</b>	<b>For Approval</b>	<b>Pre Dispatch</b>
	with, but not limited to, maintenance schedule frequency & method of oil-sampling, procedures for oil-filling & oil-filtration, etc.			
17.15	Quality plan for pad mounted substation	Required	Required	
17.16	Installation, commissioning manual for all items in PMSS		Required	Required
17.17	Operation & maintenance manual for all items in PMSS			Required
17.18	Transport / Shipping dimensions with weights, wheel base details, un-tanking height		Required	
17.19	Recommended spare parts and consumable items for five years of operation and spare parts catalogue with price list	Required	Required	
17.20	Inspection and test reports carried out in manufacturers works			Required
17.21	Test certificates of all bought out items.			Required
17.22	As Built Drawing			Required

**Annexure A: Reference layout of Pad mounted substation**

**Note: Layout is for reference only and subject to change during detailed engineering to ensure compliance with standard, Tender specification and site requirement.**

**Annexure B: MCCB Termination Details**

**Technical Specification of 11 KV Pad Mounted Substation****Annexure C: Technical Specification for transformer oil**

The Synthetic Ester Oil shall be certified as K Class as per IS 16081/IEC 61099.

<b>S. No.</b>	<b>Item description</b>	<b>Specification requirement</b>
1.0	Physical property	
1.1	Colour	Max. 200 Hazen
1.2	Appearance	Clear, free from sediments and suspended matter.
1.3	Density at 20°C, Max	1000 kg/ dm <sup>3</sup>
1.4	Kinematic Viscosity	
1.4.1	At 40° C, Max	35 mm <sup>2</sup> /sec
1.4.2	At -20°C, , Max	3000 mm <sup>2</sup> /sec
1.5	Fire point, Min	300° C
1.6	Flash point, Min	250°C
1.7	Pour point , Max	-45° C
2.0	Chemical property	
2.1	Water content, Max	200 mg/kg
2.2	Acidity, Max	0.03 mg KOH/g
2.3	Oxidation stability test duration 164 hour	Manufacturer to specify
2.4	Total Acidity, Max	0.3 mg KOH/g
2.5	Total sludge, % mass	0.01
3.0	Electrical property	
3.1	Dielectric breakdown voltage (2.5 mm gap), Min	65kV
3.2	Dielectric Dissipation factor (Tanδ) at 90° C and 50Hz Max	0.03
3.3	DC resistivity at 90° C, Min	2 GΩ-m
4.0	Biodegradation	Readily biodegradable

**Technical Specification of 11 KV Pad Mounted Substation****Annexure D: Specification of 4G Ethernet Modem for FRTU**

S. No.	Modem Configuration	
1.0	Module	4G Dual SIM with compatible 3G /GSM GPRS: a) FDD LTE: B1 (1920-1980/2110-2170)/B3 (1710-1785/1805-1880) / B8 (880-915/925-960) / B20 (800) MHz b) TDD LTE: B38 (2570-2620) / B39 (1880-1920) / B40 (2300-2400) / B41 (2496-2690) c) HSPA / UMTS: B1 (2100) / B8 (900)/800/850/1900 MHz d) GSM: 900/1800/ MHz Class 10
2.0	WAN Protocol	PPP/IPCP over Asynchronous HDLC with PAP/CHAP Authentication.
3.0	Compatibility	with IPv4 & IPv6 scheme
4.0	Console Interface	RS232 on RJ45 connector
5.0	LAN Interface	10/100 Base-T complying to IEEE 802.3 / ANSI 8802-3 on RJ45 connector.
6.0	Network Protocols	PPP, IPCP, PAP, CHAP, ARP, IP, ICMP, TCP, UDP, IPSEC, SNTP, TFTP.
7.0	Management	Serial, HTTP, HTTPS, Telnet & via SMS, Port Mapping, Event Log & Upload. Firmware Upgrade
8.0	Status Monitoring	ICMP to 4 destinations for Keep Alive & Self Heal. Signal Strength & LEDs.
9.0	Features	a) Support for SCADA Protocols in transparent pass through mode b) Support for NAT and Port forwarding c) Modem shall have self healing capability to recover from dead lock situation
10.0	SIM Interface	External with locking provision
11.0	AT Commands Interface	Supporting AT commands for dialing from FRTU through RS-232 serial port to modem
12.0	Communication Interface	Remote management features like telnet & remote download facility
13.0	LED Indications	Power ON, Network–Signal strength, SIM availability, Ethernet link
14.0	Connectors	RJ45 Ethernet Port, SIM Card Holder, DC power connector, SMA Antenna connector
15.0	Power Supply	24V DC (with reverse current protection) with 2 numbers Terminal Block without adapter. Modem functionality shall not affect during DC voltage supply range of 18 to 30V DC.
16.0	Enclosure	Metallic Extrusion

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S. No.	Modem Configuration	
17.0	Mounting	DIN Rail Mounting
18.0	Temperature	Operating (-10 to 70 Degree Centigrade), 95% Humidity
19.0	Antenna	<ul style="list-style-type: none"> <li>a) 2 Nos to be provided</li> <li>b) 12dB High Gain Antenna with SMA connector and 15mtr wire length</li> <li>c) 7dB High Gain Antenna with SMA connector and 5mtr wire length</li> <li>d) It shall be ensured that the male pin SMA Connector of Antenna is of copper at the Antenna base and also at the point of modem connection.</li> </ul>
20.0	Accessories	<ul style="list-style-type: none"> <li>a) 1 Meter cable for connecting to external DC power source (24 V)</li> <li>b) 1 Meter Standard Ethernet (Straight) data cable with metallic connector (SS/MS)</li> <li>c) Standard Console cable for diagnostic port of Modem</li> <li>d) 1 Meter serial cable for dialing modem from FRTU</li> </ul>
21.0	Certification	
21.1	Conducted Immunity: IEC61000-4-6	<ul style="list-style-type: none"> <li>a) Measure emission of the device (referenced to earth) on power mains and to compare them with specified limits to ascertain that the device will not disturb other equipment</li> <li>b) Frequency: 0.15MHz to 80MHz</li> <li>c) Modulation: 80% AM at 1 KHz</li> <li>d) Test Voltage: 3V</li> </ul>
21.2	Electrostatic Discharge (ESD): IEC61000-4-2	<ul style="list-style-type: none"> <li>a) Check immunity against discharge of static electricity that may occur when a charged operator touches the device</li> <li>b) Contact Discharge: 4KV</li> <li>c) Air Discharge: 8KV</li> <li>d) No. of Discharge: 10 at pre-selected spots</li> <li>e) Positive &amp; Negative Polarity</li> </ul>
21.3	EN55022 CLASS B	<ul style="list-style-type: none"> <li>a) Immunity characteristics of the device when subjected to continuous conducted noise</li> <li>b) Conducted Emission: Frequency - 150 KHz - 30 MHz</li> <li>c) Radiation Emission: Frequency – 30 MHz - 1000 MHz</li> </ul>

## Annexure E: Specification for Feeder Remote Terminal Unit for RMU

### 1.0 FRTU Technical requirement

<p>1.1</p>	<p>FRTU Functionalities</p>	<ul style="list-style-type: none"> <li>a) It should be capable of handling minimum 250 DP (data point) respectively.</li> <li>b) FRTU shall have serial port, configurable RS485/RS232 for MODBUS serial and IEC 103 protocol communication.</li> <li>c) FRTU shall have TCP/IP port for Modbus TCP/IP and IEC 61850 communication.</li> <li>d) Ethernet ports for interfacing with IEC 60870-5-104 protocol to communicate with MCC and BCC.</li> <li>e) Ethernet port should be configured for IEC 60870-5-104 protocol as a slave.</li> <li>f) Built in optical couplers to isolate the field signals and field communication channels.</li> <li>g) FRTU shall support event storage capacity as measured events (500), system events (50), alarms (50) and normal events (250). Events should be stored on the basis of FIFO.</li> <li>h) Local viewing of all events shall be possible.</li> <li>i) FRTU DI/ DO communication channel capacity should be such that it can fulfill automation of complete substation system.</li> <li>j) FRTU shall support web based monitoring from remote as well as local.</li> <li>k) All DI/ DO communication channels should have individual LED indications.</li> <li>l) FRTU shall support feature of remote configuration as well as diagnosis.</li> <li>m) FRTU system shall support communication with 4 Nos. master stations simultaneously.</li> <li>n) All DI/DO communication card installed in FRTU shall support HOT swap feature.</li> <li>o) As the SCADA/ DMS system will use public domain such as RF/ GPRS etc., therefore it is mandatory to guard the data/ equipment from intrusion/ damage/ breach of security &amp; shall have SSL</li> </ul>
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		<p>VPN based security.</p> <p>p) FRTU shall support SNMP (Simple Network Management Protocol).</p> <p>q) Capability of time synchronization with GPS receiver and SCADA MCC/ BCC.</p> <p>r) FRTU system should be modular and expandable.</p> <p>s) FRTU should be capable to store the configuration program in detachable flash memory card.</p> <p>t) FRTU shall have console port with console cable.</p>
1.2	CPU Module	<p>a) 32bit ARM core CPU, operating @ minimum 450 MHz.</p> <p>b) Internal memory minimum 128MB and RAM 64MB, suitable for handling the RMU data acquisition and controlling the RMU, DT monitoring, ACB, LT panel and APFC used in substation.</p> <p>c) Real Time Clock (RTC)</p> <p>d) Display to show the error code and status of the processor.</p>
1.3	Communication Ports	<p>a) Each Serial port should be capable of handling minimum 10 Nos. devices on the network with same communication settings.</p> <p>b) The settings of Ethernet and serial ports should be programmable.</p> <p>c) System should have the capability to increase TCP/ IP Ethernet and serial ports for communication by addition of communication modules.</p> <p>d) Refer Table 2 of Annexure E for details</p>
1.4	MCC/ BCC Communication Protocol	<p>a) FRTU system shall be configured to communicate with MCC/ BCC simultaneously on IEC 60870-5-104 protocol.</p> <p>b) In addition to IEC 104 protocol, FRTU shall also able to communicate all data over secure MQTT with latest version.</p> <p>c) FRTU shall support periodic reporting of analog data that shall be configurable upto 1 hour polling delay.</p> <p>d) Digital status data shall have higher priorities as compared to the analog data.</p> <p>e) Dead band for reporting analog values shall be programmable for the full scale value.</p>

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1.5	Communication between FRTU, MFMs and Protection Relays	<ul style="list-style-type: none"><li>a) FRTU can acquire analog values from MFMs/FPIs and protection relay through RS485 serial communication port using MODBUS and IEC 103 protocol respectively.</li><li>b) Communication of ACB/MCCBs on Modbus TCP/IP / IEC 61850 protocol.</li><li>c) MFM/FPI and protection relay will act as slaves to the FRTU. The FRTU shall transmit these analog values to master station by using IEC 60870-5-104 protocol.</li><li>d) To protect the serial communication port(s), optical isolation is required which is mandatory to avoid damage to FRTU channels</li></ul>
1.6	Digital Input Module	<ul style="list-style-type: none"><li>a) FRTU shall be capable of accepting isolated potential free contact status inputs.</li><li>b) FRTU shall provide necessary sensing voltage, current, optical isolation for each status input.</li><li>c) FRTU shall be capable to configure re-bounce filtering for each input.</li><li>d) The sensing voltage of input module should be 24V DC.</li><li>e) The FRTU shall accept two types of status input: Single point and double point.</li><li>f) Single point status input represented by 1 Bit in the protocol message whereas double point status input represented by 2 Bits in the protocol message.</li><li>g) FRTU configuration software shall have the capability to invert the DI signal value required in the configuration.</li><li>h) There shall be channel wise visual indication on all DI module installed in the FRTU panel for troubleshooting problems.</li><li>i) Digital Input module should have hot swap compliance</li></ul>

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1.7	Digital Output Module	<ul style="list-style-type: none"><li>a) FRTU shall provide the capability for master station to select and change the state of Digital output points.</li><li>b) These control outputs shall be used to control power system devices such as circuit breakers, isolators and other two state devices which shall be supported by FRTU.</li><li>c) FRTU should also support single command output to reset FPI operation.</li><li>d) The output contact shall be rated to operate RMU motor, ACB, LT MCCB, APFC and other signals used in substation.</li><li>e) Incase control output module of FRTU does not provide potential free control output of required rating then separate control output relays shall be provided.</li><li>f) There shall be channel wise visual indication of DOs available in FRTU panel and command issued for any digital channel for troubleshooting the problem.</li><li>g) DO modules should have the capability to configure for a single as well as double command output.</li><li>h) Digital Output module should have hot swap compliance</li></ul>
1.8	Interfacing of FRTU system with RMU	<ul style="list-style-type: none"><li>a) RMU signal connections should be terminated in RMU bay wise and extension of the signals from the each equipment TB (Terminal Block) to FRTU TB through cable connectors, bay wise.</li><li>b) Separate multi-core cable for Interconnection of FRTU with RMU with suitable size and length.</li><li>c) Male and female connector with cable for interconnection should be provided in FRTU panel.</li><li>d) Minimum 2.5/ 4 sqmm multi-strand copper wire/ cable of suitable length for connecting the battery bank and battery charger placed in FRTU cabinet.</li><li>e) Supply and dressing of inter-connecting cables through suitable size PVC duct are in the supplier scope.</li><li>f) Interconnections should have proper lugs, ferrules etc.</li><li>g) 1 Meter Standard Ethernet (Straight) data cable with metallic connector</li></ul>

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		(SS/MS) to be provided for connection between FRTU and Ethernet SPD
1.9	Troubleshooting	<ul style="list-style-type: none"> <li>a) FRTU should be configurable using web based configuration and maintenance tool.</li> <li>b) FRTU shall have proper diagnosis tool for troubleshooting the failures related to the following from remotely as well as locally. Supplier shall consider all required configuration and diagnosis cable and software with each supplied FRTU with license if any.</li> <li>c) Communication of FRTU with master</li> <li>d) Communication of MFM with FRTU</li> <li>e) Communication of DI/ DO</li> <li>f) Communication with Protection Relay</li> </ul>
1.10	Programmable Logic Control (PLC)	<ul style="list-style-type: none"> <li>a) FRTU shall be provided with the PLC license.</li> <li>b) FRTU should have the functionality of logic development and perform the task using its own CPU.</li> <li>c) FRTU should have the capability to run more than one PLC tasks at a time.</li> </ul>
1.11	Cyber Security	<p>The FRTU shall comply to IEC62351- 3 for cyber security in communication between FRTU and master station and IEC62443-4-2 for cyber security for product including testing requirement as per MoP order no 12/34/2020-T&amp;R dtd 08.06.21 &amp; CEA /PLG/R&amp;D/MII/2021 dtd 11.6.21 and any amendment from time to time.</p> <p>All the eligible equipment should complied to requirement of Mandatory Testing and Certification of Telecom Equipment (MTCTE) vide MoP order No. 14/02/2021-UR&amp;SI-II-Part(1) (E-258136).</p> <p>FRTU should have following features:</p> <ul style="list-style-type: none"> <li>a) User level configuration</li> <li>b) User wise authentication like system admin, configuration admin, control, operator.</li> <li>c) Disabling the DNS</li> <li>d) Disabling, enabling &amp; configuration of TCP/ IP and UDP ports.</li> <li>e) Door lock alarm integration with FRTU.</li> </ul>
1.12	General Construction of Enclosure	<ul style="list-style-type: none"> <li>a) FRTU enclosure should be 2.0 mm thick GI sheet.</li> <li>b) IP 54 protection suitable for outdoor applications.</li> </ul>

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		<ul style="list-style-type: none"> <li>c) The cabinet shall have adequate space for installation of other hardware's like modem, battery charger and battery as well as shall have at least 10% spare space.</li> <li>d) The component and accessories to be mounted on mounting plate of FRTU.</li> <li>e) Enclosure should have proper illumination, universal type socket and laptop stand and Drawing pocket.</li> </ul>
<p>1.13</p>	<p>FRTU Power Supply</p>	<ul style="list-style-type: none"> <li>a) Power supply for FRTU shall be on 24V DC system which would be made wired from Battery Charger/batteries housed in FRTU cabinet.</li> <li>b) The main DC circuits shall be protected by incoming circuit breakers. Each circuit shall be tapped through single pole fuse so as to provide an individual DC feed to each of the I/O modules, modems and protocol converters. Contractor shall provide maximum power consumption data of each of the type of FRTU. To protect from the theft the batteries should be enclosed in a protected box with anti-theft shear head type nut and bolts. Battery enclosure should be concealed and not visible.</li> <li>c) Power supply system should have redundant battery charger to provide the supply to FRTU system as well as to charge the battery.</li> <li>d) Type 3 Pluggable Surge Protection Device in accordance with IEC 61643 with KEMA &amp; 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 (i.e. on Ethernet/RS 485 lines)</li> </ul>
<p>1.14</p>	<p>Software / Firmware</p>	<p>The term software is used in this Technical Specification to mean software or software implemented through firmware. All software shall be implemented according to the Contractor's latest established design and coding standards. Complete and comprehensive documentation shall be provided for all software. Contractor should provide windows based software as it is preferred for its user friendliness.</p>

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1.14.1	General	<ul style="list-style-type: none"><li>a) A real-time non-proprietary operating system that is capable of managing the FRTU applications shall be provided.</li><li>b) This software shall provide automatic restart of the FRTU upon power restoration, memory parity errors, hardware failures, and manual request. The software shall initialize the FRTU and begin execution of the FRTU functions without intervention by the SCADA/DMS master station. All restarts shall be reported to the SCADA/DMS.</li><li>c) The software shall be prepared in a high level language and shall be documented in detail. No separate licensing charges or agreements shall attach to the FRTU software or its underlying operating system.</li><li>d) In order to easily support the system under continuously changing site conditions all protocol, configuration, and application data must be contained in easily programmable non-volatile memory such as Flash EPROM.</li><li>e) The FRTU design shall be independent of any communication protocol that would impose restrictions on the flexibility or functionality of the FRTU. Protocol changes shall be accomplished by software/firmware changes only.</li></ul>
1.14.2	Diagnostic Software	<ul style="list-style-type: none"><li>a) Software shall be provided to continuously monitor operation of the FRTU and report FRTU hardware errors to the SCADA/DMS. The software shall check for memory, processor, and input/output errors and failures. It is desirable that internal diagnostics be sufficiently detailed to detect malfunctions to the level of the smallest replaceable component.</li><li>b) The FRTU shall facilitate isolation and correction of all failures and shall include features that promote rapid fault isolation and component replacement. All functional module nodes shall be designed with integrated on-line diagnostic functions. The results of these diagnostics shall</li></ul>

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		be reported to the central processing module. The central module shall store this information and report it to the SCADA/DMS as permitted by the protocol. FRTU shall be able to access from remote (BCC/MCC) for downloading configuration.
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**2.0 Communication Ports details**

S. No.	Communication With	Communication Protocol	Physical Layer		Connecting Cable	Required Physical Port Qty.
			Interface	Port		
2.1	Master station(s)	IEC 60870-5-104	Ethernet	RJ45	CAT VI	1
2.2	Local Configuration	–	RS232	USB/DB9	Console Cable	1
2.3	Protection relays/FPI/VPI	MODBUS	RS485	Terminal Block	Shielded RS485 Twisted Copper Cable	1
2.4	MFM/ LV panel/Transformer	MODBUS	RS485	Terminal Block	Shielded RS485 Twisted Copper Cable	1
	Total					4

**3.0 FRTU DI/DO/AI list**

FRTU configuration DI/ DO Channel requirement is indicated in the Table given below

3.1	FRTU configuration	DI-64 no's DO-16 no's
3.2	Digital Inputs	
3.2.1	Cable feeder VCB module 1 & 2	CB ON
		CB OFF
		Disconnecter ON position
		Disconnecter OFF position
		Earth position ON position
		Earth position OFF position
		Fault Passage Indicator ON Status
		Fault Passage Indicator OFF Status
		L/R switch in local(Common all VCBs modules)
		L/R switch in remote (Common all VCBs modules)
	Control circuit Healthy	

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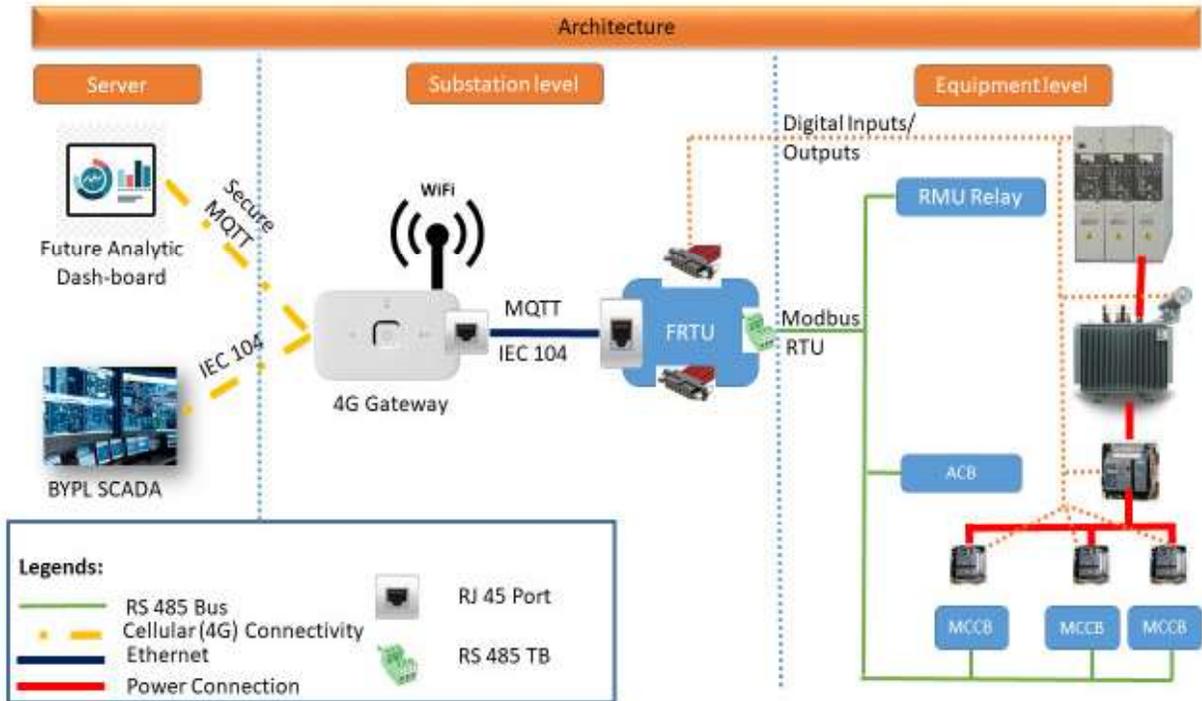
3.2.2	Transformer VCB	CB ON
		CB OFF
		Disconnecter ON position
		Disconnecter OFF position
		Earth position ON position
		Earth position OFF position
		Auto Trip
		Control circuit Healthy
3.2.3	Common Signals	SF6 Low
		Battery Charger 1 Fail
		Battery Charger 2 Fail
		Battery low(BHMu & Charger)
		Battery Unhealthy/fail
		Battery Test in progress
		Command Acknowledgement
		Door Open/Close
3.2.4	Transformer signals	Transformer Oil level low
		OTI Alarm from field
		WTI Alarm from field
		WTI trip
		Transformer pressure relay operated
3.2.5	LT ACB (through microprocessor release)	LT ACB ON
		LT ACB OFF
		LTACB Trip
		L/R switch in remote
		Control supply healthy
3.2.5	Outgoing MCCB (through microprocessor release)	LT Outgoing MCCB ON
		LT Outgoing MCCB OFF
		L/R switch in remote
		Control supply healthy
3.3	Digital Outputs (Commands)	
3.3.1	Cable feeder VCB module 1 & 2	CB ON
		CB OFF
		FPI Reset
3.3.2	Transformer VCB module 3	CB ON
		CB OFF
3.3.3	LT ACB (through microprocessor release)	LT ACB ON
		LT ACB OFF
3.4	Measuring inputs	
3.4.1	Energy Meter (energy meter in purchaser scope)	IR
		IY
		IB
		VAR
		W
		VA
		PF
		VRY
VYB		

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		VBR
		VRN
		VYN
		VBN
		IN
3.4.2	ACB release	IR
		IY
		IB
		W
		VA
		VAR
		PF
3.4.3	MCCB release	IR
		IY
		IB
		W
		VA
		VAR
		PF
3.4.4	WTI Scanner	Oil temperature
		Winding temperature
3.4.5	Self Powered relay	IR
		IY
		IB
		R phase Fault current
		Y phase Fault current
		B phase Fault current
		Earth Fault current
		Fault Record
3.4.6	Battery monitoring	Battery Voltage
		Battery current

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### 4.0 Communication Architecture



### Annexure F: Recommended spares (Data by supplier)

List of recommended spares as following:

S. No.	Description of spare part	Unit	Quantity
1		No	
2		No	
3			
4			
5			