

TENDER DOCUMENT FOR

SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT 33kV DMS GRID AND 66kV KHICRIPUR GRID SUB STATION, DELHI

IN

BSES YAMUNA POWER LTD.

NIT NO CMC/BY/19-20/RB/SV/39

Due Date for Submission: 22.08.2019, 14:30 HRS

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

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VOLUME – I

INFORMATION TO BIDDER (ITB)

OF

SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT 33kV DMS GRID AND 66kV KHICRIPUR GRID SUB STATION, DELHI

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VOLUME – I: INFORMATION TO BIDDER (ITB)

1.00 EVENT INFORMATION

- 1.01 BSES Yamuna Power Ltd (hereinafter referred to as “BYPL”) invites sealed tenders in 2 envelopes for following scope of works:

Sr.	Scheme Description Location Scheme Description	Estimate Cost Value In INR	EMD Value In INR	Qty.
1	SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT DMS AND KHICRIPUR GRID SUB STATION, DELHI	2.70 Crore	5.40 Lakh	AS PER BOQ (Bidder is requested to verify the same before bidding by visiting the site)

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

All envelopes shall be duly super scribed “SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT DMS AND KHICRIPUR GRID SUB STATION, DELHI”.

Bid shall be submitted in two (02) parts. Details of part are as follow:

Part A – Techno Commercial Bid

Part B – Price Bid

- 1.1. The schedule of specifications with detail terms & conditions can be obtained from address given below against submission of non-refundable demand draft of **Rs.1,180/-** drawn in favour of BSES Yamuna Power Ltd, payable at Delhi. The tender documents & detail terms and conditions can also be downloaded from the website www.bsesdelhi.com --> **BSES YAMUNA POWER LTD --> Tender --> Open Tenders**

In case tender papers are downloaded from the above website, then the bidder has to enclose a demand draft covering the cost of bid documents.

- 1.2. Bids will be received up to **22.08.2019, 14:30 PM.** at the address given below.

Part A of the Bid shall be opened on **22.08.2019, 16:00 PM.**

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 reach this office on or before the last date.

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

- 1.3 BSES Yamuna Power Ltd reserves the right to accept/reject any or all tenders without assigning any reason thereof in the event of following:
- a) Tender fee of requisite value.
 - b) Earnest Money Deposit (EMD) of value 1% of the estimated value of quoted package is not deposited in shape of Demand Draft/Pay Order/Banker's Cheque /Bank Guarantee drawn in favor of BSES Yamuna Power Ltd, payable at Delhi.
 - c) The offer does not contain prices indicating break-up towards all taxes & duties in prescribed format
 - d) Complete Technical details are not enclosed.
 - e) Tender is received after due date and time.
 - f) Technical offer contains any prices
 - g) Prices are not FIRM and subject to Price Variation.

2.00 QUALIFICATION CRITERIA

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

2.02 Technical Criteria:

SI No.	Criteria	Documents to be submitted by bidder
1	The bidder should be a manufacturer of 33KV or higher voltage class Control & Relay Panels	Manufacturer self certificate and factory incorporation certificate
2	The bidder should have executed at least 50 Nos of 33KV or higher grade Control & Relay Panels order(s) in last 3 years.	<ol style="list-style-type: none"> i. Summary list of executed Purchase orders ii. Purchase order copies iii. Material delivery clearance certificate copy

3	The bidder should have established project management, field quality assurance system & safety organization designed to achieve high level of reliability at various stages of field services required for successful erection, testing & commissioning and shall have designed, supplied, installed & commissioned project (of 33KV or higher), having minimum 10 Nos CRP's in last 3 years. The list of such projects shall be furnished as per Format attached in SCHEDULE I (List of Projects).	<ul style="list-style-type: none"> i. Turnkey Purchase order/Work order copy ii. Work completion certificate copy
4	Performance certificate for 1 (One) year satisfactory performance from at least 02 companies should be submitted (of 33KV or higher), out of which one certificate should be of more than 10Nos	Performance certificate
5	The bidder must possess valid ISO 9001:2015 certification	Valid copy of ISO Certificate
6	The bidder must possess valid BIS License or Equivalent International License (If applicable)	Valid copy of BIS License or Equivalent International License.
7	The bidder should possess valid Electrical Contractor License issued by competent statutory agency to undertake work in NCT Delhi. In case bidder is not having this license, Bidder to give the undertaking that it will be obtained by them before the start of the work at site or suitable sub-contractor having the valid license shall be engaged for works at site where copy of valid license shall be submitted to BYPL before the start of the work.	<ul style="list-style-type: none"> i. Electrical Contractor License Copy ii. Undertaking meeting the qualifying criteria

2.02 **Commercial Criteria:**

SI No.	Criteria	Documents to be submitted by bidder
1	The bidder must have adequate Financial Stability and status to meet the financial obligation pursuant to the scope of work and shall have average annual turnover of minimum Rs 200 Crores during last three (3) Financial Years preceding the date of opening of bid	Duly certified CA certificate to be submitted
2	An undertaking (self certificate) that the bidder has not been blacklisted/debarred by any central/state government institution including electricity boards.	Undertaking
3	The bidder should have registered under GST ACT and shall submit PAN, EPF and GST Registration Number, in addition to other statutory compliances. The bidder must submit the copy of registrations and submit an undertaking that the bidder shall comply all the statutory compliances as per the applicable laws/rules etc before the start of the work.	<ul style="list-style-type: none"> i. Relevant Statutory Documents Copy ii. undertaking

Notwithstanding anything stated above, BYPL reserves the right to assess 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. **NO DEVIATION IS ACCEPTABLE.** BYPL shall response to the clarifications raised by various bidders and the will be distributed to all participating bidders through website.

3.01 BID SUBMISSION

The bidders are required to submit the bids in 2(two) parts and submitted in **1 original + 1 Duplicate** to the following address:

**Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
3rd Floor, A Block
Shaktikiran Building, Karkardooma
Delhi 110032**

PART A :: TECHNICAL **BID** comprising of following:

Sr. No	Descriptions	Type of Documents
Commercial :		
1	Tender Fee - Demand Draft (Rs.1180/-) (Incl GST)	Non-refundable demand draft for Rs 1180/- in case the forms are downloaded from website
2	EMD	In prescribed format
3	Power-of-Attorney	In prescribed stamp paper & format
4	PQR Compliances	Documentary evidence in support of qualifying criteria like : 1. Details of constitution of the company (Proprietary/Limited/etc along with the details), Memorandum of Association of the company 2. Bidders shall submit the certified annual Balance sheets for the last completed three (3) financial years 3. Supportive document on Positive Net worth. Credit rating/solvency certificate from competent authority. 4. Copies of Orders, Execution /Performance Certificate & Other Documents to support qualification Criteria
5	Signed Tender document	Original Tender documents duly stamped & signed on each page as token of acceptance

Sr. No	Descriptions	Type of Documents
6	Black listing undertaking	Bidder should submit a Self undertaking signed by its Authorized Signatories that the Bidder or any of their sub contractor has not been blacklisted/barred by any Govt. Organization or Regulatory Agencies in India or abroad.
7	No litigation Certificate	Duly signed No Litigation Certificate as per attached format.
8	Commercial Terms and Conditions	Acceptance on Commercial Terms and Conditions viz Delivery schedule/period, Payment terms, PBG etc.
9	Acceptance on Reverse Auction	Duly signed Acceptance Form For Participation In Reverse Auction Event as per attached format
10	Bid Form (Unpriced) Duly Signed	Duly Signed Bid Form as per attached format
11	Un price Bid Duly Signed	Duly Signed Un price Bid as per attached format
Technical:		
12	Technical Details/ Filled in GTP/Drawings	Bidder shall submit duly filled GTP with all Technical documents and Drawings.
13	Field Quality and assurance Plan (QAP)	Bidder shall submit the detailed QAP plan in their technical proposal.
14	Type Test Reports	Bidders shall submit the copy of type test reports in their technical bids in support of PQR conditions
15	Project Implementation Plan and Methodology	Bidder shall submit detail Project Implementation plan and methodology in their technical bid.
16	Testing Facilities	Bidder shall submit the details of testing facilities available at their works/factory.
17	Organization Chart & Manpower Details.	Bidder shall submit the details of Manpower to be deployed for project management with qualification and experience.
18	List of Current Commitments/ Work In Progress.	Bidder shall submit the list of projects (Current Commitments/Work in Progress)

- PART B** :: **FINANCIAL BID** comprising of (01 original only)
- Price strictly in the Format enclosed indicating Break up of basic price, taxes & duties, transportation etc

3.02 TIME SCHEDULE

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

S.No.	Steps	Due date
1	Last Date of Sale of Bid Documents	21.08.2019
2	Date of Site Visit (If require)	19.08.2019, 10:00HRS
3	Pre-Bid Meeting	19.08.2019, 15:00HRS
4	Last Date of Queries, if any	20.08.2019
5	Last Date of Receipt of Bid Documents	22.08.2019, 14:30HRS
6	Date & Time of Opening of PART A - Technical and Commercial Bid	22.08.2019, 16:00HRS

This is a two part bid process. Bidders are to submit the bids in 2(Two) parts Both these parts should be furnished in separate sealed covers super scribing NIT no. DUE DATE OF SUBMISSION, with particulars as **PART-A TECHNICAL BID & COMMERCIAL TERMS & CONDITIONS** and **Part-B FINANCIAL BID** and these sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

Part – A:: Technical Bid should not contain any cost information whatsoever and shall be submitted within the due date.

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

Bidder has to submit the item wise price bifurcation in bid. Un priced copy must be attached with the Part A (Technical Bid). Reverse Auction will be carried out on Lump sum Basis/Total Landed Cost i.e. Supply + Services

REVERSE AUCTION CLAUSE :: Purchaser reserves the right to use reverse auction as optional tool through SAP – SRM as an integral part of the entire tendering process. All techno-commercially qualified bidders shall participate in reverse auction.

Notwithstanding anything stated above, the Purchaser reserves the right to assess 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 to submit their acceptance as per format attached ANNEXURE-C

Bidder shall bids for one or more packages, however bid to be submitted for complete package comprising of Supply, Installation, testing and Commissioning of Grid, In-feed and Outgoing feeders as per scope of work/ BOQ of respective package for each and every items & activities.

BIDS RECEIVED AFTER DUE DATE AND TIME MAY BE LIABLE TO REJECTION

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4.00 AWARD DECISION

- 4.01 Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to submit the bid competitively. The decision to place purchase order/LOI solely depends on 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 purchaser (and / or its affiliates) and you subsequent DEFAULT on your bid; you will be required to pay 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 bidder is found unsatisfactory during the Project execution, the award will be cancelled and BYPL reserves the right to award other bidders who are found fit.
- 4.05 The purchaser reserves all the rights to award the contract to one or more bidders so as to meet the Project execution requirement or nullify the award decision without citing any reason.
- 4.06 Qty Variation: The purchaser reserves the rights to vary the quantities to +/- 30%

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 prior to participating. In addition to other remedies available, we reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. Bidders who violate the marketplace rules or engage in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace.
- Breach of 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 honor 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 post/courier to following address. The same shall not be communicated through phone

	Technical	Commercial
Contact Person	Mr Ashwani Aggarwal & Gaurav Sharma	Mr Rakesh Bansal & Rajesh Srivastava

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	Copy to : Mr. Rakesh Bansal	
Address	BSES Yamuna Power Ltd , 3 rd floor, B Block, Shaktikiran Building, Karkardooma, Delhi 110032	C&M Deptt. 3 rd Floor , A-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032
E-Mail ID	ashwani.aggarwal@relianceada.com gaurav.a.sharma@relianceada.com	rakesh.bansal@relianceada.com rajesh.r.srivastava@relianceada.com

8.00 BID FORM

The Bidder shall submit one "Original", "Copy- 1", of the Un price Bid Form, Supporting Documents & Technical Data Sheets duly filled in as per attached specification/BOM etc enclosed.

9.00 EMD

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

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

- (a) Banker's Cheque / Demand Draft / Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
- (b) EMD shall be valid for One Hundred Eighty (180) days after due date of submission or amended due date of submission drawn in favour of BSES Yamuna Power Ltd

The EMD may be forfeited in case of:

- (a) the Bidder withdraws its bid during the period of specified bid validity

or

- (b) the case of a successful Bidder, if the Bidder does not

- (i) accept the Purchase Order, or

- (ii) furnish the required contract performance BG.

10.00 BID PRICES

10.01 Bidders shall quote for the entire Scope of Supply/Work with a break-up of prices for individual items and Taxes & Duties. 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, Transportation to site, all in accordance with the requirement of Bidding Documents. The Bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total Price with taxes, duties & freight upto destination.

10.02 The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during execution of the supply work, 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

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performance of the Contract. **A Bid submitted with an adjustable price/ Price Variation Clause will be treated as non-responsive and rejected.**

10.04 The qty break-up shown else-where in Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any item not indicated but is required to complete the job, shall be deemed to be included in the prices quoted.

10.05 The format for price bid is attached as Annexure B.

11.00 BID CURRENCIES

11.01 Prices shall be quoted in Indian Rupees Only.

12.00 PERIOD OF VALIDITY OF BIDS

12.01 Bids shall remain valid for 180 days from the due date of submission of the Bid & subsequent corrigendum/amendment/extension of due date of submission.

12.02 Notwithstanding Clause 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/e-mail.

13.00 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.

14.00 FORMAT AND SIGNING OF BID

14.01 The original Bid Form and accompanying documents, clearly marked "Original Bid" plus copy1, must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0. In the event of any discrepancy between the original and the copies, the original shall govern.

14.02 The original and copies of the 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-Authority accompanying the Bid.

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 initialed by the person or persons signing the Bid.

15.00 SEALING AND MARKING OF BIDS

15.01 Bid submission: One original, & copy1 (hard copies) of all the Bid Documents shall be sealed and submitted to the Purchaser before the closing time for submission of the bid.

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- 15.02 The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with —“Technical & EMD”. The price bid shall be inside another sealed envelope with superscribed “Financial Bid”. Both these envelopes shall be sealed inside another big envelope. All the envelopes should bear the Name and Address of the Bidder and marking for the Original, & copy1. The envelopes should be superscribed with —“Tender Notice 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.

16.00 DEADLINE FOR SUBMISSION OF BIDS

- 16.01 The original Bid, together with the required copies, must be received by the Purchaser at the address specified earlier.
- 16.02 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will there after be subject to the deadline as extended.

17.00 ONE BID PER BIDDER

- 17.01 Each Bidder shall submit only one Bid by itself. No **Joint Venture/consortium is acceptable.** A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

18.00 LATE BIDS

- 18.01 Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0, will be declared "Late" and may be rejected and returned unopened to the Bidder.

19.00 MODIFICATIONS AND WITHDRAWAL OF BIDS

- 19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid’s submission.

20.00 THE PURCHASER’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

- 20.01 The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at anytime prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser’s action.

21.00 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 order to other bidders in the tender, provided it is required for timely execution of project & provided he agrees to come to the lowest rate.

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22.00 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 issue of the letter of intent /Notification of Award by Purchaser. The date of LOI/LOA shall be treated as Start date of Project.

23.00 CONTRACT PERFORMANCE BANK GAURANTEEE

Within 15 days of the receipt of Notification of Award/ Letter of Intent/PO from the Purchaser, the successful Bidder shall furnish Contract Performance Bank Guarantee towards faithful performance of Contract for an amount of 10% (Ten percent) of the Contract Price. The Performance Bond shall be valid upto completion period/handing over, whichever is earlier plus 3 months claim period. Upon submission of the performance security, the EMD shall be released. 03 (three) nos. separate CPBG's shall be submitted against Supply, ETC & Civil Contract.

24.00 PACKAGE COMPLETION PERIOD (PROJECT)

24.01 Vendor require to complete the project as per package wise schedule as under

Package Number	Package Name	Total Months for Handling over of the Package, From Zero Date	Total No. of Day for Handling over of the Package From Zero Date
Package No A	DMS	5 months	150 days
Package No B	KHICHRIPUR	5 months	150 days

25.00 GENERAL

All the Bids shall be prepared and submitted in accordance with these instructions.

- 25.01 Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.
- 25.02 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 any other party.
- 25.03 The Purchaser reserves the right to request for 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 NIT requirement is incomplete.
- 25.04 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.

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APPENDIX I

(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*] (herein after called the "Bidder") has submitted its bid dated [*date of submission of bid*] for the supply of [*name and/or description of the goods*] (here after 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*](herein after called the "Bank"),are bound unto BSES Yamuna Power Ltd., with it's Corporate Office at Shaktikiran Building, Karkardooma, Delhi - 110032, (herein after 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 the 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 Eighty (180) 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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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 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 under take to deliver the entire goods as) as per delivery schedule mentioned in Section IV from the date of award of purchase order/letter of intent.

4 If our Bid is accepted, we will furnish a performance bank guarantee for an amount of 10% (Ten)percent of the total contract value for due performance of the Contract in accordance with the Terms and Conditions.

5 We agree to abide by this Bid for a period of 180 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 supply 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 there of, 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, in accordance with the Laws and Jurisdiction of Contract.

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

Signature..... In the capacity of

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

(IN BLOCK CAPITALS)

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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 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, and 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 glitch, 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 to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out rightly rejected by 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 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 conclusion of the auction event for arriving at contract amount.

Signature & seal of the Bidder

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LITIGATION HISTORY

Year	Name of client	Details of contract & date	Cause of Litigation/arbitration and dispute	Disputed amount

CURRENT CONTRACT COMMITMENTS / WORK IN PROGRESS

Year	Name of client	Details of contract & date	Value of outstanding work	Estimated completion date

FINANCIAL DATA

(Duly Certified by Chartered Accountant)

	Actual in previous 5 financial years				
	FY 18-19	FY 17-18	FY 16-17	FY 15-16	FY 14-15
Total assets					
Current assets					
Total Liability					
Current Liability					
Profit before taxes					
Profit after taxes					

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 labor 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.

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- . 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, 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 is 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) are 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 is 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.

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 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 an Vendor and in legal action.
- . Disclosure of Information - Vendors must disclose information regarding its 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.

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- . 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.

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 modeled on and contains language from the 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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**SPECIAL CONDITIONS OF CONTRACT
(SCC)**

OF

**SURVEY, DESIGN, ENGINEERING, SUPPLY,
ERECTION, TESTING, & COMMISSIONING OF NEW
CONTROL & RELAY PANELS ALONG WITH OTHER
MATERIALS, DISMANTLING OF EXISTING
EQUIPMENTS AS PER THE SCOPE OF WORK ON
TURNKEY BASIS AT 33kV DMS GRID AND 66kV
KHICRIPUR GRID SUB STATION, DELHI**

IN

BSES YAMUNA POWER LTD.

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

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EXECUTION SCHEDULE 15

SPECIAL CONDITIONS OF CONTRACT

1.0 PRIORITY OF CONTRACT DOCUMENTS:

The several documents forming the Contract 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 Purchaser, who shall thereupon issue to the Contractor instructions thereon. In such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

1. The Contract Agreement
2. The Letter of Acceptance/ Intent
3. Agreed Minutes of the Contract Negotiation Meetings
4. Agreed Minutes of the contract Technical Meetings
5. Instruction To Bidders (ITB)
6. Special Condition of Contract (SCC)
7. General Condition of Contract (GCC)
8. Erection Conditions of Contract (ECC)
9. Civil Conditions of Contract
10. The Priced Bill of Quantities
11. The Particular Technical Specifications
12. The General Technical Specifications
13. The Submitted Tender, including all Appendices and/or Addenda, the latest taking precedence.

2.0 SCOPE OF WORK:

The scope of work under this contract shall include the turnkey execution on End to End Basis, including but not limited to design, manufacturing, inspection & testing, dispatches, loading, unloading, storage at site, erection & installation, testing of the installation, associated civil work, commissioning, Handing over to the purchaser including comprehensive marine cum storage cum erection Insurance (MSE) on "Single Point Responsibility Basis"

The entire scope of work under the contract shall be executed strictly as per the NIT conditions and the technical specification.

Scope of work shall mainly include:

1. The Scope of work under the package shall include all Supply, Survey, Design, Engineering, Manufacturing, Shop testing, Inspection, packing, dispatch, loading, unloading and storage at site, Marine cum Storage cum Erection Insurance policy, assembly, Erection, Structural and Civil work, complete pre-commissioning checks, testing and commissioning at site, obtaining statutory clearance & certification from Chief Electrical Inspector of Delhi and any other statutory authority for charging the substation and handing over of complete package.

2. The scope shall also include supply at site of all barricading, free-issued materials if any (including installation, transportation, loading & unloading), dewatering, watch and ward and transportation of scrap (generated at Site), balance free-issued material, dismantled material from site to site , site to BYPL store including loading & unloading and no additional charges shall be paid against these activities. Used barricading material will be taken back by contractor soon after job is handed over or as directed by BYPL Engineering Incharge. No additional cost for these items will be paid to the Bidder. Any leakage, pilferage and damage of the material shall be in vendor's scope.
3. Contractor shall submit the detailed PERT chart/L2 Network for the execution of the package awarded for BYPL review and approval with major intermediate milestone as mentioned in Annexure- I. Contractor shall strictly adhere to the implementation schedule as per the project plan submitted and approved.
4. All the materials supplied against this contract shall be as per BYPL approved "Makes" and "Specifications" ONLY.
5. Wherever BYPL specifications are not available, relevant IS/IEC to be followed. All Drawings mentioned in the Tender Specification and others required for completion of the work shall be submitted and approval of BYPL Engineer in Charge obtained before commencement of any job. Drawing submission process shall not be deemed complete until all the requirements are complied during the submission of the same.
7. The Contractor shall have own testing equipments like IR Tester, Hi Pot Test Kit and Earth Tester with valid Calibration Certificates for testing the cables.
8. The Contractor shall have own Safety equipment like Neon Tester, Portable Earth, Earthing discharge rod etc. along with valid Calibration Certificates of all the equipment.
9. The Bidder should have all major tools and tackles required for execution of work like Bench Machine, Rollers, Jack for lifting the Cable drum along with valid test certificates etc.
10. Any material not specifically mentioned In BOQ but required for successful Erection, Testing and Commissioning of the package awarded shall be deemed to be in the scope of the bidder.
11. Successful Bidder shall depute Safety officer and Quality officer at site separately for each package and for the entire duration of the project and they shall submit the safety report and quality report to BYPL Site In charge on weekly basis.
12. Any item/work, not specifically mentioned in the NIT condition and technical specification but essentially required for completion of the work shall be the responsibility of the contractor.
13. All Statuary Compliances (wherever applicable) required to complete the work as defined above are in the scope of contractor.
15. Electrical inspection clearance certification from Chief Electrical Inspector of Delhi and any other statutory authority for charging the substation are in scope of Contractors.

3.0 CONTRACT PRICES:

The contract price shall be including all the detailed scope as specified in the contract for the package awarded and shall be inclusive of all taxes and duties (GST) as applicable.

Prices are inclusive of all taxes and duties including labour cess.

However, IT as per applicable rate will be deducted from your bills as Tax Deduction at Source (TDS).

GST is included in the contract price awarded , however GST payment shall be made on submission of GST Registration and self declaration on your letter head stating that contractor have deposited/or will deposit the Tax as per the applicable GST laws. Contractor shall furnish your GST registration number.

4.0 QUANTITIES VARIATION UNDER THE AWARDED CONTRACT:

Contract Unit rate shall applicable for the any addition/reduction in quantities to the extent as Specified below: Quantities may vary up to (+/-) 30%

5.0 FIRM CONTRACT PRICES:

The contract price shall remain "Firm" throughout the contract execution. No Price Variation and/or escalation on any account shall be payable to the Contractor for any reason whatsoever.

6.0 STATUARY VARIATION IN TAXES:

The total order value shall remain **FIRM**. However in case of any statutory variation in GST, or Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) shall be borne by BYPL on submission of the documentary evidence.

Any variation in taxes shall be applicable only to the direct/price breakup as mentioned in the contract.

7.0 COMPLETION TIME:

Package Number	Package Name	Total Months for Handling over of the Package, From Zero Date	Total No. of Day for Handling over of the Package From Zero Date
Package No A	DMS	5 months	150 days
Package No B	KHICRIPUR	5 months	150 days

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Detailed Execution schedule, including intermediate milestone for the execution of the Package is attached as "**Annexure- I'**".

8.0 BANK GUARANTEE:

Bank Guarantee	To be submitted on	Valid Upto (tentative)
Contract Performance Guarantee (10% of total Contract value)	Within 15 days of Issue of Order.	Valid till 90 days beyond the Project Completion period/Handing Over.
Bank Guarantee against Advance (For the advance amount)	Invoice for Advance amount along with advance bank guarantee.	Valid till Completion of supplies/work under the contract.
Equipment Performance Bank Guarantee (10% of total Contract value)	Time of claiming the last payment and Issuance of Final Taking over certificate from Purchaser / Owner,	Valid till Completion of Defect Liability Period plus 3 months.

9.0 LIQUIDATED DAMAGES:

9.1 LD FOR DELAY IN COMPLETION OF WORK:

Time is essence of the Contract.

After issuance of the Letter of Intent, the contractual network / L2 network will be finalized and approved by the BYPL. Contractor shall strictly adhere to the completion schedule and intermediate milestones agreed.

If the Contractor fails to successfully hand over the Packages awarded within the agreed contract completion schedule the contractor shall pay to the Purchaser/ Owner, Liquidated damages for the delayed period at the rate of 0.5% of the total contract price per each week of delay or Pro-rata thereof, by which the Completion is delayed.

Maximum LD for delay is 10% of Contract Value.

It is agreed that liquidated damages are a genuine Pre-estimate of damages and not by way of penalty.

9.2 LD ON INTERMEDIATE MILESTONE:

Liquidated Damages shall be applicable on the delay in achieving Intermediate milestone as agreed in the L2 Network which shall be at the rate of **0.5% of the total contract price per each week of delay of Intermediate milestone or Pro-rata** thereof, by which the Milestones are delayed.

LD on delay in milestone activities shall be redeemable if the delays are covered subsequently and the package is handed over within the agreed schedule .

9.3 OVER ALL LIQUIDATED DAMAGES:

The overall Maximum LD for delay is 10% of Contract Value.

However, the total Liquidated Damages for delay will be limited as hereinafter provided below.

Notwithstanding the above, in the event the Contractor fails to complete the package as per the schedule; and delays the "Handling Over" of the package up to a period for which the liquidated damage for time delay becomes more than ten percent (10%) of the Contract Price, then the Purchaser at his sole discretion, shall be entitled to treat the failure as an act of default by the Contractor and same shall entitle the Purchaser to terminate the Contract.

The liquidated damages for delay will be recovered at the sole discretion of the Purchaser from the Contract Price or from other securities/BG's available with the Purchaser or jointly.

10.0 LIABILITY & DAMAGES:

10.1 Limitation of Liability for Clause 9.1 and 9.2 above: The aggregate amount of Supplier liability to Purchaser for all Late Completion Liquidated Damages and Performances (Considered in aggregate), shall not exceed 10% of Contract Price.

10.2 Aggregate Liability of Supplier: Supplier's / Contractor liability to Purchaser under or in connection with the Supply and Erection Contract shall not exceed 110% of the respective Contract Price.

11.0 WARRANTEE/DEFECT LIABILITY PERIOD:

Warranty /Defect Liability Period shall be of **Twenty Four (24) months** from the date of Final Take Over of Packages by Purchaser.

The Contractor shall be liable to rectify all defects in the works done by the Contractor under this Contract, or from any act or omission of the contractors during Warranty / Defect Liability Period.

Contractor shall replace/ Repair all the materials / items supplied under the contract against any defect or failure, which arise due to faulty materials, workmanship or design for the entire defects liability period.

If during the defects liability period any materials / items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within the agreed time schedule from the date of receipt of intimation. The bidder shall depute their service

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personnel within 48 hours in case of emergency and shall ensure the availability of manpower/spares for the same during warranty period.

12.0 LATENT DEFECT LIABILITY PERIOD:

At the end of warranty period, the Supplier's Liability ceases except for latent defects.

Notwithstanding the completion of the Warranty Period, the Supplier shall be responsible for expeditiously making good by repair or replacement at its option and at its cost and expense any Latent Defect which appears before the expiry of the Latent Defects Liability Period.

The Contractor's Liability for latent defects warranty shall be limited to a period of Five (5) years from end of Warranty Period for all the supply items and the work executed under the contract.

For the purpose of this clause, the latent defects shall be the defects inherently lying within the material or arising out of design deficiency or the design deficiency of the implementation process adopted, which do not manifest themselves during Warranty period.

13.0 INSURANCE:

Contractor shall, at his own cost shall take Comprehensive Marine cum Storage cum Erection insurance policy for the total Project cost.

Contractor shall take, at his own cost, Third party insurance and suitable insurance policy for his own men and material.

The insurance covers to be taken by the Contractor shall be in a joint name of Purchaser and the Contractor. The Contractor shall, however, be authorized to deal directly with Insurance Company or companies during the contract period and shall be responsible in regard to maintenance of all insurance covers.

Any loss or damage to the equipment during handling, transportation, storage, erection, putting into satisfactory operation and all activities to be performed till the successful completion of and handling over Performance Guarantee tests of the plant shall be to the account of the Contractor. The Contractor shall be responsible for preference of all claims and make good for the damage or loss by way of repairs and/or replacement of the equipment, damaged or lost.

For all the insurance policies taken, Contractor shall be responsible for settlement of claims with the underwriters without any liability on the purchaser and will arrange replacements / rectification expeditiously without waiting for the settlement of insurance claim, at contractor's own cost and this shall not entitle the Contractor for any extension of Time and Cost Overrun.

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Marine Transit risk on supply of material on 110% of captioned value & Erection all risk cover on 100% of Project cost which cover include any loss or damage not limited to AOG perils, earthquake and act of terrorism.

14.0 DRAWINGS/DOCUMENTS:

Drawings will be supplied to the Contractor by Purchaser as per Agreed Master Documents List (MDL) , Technical Specifications, BOQ and as mentioned in GCC.

15.0 TERMS OF PAYMENT:

A) FOR SUPPLY OF EQUIPMENT AND MATERIALS:

- A. 65% prorata of supply value item wise shall be payable against R/A bills for supply of equipments and materials within 45 days against receipt & acceptance of material at site and submission of following documents duly certified by BYPL Project-in-charge, complete in all respects:
 - 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 Stores & Original certificate issued by BYPL confirming receipt of the subject material at Stores/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.
 - m) Performance Bank Guarantee equivalent to 10% of Supply value of the Contract valid upto Defect Liability period for 36 months from the date of handing over of the scheme plus 3 months Claim period.
- B. 20% prorata on account of supply value of the actual executed value after installation/erection of material duly certified by BYPL Project-in- charge.
- C. Balance 15% on account of supply value of the actual executed value shall be paid in 30 days

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after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by BYPL Engineer-in-Charge specified in the tender and on submission of performance Bank Guarantee of 10% amount, in our format valid up to a defect liability period from the date of handing over of the scheme including submission of Electrical Inspector Clearance Certificate, Compliance of final punch point, No Demand Certificate, Letter of Indemnity by the supplier (The format of No Demand Certificate and Letter of Indemnity are attached as Annexure) and after reconciliation & adjustments of payments, if any towards quantities of materials issued from purchaser's stock and consumed by the contractor for expeditious completion of the job.

B) FOR ERECTION, INSTALLATION AND TESTING & COMMISSIONING:

Payment shall be made to you as under:

i) 85% pro-rata payment of total installation value of the actual executed value shall be made progressively on submission of your running invoices on Monthly basis duly certified by our Engineer In charge & shall be paid within 30 days on receipt of such bills at our office.

ii) Balance 15% on account of total installation value of the actual executed value payable shall be paid in 30 days after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by BYPL Engineer-in-Charge specified in the tender and on submission of performance Bank Guarantee of 10% amount, in our format valid up to a defect liability period from the date of handing over of the scheme including submission of Electrical Inspector Clearance Certificate, Compliance of final punch point, No Demand Certificate, Letter of Indemnity by the supplier (The format of No Demand Certificate and Letter of Indemnity are attached as Annexure) and after reconciliation & adjustments of payments, if any towards quantities of materials issued from purchaser's stock and consumed by the contractor for expeditious completion of the job.

16.0 ARBITRATION:

The venue of arbitration shall be New Delhi.

17.0 UNFORESEEABLE SUB-SURFACE CONDITIONS:

Notwithstanding anything contained elsewhere in the contract, if during the execution stage, the Contractor encounters on the Site any sub-surface conditions that are different from those envisaged from the soil testing / data available at the site, or the Contractor's own testing, which necessitates corrective action / changes in the method(s) of work, all costs related with such changes shall be borne by the Contractor. These conditions shall no way be compensated either for time, or costs, by the Purchaser.

18.0 FORCE MAJEURE:

Force Majeure Events:

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For the purpose of this Agreement, Force Majeure means any act, event or circumstance, or combination of acts, events or circumstances, which materially and adversely affects the affected

Party's performance of its obligations pursuant to the terms of this Agreement, but only if and to the extent that such acts, events or circumstances are not within the affected Party's reasonable control, were not reasonably foreseeable and could not have been prevented or overcome by the affected Party through the exercise of reasonable skill or care.

18.1 Political Force Majeure Events:

Which shall comprise the following acts, events and circumstances:

i) Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot insurrection, civil commotion, act of terrorism or sabotage, in each case occurring inside or directly involving India:

ii) Strikes, lockouts or other difficulties, which are politically motivated (rather than motivated primarily by a desire to improve compensation or working conditions of those involved) or are caused in whole or part by another event of Political Force Majeure or are part of a nation-wide or regional strike, or other generalised labour action occurring within India; (excluding such events which are site specific and attributable to the Supplier);

iii) Radioactive contamination or ionising radiation or chemical contamination originating from a source in India or resulting from another Political Force Majeure Event;

18.2 Non Political Force Majeure events comprising the following acts, events and circumstances:

i) Flood, cyclone, lightning, earthquake, drought, storm or any other extreme effect of the natural elements;

ii) Epidemic, or plague;

iii) Fire or explosion;

iv) Strikes, lockouts or other labour difficulties not included above (excluding such events which are Site specific and attributable only to the contractor)

v) Air crash, shipwreck or trainwreck or loss of or damage to any major component of the Facility arising in the course of transit.

18.3 Burden of Proof:

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In the event that the Parties are unable in good faith to agree that a Force Majeure Event has occurred, the Parties shall submit the dispute for resolution pursuant to clause , provided that the burden of proof as to whether a Force Majeure Event has occurred shall be upon the Party claiming a Force Majeure Event.

18.4 Excused Performance:

The Party claiming Force Majeure shall give notice to the other Party of any Force Majeure Event as soon as reasonably practical after becoming aware of its existence, but not later than **twenty four (24)hours** after the date on which such Party knew or should reasonably have known of the commencement of the Force Majeure Event. Notwithstanding the above, if the Force Majeure Event results in a breakdown of communications rendering it not reasonably practicable to give notice within the applicable time limit specified herein, then the Party claiming Force Majeure shall give such notice as soon as reasonably practicable after the reinstatement of communications, but not later than forty eight (48) hours after such reinstatement.

(a) The Party claiming Force Majeure shall give notice to the other Party of:
i)The cessation of the relevant Force Majeure Event; and
ii) The cessation of the effects of such Force Majeure Event on the enjoyment by such Party of its rights or the performance by it of its obligations under this Agreement;
as soon as practicable after becoming aware thereof.

(b) The suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event.

(c) No liability of either Party which arose before the occurrence of the Force Majeure Event causing the suspension of performance shall be excused as a result of the occurrence, including, without limitation, liability for the timely payment of money otherwise due and earned by performance of tasks required under this Agreement by any Party.

(d) Any Party claiming Force Majeure shall use its reasonable efforts to mitigate and overcome the effects of any act, event or circumstance of Force Majeure as soon as practicable after the occurrence of a Force Majeure Event, including by mutual agreement the expenditure of reasonable sums of money, and to co-operate with the other Party to develop and implement a plan of remedial and reasonable alternative measures to remove the Force Majeure Event, provided, however, that no Party shall be required under this provision, to settle any strike or other labour dispute on terms it reasonably considers to be unfavourable to it. The Party claiming Force Majeure shall furnish weekly written reports to the other Party with respect to its progress in overcoming the effects of the act, event or circumstance of Force Majeure together with such supporting documentation and information as the other Party reasonably requires regarding the claim of Force Majeure.

(e) When the affected Party is able to resume performance of its obligations under this Agreement that Party shall give the other Party written notice to that effect and shall promptly resume performance hereunder.

18.5 Limitations:

Anything in this Agreement to the contrary notwithstanding:

(a) The affected Party shall not be relieved from obligations under this Agreement to the extent that the gross negligence of the affected Party (or, in the case of

Purchaser's Suppliers or any Subcontractor) contributes to or aggravates the Force Majeure Event ; and

(b) The existence of a Force Majeure Event shall not excuse the affected Party from its obligations to make payment of any monies otherwise due and payable by the affected Party pursuant to this Agreement.

18.6 Consequences of Force Majeure

Neither Party shall be considered in default or in breach of its obligations under this Agreement to the extent that performance of such obligations is prevented by any circumstances of a Force Majeure Event.

19.0 SUSPENSION OF WORK:

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

For an aggregate suspension period of less than Six (6) months the Contractor shall not claim any reimbursement. Any necessary and demonstrable costs incurred by the Contractor, as a result of suspension of the Works beyond the above period, will be paid by The Purchaser, provided such costs are substantiated to the satisfaction of The Purchaser. For this purpose, only the direct costs incurred shall be considered and this shall exclude any overheads, incidentals or profit. The Purchaser's decision in this regard will be final and binding. The Purchaser shall not be responsible for any liability if suspension or delay is due to some default on the part of the Contractor or its sub-contractor. Purchasers decision in this regard shall be final and binding. Purchaser shall not be responsible for any liability if suspension is caused due to some default on the part of the supplier and its sub suppliers.

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20.0 FINAL TAKING OVER OF THE PACKAGES:

Upon successful completion of testing and Commissioning of the all the items/work under the package awarded and all the testing conducted to the Purchaser/Owner's satisfaction, the Purchaser shall issue to the Contractor a "Taking over Certificate" as a proof of the final acceptance of the packages only after receipt of such certificate from the Owner to Purchaser.

21.0 OPERATION:

Not Applicable

22.0 CONSTRUCTION WATER AND POWER:

Construction Water and power shall be arranged by Contractor at his own cost.

ANNEXURE - I

EXECUTION SCHEDULE

Contractor shall submit the detailed PERT chart/L2 Network for the execution of the package awarded for BYPL review and approval.

However the major milestone shall be as under:

SL NO	DESCRIPTION OF MATERIAL	TIMELINE
1	Zero Date (Letter of Award)	Zero Date
2	Mobilization of manpower	15 days from Zero Date
3	Submission of Drawings/Documents/calculations for Engineering Approval	30 days from Zero Date
4	Engineering Approval	60 days from Zero Date
6	Procurement/Supplies	100 days from Zero Date
6	Testing & Commissioning	120 days from Zero Date
7	Handing Over	150 days from Zero Date

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

OF

**SURVEY, DESIGN, ENGINEERING, SUPPLY,
ERECTION, TESTING, & COMMISSIONING OF NEW
CONTROL & RELAY PANELS ALONG WITH OTHER
MATERIALS, DISMANTLING OF EXISTING
EQUIPMENTS AS PER THE SCOPE OF WORK ON
TURNKEY BASIS AT 33kV DMS GRID AND 66kV
KHICRIPUR GRID SUB STATION, DELHI**

IN

BSES YAMUNA POWER LTD.

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsesdelhi.com**

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GENERAL CONDITIONS OF CONTRACT (GCC)-SUPPLY

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

1. PRIORITY AND CONTENT OF CONTRACT DOCUMENTS:

The several documents forming the Contract 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 Purchaser, who shall thereupon issue to the Contractor, instructions thereon. In such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

1. The Contract Agreement
2. The Letter of Acceptance/ Intent
3. Agreed Minutes of the Contract Negotiation Meetings.
4. Agreed Minutes of the contract Technical Meetings.
5. Instruction To Bidders (ITB)
6. Special Condition of Contract (SCC)
7. General Condition of Contract (GCC)
8. Erection Conditions of Contract (ECC)
9. Civil Conditions of Contract
10. The Priced Bill of Quantities
11. The Particular Technical Specifications
12. The General Technical Specifications
13. The Submitted Tender, including all Appendices and/or Addenda, the latest taking precedence.

All the materials, literature, data and information of any sort given by the contractor along with its bid proposal subject to the approval of the purchaser.

2. CONTRACT LANGUAGE:

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

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

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

3. DEFINITIONS AND INTERPRETATION:

Definitions TO BE FOLLOWED UNDER THE CONTRACT shall have following meanings:

3.1 COMPANY / PURCHASER / OWNER: Means BSES Yamuna Power Ltd, a company incorporated under the Companies Act 1956 and having its office at Shaktikiran Building, Karkardooma, Delhi - 110032, which expression shall include its authorized representatives, agents, successors and assigns.

3.2 CONTRACTOR: Shall mean the successful Tenderer / vendor to whom the contract has been awarded.

3.3 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.

3.4. 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.

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

3.6. ENGINEER IN CHARGE: "Engineer In-charge" means the Company's authorized representative for the purpose of carrying out the work.

3.7 APPLICABLE LAW: Applicable Laws means the constitution of India and any act, rule, regulations, directive, notification, code, order or instruction having its force of law enacted or issued by any competent legislature or Governmental Agency (including those related to taxes, duties, assessments, expropriation and compulsory acquisition) as may be in effect from time to time the implications thereof shall be deemed a Change in Law or Change in Permits.

3.8 OTHER CLEARANCES: Means any consent, approval, permit or other authorisation which is required to be granted by authorities (local, government or any other) essential to start/complete the work.

3.9 DEFECT LIABILITY PERIOD: Shall mean the period during which the contractor shall remain liable for repair or replacement of any defective part of the work performed under the contract, free of cost.

3.10 TENDER SPECIFICATION: The terms "Tender Specification" shall mean the Indian Standard specification of the work and description of work as detailed in Tender document/Tender enclosed and all such particulars mentioned directly/referred to or implied as such in the Tender.

3.11. CONTRACT PRICE shall mean the price referred to in the "Letter of Intent/Purchase Order".

3.12 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 extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

3.13 CODES AND SPECIFICATION shall mean all the applicable codes and standards as indicated in the Specification.

3.14 CHANGE OF WORK means any addition to, deletion from, suspension of or other modification, to the Work, or to the quality, function or as delineated in this Contract, including any such addition, deletion, suspension or other modification, which requires a change in one or more of the Technical Specifications and the completion schedule

3.15 EPC means Engineering, Procurement and Construction wherein the EPC contractor is made responsible for all the activities from design, procurement, supply, storage construction, commissioning and handover of the project to owner.

3.16 EFFECTIVE DATE OF CONTRACT means the date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

3.17 CONTRACT COMMENCEMENT DATE means the date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

3.18 CONTRACT COMPLETION DATE means the date of expiry of Guarantee/defect liability Period shall be deemed as the Contract Completion Date.

4. 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.

Before submitting the bid, all bidders will at their expenses make or obtain any additional information, investigations, explorations, test and studies and obtain any additional information and data which pertains to the physical conditions at or contiguous to the site or otherwise which may affect cost, progress, performance of the work and which the bidder deems necessary to determine its Bid for performing the work in accordance with the time and other terms and conditions of the tender/contract documents.

The company shall not accept any claim whatsoever arising out of the difficult site/terrain/local conditions, if an

5. 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.

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6. TIME – THE ESSENCE OF CONTRACT:

The time and the date of Contract Execution completion of the "Package" as stipulated in the Letter of Intent/ Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The "Entire Package" has to be completed and handed over not later than the aforesaid Schedule.

7. PROGRESS REPORT:

The supplier shall submit weekly/fortnightly/monthly progress report as desired by the Purchaser's Engineer in Charge and in the format mutually agreed between the parties.

8. SCOPE OF WORK:

The scope of work under this contract shall include the turnkey execution on End to End Basis , including but not limited to design, manufacturing, inspection & testing, dispatches, loading , unloading ,storage at site, erection & installation, testing of the installation, associated civil work ,commissioning ,handing over to the purchaser including comprehensive marine cum storage cum erection Insurance (MSE) on "Single Point Responsibility Basis" on turnkey Basis for the following packages:

Package Number	Package Name	Total Months for Handling over of the Package, From Zero Date	Total No. of Day for Handling over of the Package From Zero Date
Package No A	DMS	5 months	150 days
Package No B	KHICHRIPUR	5 months	150 days

Brief Scope of Work related to all the supplies for the successful completion, testing & commissioning and final handover for the above packages shall be as per the NIT conditions with the following salient details.

Any item/work, not specifically mentioned in the NIT condition and technical specification but essentially required for completion of the work shall be the responsibility of the contractor. 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.

9. QUANTITY VARIATION AND EXTRA ITEM/WORK:

The purchaser reserves the rights to vary the quantity as below:

- a) Quantity may vary up to (+/-) 30%.

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The Bill of Quantity break-up shown else-where in Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any item not indicated but is required to complete the job, shall be deemed to be included in the prices quoted.

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

10. FIRM CONTRACT PRICES:

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.

11 CONTRACT 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.

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.

The unit rates finalized are also inclusive of Insurance policy taken as defined in Special Conditions Contracts (SCC) Though Bidders shall indicate the value separately.

Cost of operation as per the requirement specified in NIT , for the duration of Six (6) months are included in the contract prices, However Bidder shall indicate the separate value for the same.

12 TAXES AND DUTIES:

Prices are inclusive of all taxes and duties including labour cess.

GST is included in the contract price awarded , however GST payment shall be made on submission of GST Registration and self declaration on your letter head stating that contractor have deposited/or will deposit the Tax as per the applicable GST laws. Contractor shall furnish your GST registration number.

13 STATUTORY VARIATION:

Any statutory variations i.e. increase/decrease in Taxes / Duties introduces by central Govt. / State Govt. of shall be reimbursed/recovered to/from Contractor against documentary evidence and proof. Any variation in taxes shall be applicable only to the direct/price breakup as mentioned in the contract.

14 CHANGE OF LAW:

"Change in Law" means:

- a) any enactment or issue of any new Applicable Law,
- b) any amendment, alteration, modification, or repeal of any existing Applicable Law or any new or modified directive or order there under,
- c) any change or variation in taxes payable in connection with and under this Agreement in each case with respect to a), b), and c) above coming into effect after the date of this Agreement.

15 SPECIFICATIONS AND STANDARDS:

The Bidder shall follow all codes and standards referred in the Contract Document. Codes and standards not specifically mentioned in the Contract Document may be followed by the Bidder with the prior written approval of BYPL, provided materials, supplies and equipment according to the standard are equal to or better than the corresponding standards specified in the Contract.

Product manufactures /makes names mentioned in the Contract documents are for the purpose of establishing the type and quality of products to be used. The Bidder shall not change the brand name and qualities of the bought out items without the prior written approval of the BYPL. All such products and equipment shall be used or installed in strict accordance with original manufacturer's recommendations, unless otherwise directed by the BYPL. In any circumstances the codes, specimen and standards prescribed by any government agency should not be violated.

16 QUALITY ASSURANCE AND INSPECTION:

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 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. In case of standard items, BYPL shall forward the standard QAP which is to be followed by vendor during manufacturing.

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 to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BYPL.

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 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.

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On completion of manufacturing, the items can only be dispatched after receipt of dispatch instructions issued by the Purchaser.

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

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 which may be levied is to be borne by the bidder.

17 ERRORS AND OMISSIONS:

The Supplier shall be responsible for all discrepancies, errors and omissions in the drawings, documents or other information submitted by him, irrespective of whether these have been approved, reviewed or otherwise accepted by the BYPL or not. However any error in design/drawing arising out of any incorrect data/written information from BYPL will not be considered as error and omissions on part of the Supplier.

18 PACKING, PACKING LIST & MARKING:

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.

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.

19 PRICE BASIS FOR SUPPLY OF MATERIALS:

Bidders shall quote their prices on Landed Cost Basis and separate price for each item.

Bidders shall quote FIRM prices for supply to BYPL Delhi/New Delhi stores inclusive of all packing, forwarding, loading at manufacturer's premises, unloading at site/stores and payment of GST. Storage of material is under the bidder Scope. Bidder shall arrange transit Insurance as per clause nos. 8 mentioned in Volume -1 Special Condition of Contract (SCC).

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20 TERMS OF PAYMENT AND BILLING – SUPPLY:

Terms of payment and Billing shall be as specified in Volume –I, Special Condition of Contract.

21 COMMISSIONING SPARES AND TOOLS & TACKLES:

Commissioning Spares shall be deemed to be included in the quoted price.

22 RETURN, REPLACEMENT OR SUBSTITUTION:

BYPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BYPL may in 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 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.

23 PERFORMANCE GUARANTEE:

Performance Guarantee shall be as specified in Volume –I, Special Condition of Contract.

24 WARRANTY/DEFECTS LIABILITY PERIOD:

All supplies made/Work executed shall be guaranteed against any defect or failure which may arise due to faulty materials, design or workmanship for a period of 24 months from the date of final handing over of the entire package as defined in SCC.

If during the Defect Liability Period any work are found to be defective, shall be immediately rectified or repaired, upto BYPL satisfaction, by the contractor at his own cost within 10 days from the date of receipt of intimation from BYPL.

Under no circumstances any extra claim in terms of time and cost shall be entertained for such repair/rectification.

25 SUPPORT BEYOND THE GUARANTEE PERIOD:

The Bidder shall ensure availability of spares and necessary support for a period of at least Twenty (20) years post completion of guarantee period of equipments supplied against the contract.

26 DOCUMENTATION:

The Bidder's shall procure all equipment from BYPL approved sources as per attached specifications. The Bidder shall submit 5 copies of Material/Type Test Certificates, O&M Manuals, and Approved & As-built drawings. The Bidder shall ensure for the strict compliance to the specifications and Field Quality Procedures issued by BYPL Engineer in-charge.

27 FORFEITURE:

Each Performance Bond established under the contract 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 set forth in the Contract. 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 set forth in the contract.

28 SUSPENSION OR EXTENSION:

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

For an aggregate suspension period of less than Six (6) months the Contractor shall not claim any reimbursement. Any necessary and demonstrable costs incurred by the Contractor, as a result of suspension of the Works beyond the above period, will be paid by The Purchaser, provided such costs are substantiated to the satisfaction of The Purchaser. For this purpose, only the direct costs incurred shall be considered and this shall exclude any overheads, incidentals or profit. The Purchaser's decision in this regard will be final and binding. The Purchaser shall not be responsible for any liability if suspension or delay is due to some default on the part of the Contractor or its sub-contractor. Purchasers decision in this regard shall be final and binding. Purchaser shall not be responsible for any liability if suspension is caused due to some default on the part of the supplier and its sub suppliers.

29 TERMINATION DUE TO CONTRACTORS DEFAULT:

The Purchaser may terminate the contract after giving 7(seven) days notice if any of following occurs

- a) Contractor fails to complete execution of works within the approved schedule of works, terms and conditions
- b) In case the contractor commits any Act of Insolvency, or adjudged insolvent
- c) Has abandoned the contract
- d) Has failed to commence work or has suspended the progress of works
- e) Has failed to proceed the works with due diligence and failed to make such due progress

30 EVENTS OF DEFAULT:

BYPL 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 BYPL, 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 BYPL.
- d) Failing to comply with any reasonable instructions or orders issued by BYPL in connection with the works.
- e) Failing to comply with any of the terms or conditions of this work order.
- (f) Supplier fails or refuses to deliver supplies conforming to this NIT / specifications, or fails to deliver supplies within the period specified in PO or any extension thereof
- (g) 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;
- (i) 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.

In the event BYPL terminates this work order, in whole or in part, on the occurrence of any event of default, BYPL 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 BYPL 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 BYPL for any additional costs that may be incurred by COMPANY for the execution of the Work.

31 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;
- (c) present for encashment to the bank the relevant Performance Bond;

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- (d) Purchase the same or similar Commodities from any third party; and/or
- (e) Recover any losses and/or additional expenses BYPL may incur as a result of Supplier's default

32. RISK & COST:

If the Contractor fails to execute the work as per NIT specification / as agreed in the contract within the scheduled period and even after the extended period, the contract shall get terminated and BYPL 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 Contract.

33 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.

34 TERMINATION FOR CONVENIENCE OF BYPL:

BYPL at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Supplier. BYPL 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.

35 LIQUIDATED DAMAGES:

Liquidated damages shall be as per Volume –I, Special Condition of Contract.

36 TRANSFER AND SUB-LETTING:

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

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37 RECOVERIES:

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 deducting 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.

38 WAIVER:

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

39 INDEMNIFICATION:

Notwithstanding contrary to anything contained in this NIT, 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.

40 PATENT RIGHTS AND ROYALTY:

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

Moreover, the Bidder undertakes not to breach any intellectual property right vesting in a third party/parties, whether by breach of statutory provision, passing off, or otherwise. In the event of any such breach, the Bidder shall be wholly liable to compensate, indemnify or make good any loss suffered by such third party/parties, or any compensation/damages arising from any legal proceeding/s, or otherwise. No liability of BYPL shall arise in this respect, and any costs, damages, expenses, compensation payable by BYPL in this regard to a third party/parties, arising from a legal proceeding/s or otherwise, shall be recoverable from the Bidder.

41 CONFIDENTIALITY:

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

Documents

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

Geographical Data

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

Violation

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

42 DISPUTE RESOLUTION & ARBITRATION:

To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with this contract. 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 the provisions of the Indian Arbitration & Conciliation Act, 1996 and the venue of such arbitration shall be in the city of New Delhi only. The language of proceedings, documents and communication shall be English.

Suspension of Work on Account of Arbitration

The reference to negotiation/arbitration shall proceed notwithstanding that the Works shall not then be or be alleged to be complete, provided always that the obligations of the Purchaser and the Supplier shall not be altered by reasons of arbitration being conducted during the progress of the Works. In no event shall the Supplier be entitled to suspend the Execution of the Works or part of the Works to which the Dispute relates on account of arbitration and payments to the Supplier shall continue to be made in terms of the Contract.

The laws and jurisdiction of contract

Where recourse to a Court is to be made in respect of any matter, the courts at Delhi shall have exclusive jurisdiction.

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**ERECTION CONDITIONS OF CONTRACT
(ECC)**

OF

**SURVEY, DESIGN, ENGINEERING, SUPPLY,
ERECTION, TESTING, & COMMISSIONING OF NEW
CONTROL & RELAY PANELS ALONG WITH OTHER
MATERIALS, DISMANTLING OF EXISTING
EQUIPMENTS AS PER THE SCOPE OF WORK ON
TURNKEY BASIS AT 33kV DMS GRID AND 66kV
KHICRIPUR GRID SUB STATION, DELHI**

IN

BSES YAMUNA POWER LTD.

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

This document is a property of BYPL. This is not transferable and shall not be used for any purpose other than, for which it is supplied.

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GENERAL TERMS & CONDITIONS - ERECTION, TESTING & COMMISSIONING

The Erection Condition of the contract shall form a part of the specifications, contract documents.

1. PRIORITY OF CONTRACT DOCUMENTS:

The several documents forming the Contract 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 Purchaser, who shall thereupon issue to the Contractor, instructions thereon. In such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

1. The Contract Agreement
2. The Letter of Acceptance/ Intent
3. Agreed Minutes of the Contract Negotiation Meetings.
4. Agreed Minutes of the contract Technical Meetings.
5. Instruction to Bidders (ITB)
6. Special Condition of Contract (SCC)
7. General Condition of Contract (GCC)
8. Erection Conditions of Contract (ECC)
9. Civil Conditions of Contract
10. The Priced Bill of Quantities
11. The Particular Technical Specifications
12. The General Technical Specifications
13. The Submitted Tender, including all Appendices and/or Addenda, the latest taking precedence.

All the materials, literature, data and information of any sort given by the contractor along with its bid proposal subject to the approval of the purchaser.

2. DEFINITIONS AND INTERPRETATION:

Definitions TO BE FOLLOWED UNDER THE CONTRACT shall have following meanings:

2.1 COMPANY / PURCHASER / OWNER: Means BSES YAMUNA Power Ltd, a company incorporated under the Companies Act 1956 and having its office at Shaktikiran Building, Karkardooma, Delhi -110032, which expression shall include its authorized representatives, agents, successors and assigns.

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2.2 CONTRACTOR: Shall mean the successful Tenderer / vendor to whom the contract has been awarded.

2.3 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.

2.4. 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.

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

2.6. ENGINEER IN CHARGE: "Engineer In-charge" means the Company's authorized representative for the purpose of carrying out the work.

2.7 APPLICABLE LAW: Applicable Laws means the constitution of India and any act, rule, regulations, directive, notification, code, order or instruction having its force of law enacted or issued by any competent legislature or Governmental Agency (including those related to taxes, duties, assessments, expropriation and compulsory acquisition) as may be in effect from time to time the implications thereof shall be deemed a Change in Law or Change in Permits.

2.8 OTHER CLEARANCES: Means any consent, approval, permit or other authorisation which is required to be granted by authorities (local, government or any other) essential to start/complete the work.

2.9 DEFECT LIABILITY PERIOD: Shall mean the period during which the contractor shall remain liable for repair or replacement of any defective part of the work performed under the contract, free of cost.

2.10 TENDER SPECIFICATION: The terms "Tender Specification" shall mean the Indian Standard specification of the work and description of work as detailed in Tender document/Tender enclosed and all such particulars mentioned directly/referred to or implied as such in the Tender.

2.11. CONTRACT PRICE shall mean the price referred to in the "Letter of Intent/Purchase Order".

2.12 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 extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

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2.13 CODES AND SPECIFICATION shall mean all the applicable codes and standards as indicated in the Specification.

2.14 CHANGE OF WORK means any addition to, deletion from, suspension of or other modification, to the Work, or to the quality, function or as delineated in this Contract, including any such addition, deletion, suspension or other modification, which requires a change in one or more of the Technical Specifications and the completion schedule

2.15 EPC means Engineering, Procurement and Construction wherein the EPC contractor is made responsible for all the activities from design, procurement, supply, storage construction, commissioning and handover of the project to owner.

2.16 EFFECTIVE DATE OF CONTRACT means the date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

2.17 CONTRACT COMMENCEMENT DATE means the date of issue/award of contract shall be the Effective Date of Contract or Contract Commencement date.

2.18 CONTRACT COMPLETION DATE means the date of expiry of Guarantee/defect liability Period shall be deemed as the Contract Completion Date.

3 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.

Before submitting the bid, all bidders will at their expenses make or obtain any additional information, investigations, explorations, test and studies and obtain any additional information and data which pertains to the physical conditions at or contiguous to the site or otherwise which may affect cost, progress, performance of the work and which the bidder deems necessary to determine its Bid for performing the work in accordance with the time and other terms and conditions of the tender/contract documents.

The company shall not accept any claim whatsoever arising out of the difficult site/terrain/local conditions, if an

4 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.

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5 SCOPE OF WORK:

The scope of work under this contract shall include the turnkey execution on End to End Basis , including but not limited to design, manufacturing, inspection & testing, dispatches, loading , unloading ,storage at site, erection & installation, testing of the installation, associated civil work ,commissioning ,handing over to the purchaser including comprehensive marine cum storage cum erection Insurance (MSE) on "Single Point Responsibility Basis

Package Number	Package Name	Total Months for Handling over of the Package, From Zero Date	Total No. of Day for Handling over of the Package From Zero Date
Package No A	DMS	5 months	150 days
Package No B	KHICHRIPUR	5 months	150 days

Brief Scope of Work related to Erection and Installation work including testing and commissioning and final handover for the above packages shall be as per the NIT conditions with the following salient details.

5.1 Survey, design, engineering, manufacture, shop testing, inspection, packing, dispatch, loading, unloading and storage at site including comprehensive SCE (Storage cum Erection) insurance, assembly, erection, civil structural, architectural work, complete pre-commissioning checks, testing & commissioning at site, also includes all statutory clearances & certification from State Electrical Inspector, Municipal corporation department, Fire officer, Horticulture department , various local bodies like RWA and handing over to the Owner after satisfactory commissioning of complete Packages as defined above for **Cable In feed on Turnkey Basis.**

- Schedule of work shall be as mentioned in the Bill of quantity attached herewith.
- After completion of Erection, Testing & Commissioning of the package awarded, contractor has to obtain the Electrical Inspectorate's Clearance from the Electrical Inspector of Delhi Govt.
- Contractor shall arrange any permission like Road cutting clearance etc. from the Delhi Civic authorities. All Statutory charges and direct fees shall be borne by BYPL.
- All the Labour, plant appliance, ladder, scaffoldings, materials, tool, tackles etc are included in your scope of work.
- Adequate number of engineers, supervisors and labours shall be posted at site and the list of the same along with certificate of Qualification of technical staff should be submitted by the Contractor to the Engineer In Charge for

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checking the adequacy immediately (with in seven days) after award of contract. Detailed Organisation chart , along with the qualification of the manpower to be deployed shall submitted along with Bid.

- The Contractor shall also make his own arrangement for the accommodation/conveyance requirements for its staff at site.
- Contractor shall arrange storage for storing the materials, tools, tackles etc. Contractor shall be responsible for all the unloading of the material, marking, staking and storage at site. The insurance for all the storage material shall be included in the policy taken by Contractor. Contractor shall submit the copy of insurance policy to BYPL. In case of any mishappening/damage to the storage material contractor shall be responsible to lodge the claim. Under no circumstances no delay in execution shall be allowed and contractor shall immediately arrange for the replacement without waiting for the settlement.
- All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered into the register kept for this purpose and shall be in the custody of Contractor, however company does not hold any responsibility for any loss or damage of Contractor's material etc.
- All loading/unloading, of materials at work-site shall be contractors responsibility. Involvement of Crane/Hydra/Tractor/Trailer for this type of work shall be in contractors scope. Adequate weather protection shall be provided by the contractor to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins.

While carrying out trenchless / open digging works the existing underground cables are liable to get damaged leading to High Risk Safety Hazard to the working people.

To arrest above problem to the best degree possible, there are technology support available, like Cable Route Tracer which is an important tool to detect the live / dead cables underground to the depth upto 3 meters, comfortably. The vendor must employ Cable Route Tracer before start of excavation / trenchless job and submit reports to the Engineer-in-charge for clearance to start the job. The above will minimize the risk of cable damage and improve safety of the working people.

It may please be noted that in case bidders have no "Cable Route Tracers" with him, as a basic necessity tool. Heavy penalty will be imposed on the vendors, if the vendor damages the cables. The cable route tracer shall be of approved make of BYPL.

Special Instruction for cable laying related works:-

- a. Contractor need to conduct sheath voltage test after finishing the cable laying to check integrity of outer sheath in presence of project engineer.
- b. All cable laying tools and tackles and testing equipment shall be available with

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contractor in event of order.

- c. Contractor shall submit copy of cable laying schedule to BSES in event of order so that quality checks can be done on sample basis.

6 CONTRACT 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.

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.

The unit rates finalized are also inclusive of barricading and watch & ward during execution and no separate charges shall be paid for the same.
The cost of training of BYPL Official shall be included in the prices quoted by vendor.

7 TAXES AND DUTIES:

Prices are inclusive of all taxes and duties including labour cess.

However, IT as per applicable rate will be deducted from your bills as Tax Deduction at Source (TDS).

GST is included in the contract price awarded , however GST payment shall be made on submission of GST Registration and self declaration on your letter head stating that contractor have deposited/or will deposit the Tax as per the applicable GST laws. Contractor shall furnish your GST registration number.

Any statutory variations i.e. increase/decrease in Taxes / Duties introduces by central Govt. / State Govt. of shall be reimbursed/recovered to/from Contractor against documentary evidence and proof.

Any variation in taxes shall be applicable only to the direct/price breakup as mentioned in the contract.

CHANGE OF LAW:

"Change in Law" means:

- a) any enactment or issue of any new Applicable Law,
- b) any amendment, alteration, modification, or repeal of any existing Applicable Law or any new or modified directive or order there under,
- c) any change or variation in taxes payable in connection with and under this

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Agreement in each case with respect to a), b), and c) above coming into effect after the date of this Agreement.

8 ACCOMODATION & CONVEYENCE FOR THE STAFF:

The Contractor shall also make his own arrangement for the accommodation/conveyance requirements for its staff at site.

9 STORAGE AT SITE:

Contractor shall arrange the storage at site with the adequate open space / closed storage for contractor's site store for storing the materials, tools, tackles etc.

All the Contractor's storage will be within the site premises. All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered into the register kept for this purpose and shall be in the custody of Contractor, however company does not hold any responsibility for any loss or damage of Contractor's material etc. All loading/unloading, of materials at work-site shall be your responsibility. Involvement of Crane/Hydra/Tractor/Trailer for this type of work shall be in your scope.

Adequate weather protection shall be provided by the contractor to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins. Water and Electricity Power shall be arranged by the Contractor at his own. 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 including in the above mentioned

Tender value. The unit rates mentioned in annexure is inclusive of barricading and watch & ward during execution and no separate charges shall be paid for the same.

10 SECURITY, WATCH & WARD:

The contractor, at his own cost, shall arrange for the security and watch and ward of the materials, men and machineries at site. Round the clock security alongwith the CCTV shall be provided for the materials stored at the site.

11 DEFECT LIABILITY PERIOD:

Work executed shall be guaranteed against any defect or failure which may arise due to faulty materials, design or workmanship for a period of Twenty Four (24) months from the date of final handing over of the entire package as defined in SCC. If during the Defect Liability Period any works are found to be defective, shall be immediately rectified or repaired, upto BYPL satisfaction, by the contractor at his own cost within Ten (10) days from the date of receipt of intimation from BYPL.

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Under no circumstances any extra claim in terms of time and cost shall be entertained for such repair/rectification.

12 PERFORMANCE GUARANTEE:

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

12.02 Contract performance bank guarantee of total 10% of the contract price shall be submitted within 15 days of award of contract with the validity till completion of the contract period.

12.03 Contractor shall submit the workmanship / equipment performance bank guarantee equivalent to the 10% of the contract value at the time of claiming the last payment as per TERMS OF PAYMENT (Erection, Testing & Commissioning)), with the validity of the bank guarantee till Defect Liability Period i.e. 24 months from the date of Handing over of entire package plus 3 months.

13 COMPLETION PERIOD:

Contractor is required to mobilize your manpower and Tools & Tackles and furnish a list of equipments to be used for erection and commence the execution activity as per instructions of Engineer In-charge. The detailed schedule and milestone completion dates would be as per the contract schedules given from time to time by Engineer In-charge at site.

The time schedule for carrying out this work and period for mobilization shall be as under:

13.1 The Contractor's team should be mobilized at site for commencement of work immediately on receipt of the order.

13.2 The entire work under this order as indicated in the scope of work shall be carried out and completed within 150 days for entire package as defined in SCC. Total completion schedule for Engineering, manufacturing, inspection & testing, packing and forwarding and Transportation till site and Erection Testing & Commissioning shall be as per the milestones timelines defined in SCC.

13.3 A detailed L2 Schedule shall be submitted by the supplier within Fifteen(15) days of LOI. The contractor shall plan parallel working (round the clock working) for completion of work as per schedule and mobilize manpower accordingly.

13.4 Progress Review Meeting between the Contractor and the Engineer In charge shall be held at site at least once in a week. Also a weekly progress report giving the

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details of the manpower engaged at site and the details of the major job completion shall be submitted to Engineer In-charge.

13.5 The above time schedule must be strictly adhered to and improved upon wherever possible. In the event we find that your work is not progressing in quality or time frame as per above agreed schedule and to our satisfaction, we reserve the right to withdraw the work in whole or in part without further notice and liability of the Company.

13.6 The completion of the work shall have to be certified by Engineer In charge.

13.7 In order to maintain the time schedule, if necessary the Contractor shall carry out the work on all Sunday & Holiday except National Holiday with prior written permission from Engineer-in-Charge.

14 CLEANLINESS & PRECAUTIONS AT SITE TO PREVENT DUST POLLUTION:

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, the contractor 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.

While carrying out any civil work including road/ pit digging, plinth/ fence making, road restoration etc contractor shall adhere to below mentioned guidelines.

14.1 No construction material/ debris shall be stored on metalled road.

14.2 Wind breakers of appropriate height on all sides of ear marked area using CGI sheets shall be raised to ensure that no construction material dust fly outside ear marked area.

14.3 The construction material i.e. coarse sand, stone aggregates, excavated earth, cement and any other material to and from the site shall be transported under wet and covered condition to ensure their non-slippage en-route to avoid air contamination.

14.4 The contractor shall provide mask and helmet to every worker working on the construction site and involved in loading/unloading and carriage of construction material and construction debris to prevent inhalation of dust particles.

14.5 Over loading of vehicles shall be strictly prohibited.

14.6 The construction material at site shall be stored under wet and covered condition.

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14.7 The dumping sites for temporarily storing the excavated earth shall be properly levelled, watered and rehabilitated by plantation to avoid flying of dust.

14.8 The worker at the site shall be sensitized to adopt / observe the dust controlled measures in true spirit.

14.9 If any C&D waste is generated at site the same will be transported to the C&D waste site only and the record for the same will be maintained by the agency.

14.10 Wet jet in grinding and stone cutting is being permitted at site.

14.11 The necessary record for dust control is being maintained by the department on day to day basis and being monitored regularly.

The Execution vendors shall be responsible for all the preventive and protective environmental steps as per guidelines. Any violations from the above guidelines have been viewed very seriously by the authorities. Concerned agency is liable for the penalties / other action by the authorities, The Agency shall indemnify BYPL from all liabilities on this account

15 COMMISSIONING & ACCEPTANCE TEST:

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

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

16 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 stage of the work at site.

The contractor shall be solely responsible for any shortage or damage of materials issued to them handling of and / or in storage and erection at site and cost of the same will be recovered from the contractor as certified by Engineer In-Charge. Contractor must submit a periodical material reconciliation statement in the approval format with every Running Bill raise by him or end of every month whichever is

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earlier. The contractor shall maintain an accurate and exhaustive record detailing out the list of all items received by him for the purpose of erection and keep such record open for the inspection of the company.

17 PENALTY AND LIQUIDATED DAMAGES

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

17.2 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 to the Company liquidated damages as per the clause defined in SCC

18 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.

The contractor shall observe the safety requirements as laid down in the 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 in order 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 coordinator 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, extent of properly damage and remedial action 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.

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19. STATUTORY OBLIGATIONS:

The Contractor shall take all steps as may be necessary to comply with the various applicable laws/rules including the provisions of contract labour (Regulation & Abolition Act) 1970 as amended, minimum wages Act, 1984, Workman Compensation Act, ESI Act, PF Act, Bonus Act and all other applicable laws 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 issued by Govt.of Delhi.
- 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) PAN No.
- f) Work Contract Tax Registration Number/ GSTN Registration. g) Labour License under Contract Labour Act (R & A) Act 1970

(Engineer-in-charge 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) Salary / Wages to be distributed in presence of representative of Company's representative not later than 7th of each month.
- 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}

20. WORKMAN COMPENSATION:

The Contactor shall take insurance policy at his own cost 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

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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.

21. STAFF AND WORKMAN:

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.

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.

The records shall be in the prescribed formats only.

(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.

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(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 Engineer in charge to assist him to discharge the overall responsibility of the execution of the project.

22. HUMAN RESOURCE ISSUES:

22.1 The CONTRACTOR would execute these works through their own resources.

22.2 The CONTRACTOR shall bear all expenses/cost to be incurred towards salary, allowances, perks, traveling allowances, advances, insurance, safety measures, security, transportation and all other misc. expenses etc. of their employees/ workmen during the tenure of AMC. Also, the CONTRACTOR shall be sole responsible for making payment for Out-patient department, Hospitalization, Compensation thereof in case of any accident, injury or death.

22.3 ID CARD: No contractor will issue any ID cards to their staff on their own .All ID Cards for the workforce will be issued by BYPL Security ID Card Cell only. Contractors should maintain the records of Identity Cards of their employees and whenever any employee quits / is removed then his/her Identity card should be collected & submitted to BYPL Security ID Card Cell. Penalty will be imposed on the vendor in case of violation of the above rule.Contractors shall submit the detail list of the employees that they are going to be hire to BYPL Security before start of the contract.

22.4 The CONTRACTOR to deploy their manpower immediately for carrying out the work as specified above.

22.5 The CONTRACTOR should ensure that there are no disputes regarding service, payment etc of the persons engaged by him, anytime during the currency of the contract. At no point of time during the currency of contract, the CONTRACTOR's employees shall insist upon the COMPANY for employment, wages, and allowances or any other related matter, payment etc.

22.6 The CONTRACTOR shall not deploy the manpower below the age of 18 years.

22.7 The CONTRACTOR shall not deploy the female manpower between 7 PM to 6 AM.

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22.8 The CONTRACTOR shall be directly responsible for any / all disputes arising between him and his persons and keep the COMPANY indemnified against all losses, damages and claims arising thereof. The CONTRACTOR shall resolve any dispute of their manpower. All the legal dues of their manpower is to be paid on due date or within 8 days on the termination of manpower.

22.9 All safety wears required for the CONTRACTOR's manpower during the execution of work such as safety shoes, safety helmets, hand gloves, safety belt, goggles etc. must be provided by the CONTRACTOR at his own cost and he shall ensure that his employees regularly use such safety gears while executing COMPANY's work.

22.10 The CONTRACTOR shall be responsible for discipline of his manpower and shall adhere to the disciplinary procedure set by the COMPANY at site. The COMPANY shall be at liberty to object to the presence of any representative or employees of the CONTRACTOR at the site, if in the opinion of the COMPANY such manpower has done any act of misconduct or negligence or otherwise undesirable, then the CONTRACTOR shall remove such a person objected to and provide a competent replacement immediately.

22.11 The CONTRACTOR shall ensure that he has complied with the following:
- has paid minimum wages to his manpower as per the rate notified from time to time by the Government of National Capital Territory of Delhi.
- Contractor shall disburse the salary of his staff through ECS only.

22.12 Deduct and deposited ESI and PF contribution. Copies of the same shall be submitted.

22.13 The COMPANY reserves the right to demand the CONTRACTOR's services on holidays as well as beyond the normal working hours. The Engineer In-charge shall communicate in writing for any work required to be done during Holidays.

22.14 The CONTRACTOR will ensure that none of their person is engaged in any unlawful activities subversive of the COMPANY's interest failing which suitable action may be taken against the CONTRACTOR as per the terms and conditions of this tender.

22.15 The CONTRACTOR shall be liable for payment of all taxes and duties as applicable, to the State/ Central Govt. or any local authority.

22.16 The CONTRACTOR's employees shall not be treated as COMPANY's employees / persons for any purpose whatsoever & facilities/ benefits applicable to the COMPANY's employees shall not be applicable to CONTRACTOR's employees. If due to any reasons whatsoever the COMPANY is made liable to meet any obligation under any of the laws & enactment etc, for any reason whatsoever the same shall be recovered from the CONTRACTOR or from any of the bills payable to him or failing which it shall be recovered as per law.

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22.17 The CONTRACTOR shall be responsible and shall comply with the provision of all the STATUTORY ACTS APPLICABLE. Special attention of the CONTRACTOR is drawn towards the compliance of provision of the following statutes: (along with the latest amendments/additions):

- 22.17.1 The Child Labour (Prohibition and Regulation) Act, 1986.
- 22.17.2 The Contract Labour (Regulation and Abolition) Act, 1970.
- 22.17.3 The Employee's Pension Scheme, 1995.
- 22.17.4 The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- 22.17.5 The Employees State Insurance Act, 1948.
- 22.17.6 The Industrial Disputes Act, 1947.
- 22.17.7 The Maternity Benefit Act 1961.
- 22.17.8 The Minimum Wages Act, 1948.
- 22.17.9 The Payment of Bonus Act, 1965.
- 22.17.10 The Payment of Gratuity Act, 1972.
- 22.17.11 The payment of Wages Act, 1936.
- 22.17.12 The Delhi Shops & Establishment Act, 1954.
- 22.17.13 The Workmen's Compensation Act. 1923.
- 22.17.14 The Employer's Liability Act, 1938.

The Contractor shall furnish the above specified compliances as per the format attached as Annexure I.

Contractor shall adhere to the Vendor Code of Conduct as specified in the NIT.

23. INSURANCE:

23 a) THIRD PARTY INSURANCE:

Before commencing the execution of the work the contractor shall take third party insurance policy at his own cost 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 contractor 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 contractors own cost.

23 b) ACCIDENTAL INSURANCE POLICY FOR LIFE COVER:

Before commencing the execution of the work the CONTRACTOR shall take Accidental insurance policy for the staff engaged by him for this work to insure against any loss of life which may occur during the contract for the work of the COMPANY. The policy shall have coverage of Rs. 10 Lacs (Table C- Death +

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Permanent Total Disability + Partial permanent Disability due to external accidents). The Contractor shall be responsible for on the spot same day claim settlement with the victim's legal heirs without waiting for settlement by insurance claim without any liability on BYPL. The premium amount for such life cover policy shall be borne by the contractor. The contractor shall furnish copy of policy when demanded by BYPL.

23 C) INSURANCE FOR MAN, MATERIAL & MACHINERY DEPLOYED AT SITE:

Contractor shall be responsible for the insurance for his own man , material and machinery deployed at site for the package awarded. Contractor shall furnish the copy of this insurance policy to the purchaser, prior start of work.

24. SECURITY

Adequate number of trained Security Guards shall be deployed both at the storage yard and stores as well as places of work to prevent theft and pilferage of material and accessories and various other materials. All security rules and safety rules enforced at site by company shall be strictly observed.

25. 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 prior to 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 contractors staff is accountable for the following:

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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.

26. 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 to the specifications and Field Quality Procedures issued by company / Engineer in-charge.

27. 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.

28. INDEMNITY:

Contractor shall indemnify and save harmless COMPANY against and from any and all 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

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- agents including any wrongful use by it or them of any property or goods belonging to or by COMPANY.
- d) The vendor shall submit an Indemnity Bond against any damages / loss of free issued materials.

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

29. 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.

30. RISK & COST:

If the Contractor of 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 got cancel 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 Contract.

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31. 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.

32. SECURITY 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.

These technical information, drawing and other related documents shall be returned to the Company with all approved copies and duplicates including drawing/plans as are prepared by the Contractor 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 contractor shall indemnify the Company against any loss, cost or damage or claim by any party in respect of such breach.

33. TERMINATION DUE TO NON PERFORMANCE:

"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 15 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.

34. TERMINATION BY EEMPLOYER CONVENIENCE:

The owner at any time terminate the contract for any reason, by giving the contractor a notice of termination. Upon receipt of the notice of termination, the contractor shall

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either within 14 days of receipt of such notice, or on the date specified in the notice of termination, carry out the following : Cease all further work, except for such work as the owner may specify in the notice of termination for the sole purpose of protecting that part of the facilities already executed, or any work required to leave the site in a clean and safe condition.

- Terminate all subcontracts, except as mentioned below.
- Remove all Contractor’s equipment from the site, repatriate the contractor’s and its sub-contractor’s personnel from the site, remove from the site any wreckage, rubbish and debris of any kind, and leave the whole of the site in a clean and safe condition.
- Deliver to the owner the parts of the facilities executed by the contractor up to date of termination.
- To the extent legally possible, assign to the owner all right , title and benefit of the contractor to the facilities and to the plant and equipment as at the date of termination, and as may be required by the owner, in any subcontracts concluded between the contractor and its sub-contractors.
- Deliver to the owner all non-proprietary drawings, specifications and other documents prepared by the contractor or its sub-contractors as at date of termination in connection with the facilities. In the event of termination of the contract by the owner, under this clause, the owner shall pay to the contractor the following amounts after setting off the owner’s claim if any under the contract:
 - a) The contract price, properly attributable to the parts of the facilities executed by the contractor as of the date of termination.
 - b) The costs reasonably incurred by the contractor in the removal of the contractor’s equipment from the site and in the repatriation of the contractor’s and its sub contractors personnel.
 - c) Pre- approved and reasonable cost of satisfying all other obligations, commitments and claims that the contractor may in good faith have undertaken with third parties in connection with the contract and that are not covered above.

35. 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.

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The contractor shall submit SQP indicating Customer Holding Point for design, manufacture, inspection, testing, packing, forwarding, transportation including shop painting and final painting for Purchaser's review and approval.

The contractor shall submit Field Quality Assurance and Filed Quality Control Plan (FQP) indicating Customer Hold Point for unloading, receiving, storage at site, transportation, handling at site, erection, testing, pre-commissioning & commissioning for Purchaser's review and approval as per applicable provisions of Technical Specifications.

The Contractor shall submit a Field Erection Procedure for the scope of work under the Contract Agreement. The same shall be subject to the approval of the Purchaser and the work shall be carried out in accordance with such approved procedures.

36. CONSTRUCTION WATER & POWER:

Construction Water and power shall be arranged by Contractor at his own cost.

37. PROGRESS REPORTS OF WORK EXECUTION:

During the various stages of manufacturing and erection of the critical equipments in the pursuance of the Contract, the Contractor shall at its own cost submit periodic progress reports as may be reasonably required by the Purchaser with such materials as charts, networks, photographs, test certificates, etc. Such progress reports shall be in the form and size as may be required by the Purchaser and shall be submitted in adequate number of copies to be notified by the Purchaser

The quantitative progress report of the works by reference to the project schedule in sufficient detail should permit the Purchaser to assess performance, plan witness dates and evaluate forecasts, including reports on key Sub-contracts (as applicable). Within 7 days of the submission of each such report and at such other times as the Purchaser may reasonably request, the Contractor and the Purchaser shall meet to discuss progress.. Weekly progress reports shall include the following sections:

- a) Executive summary
- b) Description of the work and services performed and goods and materials delivered and erected during the preceding week.
- c) Necessary photographs of work done in the manufacturer's shop and erection site which shall be taken when and where indicated by the Purchaser. Photographs shall be approximately 100 x 125 mm in size including a margin of 5 mm side for fixing. Adequate numbers of photographs shall be submitted indicating

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various stages of manufacture and erection of critical items. Each photograph shall contain the date, the name of the Contractor and the title of the view taken.

d) Updated project schedule showing progress to the end of the week (as percentages completed of the Contractor's activities broken down into significant elements of the works), and the current schedule of activities and the targets for the next week.

e) Identification of areas with foreseeable problems which in the opinion of the contractor may affect the project schedule.

f) Such other information and supporting documentation as the Purchaser may require satisfying himself about the timely manufacture, delivery and erection of equipment as per contract.

The Purchaser shall advise the Contractor about the number of copies of progress reports and, where relevant, photographs he has to submit each week together with the names and addresses of persons to whom they are to be sent. Purchaser will also advise the contractor regarding the format of the Monthly Progress report.

38. FREE ISSUES OF MATERIAL AND /OR EQUIPMENT:

The Purchaser issued Free Issue Material/Equipment to Vendor in order that Vendor may fulfill its obligations under the Agreement, shall remain the property of Purchaser and shall be clearly labelled as such by Vendor until delivery of the completed Goods in accordance with the terms of the Agreement. Risk of loss in respect of all such Free Issue Items shall pass to Vendor upon receipt of such items by Vendor and remain with Vendor until delivery of the completed Goods to Purchaser in accordance with the terms of the Agreement. Vendor shall maintain all such Free Issue Items in good condition and shall use them solely in connection with the requirements of the Agreement. Disposal of surplus items shall be in accordance with written instructions from Purchaser. The vendor shall submit an Indemnity Bond to this effect, as per the format.

39. PROTECTION OF PROPERTY:

The Contractor shall be responsible for any damage resulting from his operation. He shall also be responsible for protection of all persons including members of public; and employees of the PURCHASER & the PURCHASER; employees of the Contractors & Subcontractors; and all public and private property including structures, buildings, other plants and equipment and utilities either above or below the ground.

The Contractor shall ensure provision of necessary safety equipment such as barriers, sign boards, warning lights and alarms, etc to provide adequate protection to persons and property. The Contractor shall be responsible to give reasonable notice to the PURCHASER & the PURCHASER of public or private property and utilities

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when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such PURCHASER, related to removal and/or replacement or protection of such property and utilities.

40. VARIATIONS / AMENDEMENTS:

Any additional work beyond the scope enumerated in the work order above shall be carried out as per the instructions of Engineer-In Charge. The company shall not entertain any claim or increase in the Work Order value due to execution of such additional work if the same is not approved by Engineer in Charge, in written form.

41. 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 Contractor'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 Contractor.

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

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Annexure - I

The Contractor must submit the following to Engineer-In-Charge before commencement of work:

- a) An Electrical license. (If applicable)
- 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) PAN No.
- f) Work Contract Tax/VAT Registration Number.
- g) Labor License under Contract Labor Act (R & A) Act 1970(All Engineer-in-charge responsible for execution of the job should obtain a copy of Labor License as per guidelines of HR department 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) Salary/ Wages to be distributed in presence of Company's representative not later than 7th of each month.
- 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) Labor license before start of work. (If applicable)
- i) Group personnel accident insurance shall have coverage of Rs. 10 Lacs (Table C-Death + Permanent Total Disability + Partial permanent Disability due to external accidents).

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**CIVIL CONDITIONS OF CONTRACT
(CCC)**

OF

**SURVEY, DESIGN, ENGINEERING, SUPPLY,
ERECTION, TESTING, & COMMISSIONING OF NEW
CONTROL & RELAY PANELS ALONG WITH OTHER
MATERIALS, DISMANTLING OF EXISTING
EQUIPMENTS AS PER THE SCOPE OF WORK ON
TURNKEY BASIS AT 33kV DMS GRID AND 66kV
KHICRIPUR GRID SUB STATION, DELHI**

IN

BSES YAMUNA POWER LTD.

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

This document is a property of BYPL. This is not transferable and shall not be used for any purpose other than, for which it is supplied.

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CIVIL CONDITIONS OF CONTRACT

The general Condition of the contract shall form a part of the specifications, contract documents.

1. PRIORITY OF CONTRACT DOCUMENTS:

The several documents forming the Contract 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 Purchaser, who shall thereupon issue to the Contractor, instructions thereon. In such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

1. The Contract Agreement
2. The Letter of Acceptance/ Intent
3. Agreed Minutes of the Contract Negotiation Meetings.
4. Agreed Minutes of the contract Technical Meetings.
5. Instruction to Bidders (ITB)
6. Special Condition of Contract (SCC)
7. General Condition of Contract (GCC)
8. Erection Conditions of Contract (ECC)
9. Civil Conditions of Contract
10. The Priced Bill of Quantities
11. The Particular Technical Specifications
12. The General Technical Specifications
13. The Submitted Tender, including all Appendices and/or Addenda, the latest taking precedence.

All the materials, literature, data and information of any sort given by the contractor along with its bid proposal subject to the approval of the purchaser.

2. DEFINITIONS AND INTERPRETATION:

Definitions TO BE FOLLOWED UNDER THE CONTRACT shall have following meanings:

The following terms & expressions as used in this Tender shall have the meaning defined and interpreted here under: Company: The terms "Company" shall mean BSES YAMUNA Power Ltd, a company incorporated under the Companies Act 1956 and having its office at Shaktikiran Building, Karkardooma, Delhi -110032, which expression shall include its authorized representatives, agents, successors and assigns.

2.1 Package: Package shall comprise of all the work, as defined in the scope of work as well as technical specifications, for the GIS grid substation, Cable In-feed as well as outgoing feeder.

2.2 Contractor: The terms "Contractor" shall mean the successful Tenderer / vendor to whom the contract has been awarded.

2.3 Purchaser: The terms "Purchaser" shall mean BSES YAMUNA Power Ltd who purchase the grid from the successful contractor.

2.4 Owner: The terms "Owner" shall mean BSES YAMUNA Power Ltd who own the grid.

2.5 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.

2.6 Tender Specification: The terms "Tender Specification" shall mean the Indian Standard specification of the work and description of work as detailed in Tender document/Tender enclosed and all such particulars mentioned directly/referred to or implied as such in the Tender.

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

2.8 Engineer In Charge: "Engineer In-charge" means the Company's authorized representative for the purpose of carrying out the work.

2.9 Applicable Law: "Applicable Laws" means the constitution of India and any act, rule, regulations, directive, notification, code, order or instruction having its force of law enacted or issued by any competent legislature or Governmental Agency (including those related to taxes, duties, assessments, expropriation and compulsory acquisition) as may be in effect from time to time the implications thereof shall be deemed a Change in Law or Change in Permits.

2.10 Other Clearances: Means any consent, approval, permit or other authorisation which is required to be granted by authorities (local, government or any other) essential to start/complete the work.

2.11 Defect Liability Period: Shall mean the period during which the contractor shall remain liable for repair or replacement of any defective part of the work performed under the contract, free of cost.

3. 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. Before submitting the bid, all bidders will at their expenses make or obtain any additional informations, investigations, explorations, test and studies and obtain any additional

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information and data which pertains to the physical conditions at or contiguous to the site or otherwise which may affect cost, progress, performance of the work and which the bidder deems necessary to determine its Bid for performing the work in accordance with the time and other terms and conditions of the tender/contract documents.

The company shall not accept any claim whatsoever arising out of the difficult site/terrain/local conditions, if any.

4. LANGUAGE AND MEASUREMENT:

The Tender issued to the contractor by the company and all correspondence and documents relating to the Tender placed on the Contractor shall be written in English language. Metric System shall be followed for all dimension, units etc., the mode of measurement shall be as per IS 1200.

5. SCOPE OF WORK:

The scope of work under this contract shall include the turnkey execution on End to End Basis , including but not limited to design, manufacturing, inspection & testing, dispatches, loading , unloading ,storage at site, erection & installation, testing of the installation, associated civil work ,commissioning ,handing over to the purchaser including comprehensive marine cum storage cum erection Insurance (MSE) on "Single Point Responsibility Basis" for GIS Grid Substation , Cable In-feed and Outgoing Feeder work on turnkey Basis for the following packages:

Package Number	Package Name	Total Months for Handling over of the Package, From Zero Date	Total No. of Day for Handling over of the Package From Zero Date
Package No A	Dwarka Puri	5 months	150 days
Package No B	CBD -II	5 months	150 days

Brief Scope of Work related to Erection and Installation work including testing and commissioning and final handover for the above packages shall be as per the NIT conditions with the following salient details.

5.1 Survey, design, engineering, manufacture, shop testing, inspection, packing, dispatch, loading, unloading and storage at site including comprehensive SCE (Storage cum Erection) insurance, assembly, erection, civil structural, architectural work, complete pre-commissioning checks, testing & commissioning at site, also includes all statutory clearances & certification from State Electrical Inspector, Municipal corporation department, Fire officer, Horticulture department , various local bodies like RWA and handing over to the Owner after satisfactory commissioning of complete Packages as defined above for **Grid Substation, Cable In feed, Outgoing Feeder** on Turnkey Basis.

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Schedule of work shall be as mentioned in the Bill of quantity attached herewith.

- After completion of E/T/C work of the scheme, contractor has to obtain the Electrical Inspectorate's Clearance from the Electrical Inspector of Delhi Govt.
- Contractor shall arrange any permission like Road cutting clearance etc. from the Delhi Civic authorities. All Statutory charges and direct fees shall be borne by BYPL.
- All the Labour, plant appliance, ladder, scaffoldings, materials, tool, tackles etc are included in your scope of work.
- Adequate number of engineers, supervisors and labours shall be posted at site and the list of the same along with certificate of Qualification of technical staff should be submitted by the Contractor to the Engineer In Charge for checking the adequacy immediately (with in seven days) after award of contract. Detailed Organization chart , along with the qualification of the manpower to be deployed shall submitted along with Bid.
- The Contractor shall also make his own arrangement for the accommodation/conveyance requirements for its staff at site.
- Contractor shall arrange storage for storing the materials, tools, tackles etc. Contractor shall be responsible for all the unloading of the material, marking, staking and storage at site. The insurance for all the storage material shall be included in the policy taken by Contractor. Contractor shall submit the copy of insurance policy to BYPL. In case of any mis-happening/damage to the storage material contractor shall be responsible to lodge the claim. Under no circumstances no delay in execution shall be allowed and contractor shall immediately arrange for the replacement without waiting for the settlement.
- All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered into the register kept for this purpose and shall be in the custody of Contractor, however company does not hold any responsibility for any loss or damage of Contractor's material etc.
- All loading/unloading, of materials at work-site shall be contractors responsibility. Involvement of Crane/Hydra/Tractor/Trailer for this type of work shall be in contractors scope. Adequate weather protection shall be provided by the contractor to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins.

While carrying out trenchless / open digging works the existing underground cables are liable to get damaged leading to High Risk Safety Hazard to the working people.

To arrest above problem to the best degree possible, there are technology support available, like Cable Route Tracer which is an important tool to detect the live / dead

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cables underground to the depth upto 3 meters, comfortably. The vendor must employ Cable Route Tracer before start of excavation / trenchless job and submit reports to the Engineer-in-charge for clearance to start the job. The above will minimize the risk of cable damage and improve safety of the working people.

It may please be noted that in case bidders have no "Cable Route Tracers" with him, as a basic necessity tool. Heavy penalty will be imposed on the vendors, if the vendor damages the cables. The cable route tracer shall be of approved make of BYPL.

6. FIRM CONTRACT PRICES:

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.

7. QUANTITY VARIATION AND EXTRA ITEM/WORK:

7.1. The Contractor shall carry out and complete the works in every respect in accordance with this Contract and In accordance with the directions and to the satisfaction of the Engineer in charge.

7.2. The Engineer In Charge may, at his discretion, from time to time, issue further drawings and/ or written instructions, details, directions and explanations which are herein after referred to as "EIC's Instructions" in regard to:

- a) The variation or modification of the design, quality, specification or quantity of works or the omission or substitution of any work.
- b) The timing or sequencing of work.
- c) Any discrepancy between the drawing and / or the Bill of Quantities and / or Specifications.
- d) The removal from the site of any materials/ equipment/ resources brought thereon by the Contractor and the substitution of the same thereof.
- e) The Execution of additional works of any kind necessary of the completion of the work.
- f) The removal and /or re-execution of any works executed by the Contractor.
- g) The substitution from the site of the works of any person employed there upon.
- h) The amending and making good of any defects under clause "Defects Liability".

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- i) The opening up for inspection of any work covered up.
- j) Changes in lines, levels, positions and dimensions of any part of the Work.

7.3. The Contractor shall forthwith comply with and duly execute any work comprised in such EIC's instructions provided always that verbal instructions, directions and explanations given to the Contractor or his supervisor upon the works by the Engineer In Charge shall if involving a variation be confirmed in writing by the Contractor within seven days and the Engineer in charge's written approval is obtained.

7.4. If compliance with the Engineer In Charge's Instructions as aforesaid involves work beyond that contemplated by the Contract, then unless the same were issued owing to some breach of this Contract by the Contractor, the EIC shall pay to the Contractor the cost of the said work as an extra to be valued and as hereinafter provided.

7.5. No such variation shall in any way vitiate or invalidate the Contract but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the final certification.

7.6. No such variations shall be carried out by the Contractor without instructions, in writing from the Engineer in charge. Provided that no instructions in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities. If the Engineer in charge shall consider it desirable to give any instructions verbally, the Contractor shall comply with such an instruction and any confirmation in writing of such verbal instruction given by the Engineer in charge whether before or after the carrying out of such work, shall be deemed to be an instruction in writing within the meaning of this clause. Provided further that if the Contractor shall within 7 days confirm in writing to the Engineer in charge and such confirmation shall not be contradicted in writing within 30 days by the Engineer in charge, it shall be deemed to be an instruction in writing by the Engineer in charge.

7.7. All extra or additional work done on the instructions of the Engineer In Charge shall be valued at the rates and prices set out in the Contract. If the Contract does not contain any rates or prices applicable to the extra or additional work, then suitable rates or prices shall be agreed upon between Company and the Contractor as per the following, in the order of preference:

(i) The rate shall be derived from any one of the quoted rates for similar items of work in the tender.

(ii) In case similar items are not available in the tender, then rates shall be worked out as per the following:

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a) The direct cost of labour including indirect charges thereon. The labour components shall be computed wherever possible from the related BIS Codes and the quantity of materials to be based on consumption factor as per standard norms or as accepted by the EIC.

b) The material cost inclusive of taxes, levies, fees, duties etc. as delivered to the site. Proof of cost in form of an invoice to be submitted along with the extra work claim along with other working documents.

c) The Plant & Equipment cost inclusive of hire charges of plant & equipment and operational charges as per standard norms or as accepted by the EIC.

d) In addition the Contractor shall be entitled to payment towards overheads and profit.

7.8. In cases where the items of works are not accepted as complete, or not fully in accordance with the Specification, the Engineer in Charge shall make payments of such items at such reduced rates, as he may consider reasonable in approval of Interim Bills and the Final Bill.

7.9. In all cases the Contractor shall furnish detailed Rate Analysis along with necessary details as and when required by the Engineer in Charge. The Engineer in Charge on establishing the validity of such claims shall certify the amount payable for such work and rates so determined shall be final and binding on the Contractor.

7.10. The quantities of the various kinds of work to be done and materials to be furnished under this Contract as listed in the Bill of Quantities are estimated and approximate only and shall be subject to re-measurement upon completion. The Contractor shall make no claim for anticipated profits, for loss of profits or for damages because no work is ordered under certain items or because of a difference between the quantities of the various kinds of work to be done or materials actually delivered and the estimated quantities set forth in the Bill of Quantities.

7.11. The rate/prices quoted by the Contractor in the Bills of Quantities shall be firm irrespective of any variation in the quantities of individual items of work and / or in the Total Contract Sum.

8. TAX & DUTIES:

Prices are inclusive of all taxes, duties, GST shall be to contractor's account including any duties which may be levied by the Govt. during currency of this order.(except service tax). 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 within stipulated delivery period and shall not be adjusted on account of any price increase/variations in labour & materials. However Statutory Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period shall be borne by BYPL on submission of necessary

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documents claiming such variation. Service tax as applicable shall be paid on submission of Service Tax Registration and self declaration on your letter head stating that you have deposited/or will deposit the Tax as per the applicable service tax laws.

STATUARY VARIATION IN TAXES:

The total order value shall remain FIRM. However in case of any Statutory variation in GST, or Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) shall be borne by BYPL on submission of the documentary evidence.

Any variation in taxes shall be applicable only to the direct/price breakup as mentioned in the contract.

9. CHANGE OF LAW:

"Change in Law" means:

- a) Any enactment or issue of any new Applicable Law,
- b) Any amendment, alteration, modification, or repeal of any existing Applicable Law or any new or modified directive or order thereunder,
- c) Any change or variation in taxes payable in connection with and under this Agreement in each case with respect to a), b), and c) above coming into effect after the date of this Agreement.

10. ACCOMMODATION & CONVEYANCE FOR THE STAFF:

The Contractor shall also make his own arrangement for the accommodation/conveyance requirements for its staff at site.

11. STORAGE AT SITE:

Company will be provided at site the adequate open space for contractor's site store for storing the materials, tools, tackles etc.

All the Contractor's storage will be within the site premises. All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered

into the register kept for this purpose and shall be in the custody of Contractor, however company does not hold any responsibility for any loss or damage of Contractor's material etc. All loading/unloading, of materials at work-site shall be your responsibility. Involvement of Crane/Hydra/Tractor/Trailer for this type of work shall be in your scope.

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Adequate weather protection shall be provided by the contractor to keep the materials safe from sun & rain by providing covered storage space as well as using tarpaulins. Water and Electricity Power shall be arranged by the Contractor at his own. 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 including in the above mentioned Tender value. The unit rates mentioned in annexure is inclusive of barricading and watch & ward during execution and no separate charges shall be paid for the same.

12. SECURITY, WATCH & WARD:

The contractor, at his own cost , shall arrange for the security and watch and ward of the materials, men and machineries at site. Round the clock security alongwith the CCTV shall be provided for the materials stored at the site.

13. DEFECT LIABILITY PERIOD:

Work executed shall be guaranteed against any defect or failure which may arise due to faulty materials, design or workmanship for a period of 24 months from the date of final handing over of the entire package as defined in SCC.

If during the Defect Liability Period any work are found to be defective, shall be immediately rectified or repaired, upto BYPL satisfaction, by the contractor at his own cost within 10 days from the date of receipt of intimation from BYPL.

Under no circumstances any extra claim in terms of time and cost shall be entertained for such repair/rectification.

14. PERFORMANCE GUARANTEE:

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

14.02 Contract performance bank guarantee of total 10% of the contract price shall be submitted within 15 days of award of contract with the validity till completion of the contract period.

14.03 Contractor shall submit the workmanship / equipment performance bank guarantee equivalent to the 10% of the contract value at the time of claiming the last payment as per TERMS OF PAYMENT (Erection, Testing & Commissioning)), with the validity of the bank guarantee till Defect Liability Period i.e. 24 months from the date of Handing over of entire package plus 3 months.

15. COMPLETION PERIOD:

You are required to mobilize your manpower and Tools & Tackles and furnish a list of equipments to be used for erection and commence the execution activity as per instructions of Engineer In-charge. The detailed schedule and milestone completion dates would be as per the contract schedules given from time to time by Engineer In-charge at site.

The time schedule for carrying out this work and period for mobilization shall be as under:

15.1 The Contractor's team should be mobilized at site for commencement of work immediately on receipt of the order.

15.2 The entire work under this order as indicated in the scope of work shall be carried out and completed within 150 days for entire package as defined in SCC. Total completion schedule for Engineering, manufacturing, inspection & testing, packing and forwarding and Transportation till site and Erection Testing & Commissioning of all the identified package shall be as under.

15.3 A detailed L2 Schedule shall be submitted by the supplier within 15 days of LOI. The contractor shall plan parallel working (round the clock working) for completion of work as per schedule and mobilise manpower accordingly.

15.4 Progress Review Meeting between the Contractor and the Engineer In charge shall be held at site at least once in a week. Also a weekly progress report giving the details of the manpower engaged at site and the details of the major job completion shall be submitted to Engineer In-charge.

15.5 The above time schedule must be strictly adhered to and improved upon wherever possible. In the event we find that your work is not progressing in quality or time frame as per above agreed schedule and to our satisfaction, we reserve the right to withdraw the work in whole or in part without further notice and liability of the Company.

15.6 The completion of the work shall have to be certified by Engineer In charge.

15.7 In order to maintain the time schedule, if necessary the Contractor shall carry out the work on all Sunday & Holiday except National Holiday with prior written permission from Engineer-in-Charge.

16. TEST CERTIFICATE & FIELD QUALITY ASSURANCE:

The Contractor shall procure all equipment from genuine sources as approved by the Company & as per Company specifications. Cement shall be of grade 43 ordinary port land cement conforming to IS 8112/53 grade O.P.C. conforming to IS 12269, aggregate for cement concrete shall conform to IS 383, reinforcement for cold twisted bars shall conform to IS 1786, the bricks for brick work shall correspond to IS 1077,

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Structural steel shall confirm to relevant IS code, water to be used shall comply with requirement of IS 456. Contractor shall provide all requisite facilities for field tests and laboratory tests shall be carried out in the laboratory having ISO 9001- 2000 Certified Testing Lab for which no extra payment shall be made. The Contractor shall maintain mandatory Test Register with Engineer-in-Charge as provide in latest Indian Standard Specifications.

The contractor shall submit SQP indicating Customer Holding Point for design, manufacture, inspection, testing, packing, forwarding, transportation including shop painting and final painting for Purchaser's review and approval.

The contractor shall submit Field Quality Assurance and Filed Quality Control Plan (FQP) indicating Customer Hold Point for unloading, receiving, storage at site, transportation, handling at site, erection, testing, pre-commissioning & commissioning for Purchaser's review and approval as per applicable provisions of Technical Specifications.

The Contractor shall submit a Field Erection Procedure for the scope of work under the Contract Agreement. The same shall be subject to the approval of the Purchaser and the work shall be carried out in accordance with such approved procedures.

17. 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.

18. CLEANLINESS & PRECAUTIONS AT SITE TO PREVENT DUST POLLUTION:

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, the contractor 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.

While carrying out any civil work including road/ pit digging, plinth/ fence making, road restoration etc contractor shall adhere to below mentioned guidelines.

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18.1 No construction material/ debris shall be stored on metalled road.

18.2 Wind breakers of appropriate height on all sides of ear marked area using CGI sheets shall be raised to ensure that no construction material dust fly outside ear marked area.

18.3 The construction material i.e. coarse sand, stone aggregates, excavated earth, cement and any other material to and from the site shall be transported under wet and covered condition to ensure their non-slippage en-route to avoid air contamination.

18.4 The contractor shall provide mask and helmet to every worker working on the construction site and involved in loading/unloading and carriage of construction material and construction debris to prevent inhalation of dust particles.

18.5 Over loading of vehicles shall be strictly prohibited.

18.6 The construction material at site shall be stored under wet and covered condition.

18.7 The dumping sites for temporarily storing the excavated earth shall be properly levelled, watered and rehabilitated by plantation to avoid flying of dust.

18.8 The worker at the site shall be sensitized to adopt / observe the dust controlled measures in true spirit.

18.9 If any C&D waste is generated at site the same will be transported to the C&D waste site only and the record for the same will be maintained by the agency.

18.10 Wet jet in grinding and stone cutting is being permitted at site.

18.11 The necessary record for dust control is being maintained by the department on day to day basis and being monitored regularly.

The Execution vendors shall be responsible for all the preventive and protective environmental steps as per guidelines. Any violations from the above guidelines have been viewed very seriously by the authorities. Concerned agency is liable for the penalties / other action by the authorities, The Agency shall indemnify BYPL from all liabilities on this account.

19. INDEMNITY:

Contractor shall indemnify and save harmless COMPANY against and from any and all 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.

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- 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.
- d) The vendor shall submit an Indemnity Bond against any damages / loss of free issued materials.

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.

20. 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.

21. RISK & COST:

If the Contractor of 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

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extended period, the contract shall get cancel 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.

22. ENVIRONMENTAL, HEALTH & SAFETY PLAN:

Contractor will 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 prior to 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 contractors' 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.

23. GENERAL CONDITIONS:

a) No idle labour charges will be admissible in the event of any suspension of work by the Company or stoppage caused in the work due to any reason resulting in contractors' labour or equipments being rendered idle due to any cause at any time.

b) The LOI followed by Work Order shall supersede all other correspondence and conditions of contract if furnished earlier in the event of any ambiguity.

c) ID CARD: No contractor will issue any ID cards to their staff on their own. All ID Cards for the workforce will be issued by BYPL Security ID Card Cell only.

Contractors should maintain the records of Identity Cards of their employees and whenever any employee quits / is removed then his/her Identity card should be collected & submitted to BYPL Security ID Card Cell.

Penalty will be imposed on the vendor in case of violation of the above rule.

Contractors shall submit the detail list of the employees that they are going to be hire to BYPL Security before start of the contract.

d) SITE OFFICE AND SITE FACILITIES:

The Contractor shall also make his own arrangement for the accommodation/conveyance requirements for its staff. He shall be provided at site the adequate open space for construction of site store for storing the materials, tools, tackles etc. All the Contractor's storage will be within the site premises in a manner affording convenient access for identification and inspection at all times. The storage of arrangements shall be subject to IS: 4082. All the incoming and outgoing materials, equipment, tools, tackles and any other items related to said work shall be entered into the register kept for this purpose and shall be in the safe custody of Contractor, however company does not hold any responsibility for any loss or damage caused to Contractor's material etc.

e) The Contractor shall strictly control the labour so that the site is not polluted, made dirty or littered with debris, wastes or the likes.

f) Any person, labour found creating mess or litter or pollution shall be removed from the site immediately at the Contractors cost and shall also be subject to penalty at the discretion of the EIC.

g) WATER & POWER:

Water and Electricity Power shall be arranged by the Contractor at his own.

It shall be the responsibility of the Contractor to make arrangements at his own expense for supply of water for construction and other uses. The Contractor shall also install pumps, construct temporary storage tanks and distribute the water to various points in works Site as required. The Contractor at his own

expense shall make arrangement for operating and maintaining pumps & distribution lines, connections, which are installed by him for water.

h) WATCHING & LIGHTING:

The Contractor shall in connection with the works provide and maintain at his own cost all lights, barricading arrangements, guards, fencing and watching when and where necessary for the protection of works, or for the safety and convenience of the public or others. The care, housekeeping and safety of the materials and works within the works site shall be sole responsibility of the Contractor.

i) EXTENSION OF TIME LIMIT & TIME OVER RUN:

If delay is not attributable to the Contractor, the extension of time may be considered at the discretion of the Company without prejudice to the right of the Company for recovery of liquidated damages. This is also subject to the Contractor having taken sufficient precautions to mitigate the delay and submitted to the Company a full-detailed particular of any extension of time to which he may consider himself entitled within 10 days after such work has been commenced or such circumstances have arisen. The extension of time may be granted and without any financial increment in the contract price to the Company.

j) RELEASE OF INFORMATION AND CONFIDENTIALITY:

The Contractor shall not communicate or use in advertising, publicity, sales release or in any medium photograph or reproduction of the works under this contract, or description of the site, dimensions, quantity or any other information concerning the works unless prior written permission is obtained by Company. The Contractor shall keep all the information obtained directly or indirectly through appointment of this contract confidential and shall not reveal the same to any other party without the prior written permission of the Company. The technical information, drawing and other related documents forming part of order and the information obtained during the course of execution under this order shall be the Company's exclusive property and shall not be used for any other purpose except for the execution of the 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 order.

This technical information, drawing and other related documents shall be returned to the Company with all approved copies and duplicates including drawing/plans as are prepared by

the Contactor during the executions of this order, if any, immediately after they have been used for agreed purpose.

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

k) SITE REPRESENTATIVE, SITE SUPERVISION AND ADVANCE INTIMATION:

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l) The Contractor shall have to appoint and authorize a Site In Charge/ Project Manager (PM) along with its project team, who shall be available always at site till the completion of the contract as certified by Engineer In Charge (EIC).

m) The Contractor shall be responsible for supervising the works by employing competent and experienced engineers and support teams to inspect the work and check the quality of work to ensure that the work is carried out in accordance with the drawings, specifications and instructions of the EIC. Such inspection and supervision shall not relieve the Contractor from any of his obligations towards use of material, workmanship, sequence of working and completion of project as per the stipulated period.

n) On receipt of the LOI or Work Order whichever is earlier the Contractor shall furnish to the Company, for approval, the proposed site setup with list of Engineers, Supervisors and other staff to be deployed by him with their dates of joining.

o) The Contractor's Project Manager shall obtain the written approval and instructions from the EIC prior to commencement of any works at site. The PM shall give written advance intimation for approval of all activities including deployment of resources, procurement of materials, concrete pours etc. to EIC.

24. WORK COMPLETION CERTIFICATION:

The work carried out by the Contractor under this order has to be certified as being satisfactorily completed by the Engineer In charge at work site. In case of modification/ rectification /correction to be carried out, Contractor shall carry out the said modifications/ corrections. The Contractor shall remain in close contact with Engineer In charge at site to report the general findings of the field work during the initial as well as later stage of the work at site, If required, there shall also be joint meetings at site/company office at Karkardooma, New Delhi to discuss the field findings and for revision of the method for site work if required. Work Completion Certificate shall be issued by the Engineer In charge within in 10 days of satisfactory work completion subject to handing over of clear site i/c removal of Labor accommodation, stores, storage arrangements for water, plants, tackles, scaffoldings, ladders, leveling at site. The Contractor shall give undertaking that all standing dues to Labor have been paid and all the statutory obligations have been met with. Completion certificate to be submitted with the final bill issued by Engineer-in-Charge.

25. PENALTY AND LIQUIDATED DAMAGES:

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

25.2 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

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to the Contractor, the Contractor shall pay to the Company liquidated damages as per the clause defined in SCC.

26. SAFETY REGULATIONS:

26.1. 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 workmen as well as other workers at site and premises. The contractor shall not deploy any worker below the age of 18 years.

26.2. The Contractor shall indemnify the Company from any consequence arising due to contractor's failure in respect to safety compliance.

26.3. First Aid facilities at easily accessible place shall be provided by the Contractor at his own cost as per provisions of Labor act or as advised by the Company wherever works are carried out.

26.4. All critical injuries shall be reported promptly to the Company. The report shall cover type, nature, cause, physician's report and actions for prevention of those types again.

26.5. To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the Contractor shall be open to inspection by the Company.

26.6. The cost so incurred by the Contractor in providing for safety standards and requirements as above shall be deemed to be included in the rates quoted for various items under the scope of Contract and no extra amounts shall be payable to the contractor on this account.

26.7. The Contractor shall furnish to the Company within seven days from issue of LOI or Work Order whichever is earlier, for approval of Company, the proposed safety programme on how it intends to implement the safety procedures and precautions to ensure that the site is accident free.

The contractor shall observe the safety requirements as laid down in the 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 co-ordinator in order 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.

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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, extent of properly damage and remedial action 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.

27. WORKMEN COMPENSATION:

The Contactor 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 Engineer-In-Charge. 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 Contactor shall keep the Company indemnified at all times, against all claims of compensation under the provisions 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 Contactor/sub-Contactor/sub-agent in carrying out the job involved under this 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 any money due to or to become due to the Contractor, money paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and the Contactor shall abide by the decision of the Company as to the sum payable by the Contactor under the provisions of this clause.

28. BOCW ACT:

BOCW Act applies to every establishment which employs, or had employed on any day of the preceding twelve months, ten or more building workers in any building or other construction work. The Tenderer, for carrying out any construction work, must get themselves registered with the Registering Officer under Section 7 of the Building and Other Construction Workers Act, 1996 and rules made thereto by the concerned State Govt .and submit certificate of Registration, issued from the Registering Officer of the concerned State Govt. (Labour Dept.). As per this Act, the tenderer shall be levied a cess @1% of cost of construction work, which would be deducted from each bill. Cost of material, when supplied under a separate schedule item, shall be outside the purview of cess The Tender shall also comply with all provisions of the said Act applicable to him.

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29. STATUTORY OBLIGATIONS:

The Contractor shall take all steps as may be necessary to comply with the various applicable laws/rules including the provisions of contract Labor (Regulation & Abolition Act) 1970 as amended, Minimum wages Act, 1984, Workman Compensation Act, ESI Act, PF Act, Bonus Act and all other applicable laws and rules framed there under including any statutory approval required from the Central/State Governments, Ministry of Labor. Broadly, the compliance shall be as detailed in ANNEXURE I enclosed.

Before issue of order it would be mandatory for the Contractor to furnish the Company the permanent PF code no, ESI registration, registration under W.C.T Act.

30. HUMAN RESOURCE ISSUES:

30.1 The CONTRACTOR would execute these works through their own resources.

30.2 The CONTRACTOR shall bear all expenses/cost to be incurred towards salary, allowances, perks, traveling allowances, advances, insurance, safety measures, security, transportation and all other misc. expenses etc. of their employees/ workmen during the tenure of AMC. Also, the CONTRACTOR shall be sole responsible for making payment for Out-patient department, Hospitalization, Compensation thereof in case of any accident, injury or death.

30.3 ID CARD: No contractor will issue any ID cards to their staff on their own .All ID Cards for the workforce will be issued by BYPL Security ID Card Cell only. Contractors should maintain the records of Identity Cards of their employees and whenever any employee quits / is removed then his/her Identity card should be collected & submitted to BYPL Security ID Card Cell. Penalty will be imposed on the vendor in case of violation of the above rule. Contractors shall submit the detail list of the employees that they are going to be hire to BYPL Security before start of the contract.

30.4 The CONTRACTOR to deploy their manpower immediately for carrying out the work as specified above.

30.5 The CONTRACTOR should ensure that there are no disputes regarding service, payment etc of the persons engaged by him, anytime during the currency of the contract. At no point of time during the currency of contract, the CONTRACTOR's employees shall insist upon the COMPANY for employment, wages, and allowances or any other related matter, payment etc.

30.6 The CONTRACTOR shall not deploy the manpower below the age of 18 years.

30.7 The CONTRACTOR shall not deploy the female manpower between 7 PM to 6 AM.

30.8 The CONTRACTOR shall be directly responsible for any / all disputes arising between him and his persons and keep the COMPANY indemnified against all

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losses, damages and claims arising thereof. The CONTRACTOR shall resolve any dispute of their manpower. All the legal dues of their manpower is to be paid on due date or within 8 days on the termination of manpower.

30.9 All safety wears required for the CONTRACTOR's manpower during the execution of work such as safety shoes, safety helmets, hand gloves, safety belt, goggles etc. must be provided by the CONTRACTOR at his own cost and he shall ensure that his employees regularly use such safety gears while executing COMPANY's work.

30.10 The CONTRACTOR shall be responsible for discipline of his manpower and shall adhere to the disciplinary procedure set by the COMPANY at site. The COMPANY shall be at liberty to object to the presence of any representative or employees of the CONTRACTOR at the site, if in the opinion of the COMPANY such manpower has done any act of misconduct or negligence or otherwise undesirable, then the CONTRACTOR shall remove such a person objected to and provide a competent replacement immediately.

30.11 The CONTRACTOR shall ensure that he has complied with the following:
- has paid minimum wages to his manpower as per the rate notified from time to time by the Government of National Capital Territory of Delhi.
- Contractor shall disburse the salary of his staff through ECS only.

30.12 Deduct and deposited ESI and PF contribution. Copies of the same shall be submitted.

30.13 The COMPANY reserves the right to demand the CONTRACTOR's services on holidays as well as beyond the normal working hours. The Engineer In-charge shall communicate in writing for any work required to be done during Holidays.

30.14 The CONTRACTOR will ensure that none of their person is engaged in any unlawful activities subversive of the COMPANY's interest failing which suitable action may be taken against the CONTRACTOR as per the terms and conditions of this tender.

30.15 The CONTRACTOR shall be liable for payment of all taxes and duties as applicable, to the State/ Central Govt. or any local authority.

30.16 The CONTRACTOR's employees shall not be treated as COMPANY's employees / persons for any purpose whatsoever & facilities/ benefits applicable to the COMPANY's employees shall not be applicable to CONTRACTOR's employees. If due to any reasons whatsoever the COMPANY is made liable to meet any obligation under any of the laws & enactment etc, for any reason whatsoever the same shall be recovered from the CONTRACTOR or from any of the bills payable to him or failing which it shall be recovered as per law.

30.17 The CONTRACTOR shall be responsible and shall comply with the provision of all the STATUTORY ACTS APPLICABLE. Special attention of the CONTRACTOR is drawn

towards the compliance of provision of the following statutes: (along with the latest amendments/additions):

- 30.17.1 The Child Labour (Prohibition and Regulation) Act, 1986.
- 30.17.2 The Contract Labour (Regulation and Abolition) Act, 1970.
- 30.17.3 The Employee's Pension Scheme, 1995.
- 30.17.4 The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- 30.17.5 The Employees State Insurance Act, 1948.
- 30.17.6 The Industrial Disputes Act, 1947.
- 30.17.7 The Maternity Benefit Act 1961.
- 30.17.8 The Minimum Wages Act, 1948.
- 30.17.9 The Payment of Bonus Act, 1965.
- 30.17.10 The Payment of Gratuity Act, 1972.
- 30.17.11 The payment of Wages Act, 1936.
- 30.17.12 The Delhi Shops & Establishment Act, 1954.
- 30.17.13 The Workmen's Compensation Act. 1923.
- 30.17.14 The Employer's Liability Act, 1938.

31. STAFF AND WORKMAN:

(I) It shall be responsibility of contractor

(a) To obtain Contract Labor License from the concerned authorities and maintain proper liaison with them. Necessary Forms for obtaining Labor License would be issued by the company. However you will bear all expenses for obtaining Labor 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.

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 Labor Act. The records shall be in the prescribed formats only.

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

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(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 Labor 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 Labor 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.

32. INSURANCE:

The Contractor at its own cost shall also arrange, secure and maintain the following insurance covers

33. THIRD PARTY INSURANCE:

Before commencing the execution of the work the Contractor shall insure against any damage or loss or injury which may occur to any property or to any person or any employee or representative of any outside Agency/Company engaged or not engaged for the work of the

Company, by or arising out the execution of the work or temporary work or in carrying out of this work order.

34. INSURANCE OF MAN MATERIAL & MACHINERY DEPLOYED AT SITE:

Contractor shall be responsible for the insurance of all the Man , Material and Machinery deployed at site.

35. GROUP PERSONAL ACCIDENTAL INSURANCE POLICY FOR LIFE COVER:

Before commencing the execution of the work the CONTRACTOR shall take Accidental insurance policy for the staff engaged by him for this work to insure

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against any loss of life which may occur during the contract for the work of the COMPANY. The policy shall have coverage of Rs. 10 Lacs (Table C- Death + Permanent Total Disability + Partial permanent Disability due to external accidents). The premium amount for such policy shall be borne by the contractor. The contractor shall furnish copy of policy when demanded by BYPL.

The Contractor shall be responsible for on the spot same day claim settlement with the victim's legal heirs without waiting for settlement by insurance claim without any liability on BYPL.

36. PROGRESS REPORTS OF WORK EXECUTION:

During the various stages of manufacturing and erection of the critical equipments in the pursuance of the Contract, the Contractor shall at its own cost submit periodic progress reports as may be reasonably required by the Purchaser with such materials as charts, networks, photographs, test certificates, etc. Such progress reports shall be in the form and size as may be required by the Purchaser and shall be submitted in adequate number of copies to be notified by the Purchaser

The quantitative progress report of the works by reference to the project schedule in sufficient detail should permit the Purchaser to assess performance, plan witness dates and evaluate forecasts, including reports on key Sub-contracts (as applicable). Within 7 days of the submission of each such report and at such other times as the Purchaser may reasonably request, the Contractor and the Purchaser shall meet to discuss progress.. Weekly progress reports shall include the following sections:

- a) Executive summary
- b) Description of the work and services performed and goods and materials delivered and erected during the preceding week.
- c) Necessary photographs of work done in the manufacturer's shop and erection site which shall be taken when and where indicated by the Purchaser. Photographs shall be approximately 100 x 127 mm in size including a margin of 5 mm side for fixing. Adequate numbers of photographs shall be submitted indicating various stages of manufacture and erection of critical items. Each photograph shall contain the date, the name of the Contractor and the title of the view taken.
- d) Updated project schedule showing progress to the end of the week (as percentages completed of the Contractor's activities broken down into significant elements of the works), and the current schedule of activities and the targets for the next week.
- e) Identification of areas with foreseeable problems which in the opinion of the contractor may affect the project schedule.

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f) Such other information and supporting documentation as the Purchaser may require satisfying himself about the timely manufacture, delivery and erection of equipment as per contract.

The Purchaser shall advise the Contractor about the number of copies of progress reports and, where relevant, photographs he has to submit each week together with the names and addresses of persons to whom they are to be sent. Purchaser will also advise the contractor regarding the format of the Monthly Progress report.

37. ARBITRATION:

To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with this work order. 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 final and binding upon the parties. The arbitration proceeding shall be conducted in accordance with this provisions of the Indian Arbitration & Conciliation Act, 1996 and the venue of such arbitration shall be city of New Delhi only.

38. FORCE MAJEURE:

38.1 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 party's 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

38.2 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.

38.3 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.

38.4 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 likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event Of Force Majeure.

38.5 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.

38.6 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

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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.

39. SECURITY CLAUSE:

The technical information, drawing and other related documents forming part of order and the information obtained during the course of execution under this order shall be the Company's exclusive property and shall not be used for any other purpose except for the execution of the 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 order. These technical information, drawing and other related documents shall be returned to the Company with all approved copies and duplicates including drawing/plans as are prepared by the Contactor during the executions of this order, if any, immediately after they have been used for agreed purpose. In the event of any breach of this provision, the contractor shall indemnify the Company against any loss, cost or damage or claim by any party in respect of such breach.

40. PROTECTION OF PROPERTY:

The Contractor shall be responsible for any damage resulting from his operation. He shall also be responsible for protection of all persons including members of public; and employees of the PURCHASER & the PURCHASER; employees of the Contractors & Subcontractors; and all public and private property including structures, buildings, other plants and equipment and utilities either above or below the ground.

The Contractor shall ensure provision of necessary safety equipment such as barriers, sign boards, warning lights and alarms, etc to provide adequate protection to persons and property. The Contractor shall be responsible to give reasonable notice to the PURCHASER & the PURCHASER of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such PURCHASER, related to removal and/or replacement or protection of such property and utilities.

41. VARIATIONS / AMENDMENTS:

Any additional work beyond the scope enumerated in the work order above shall be carried out as per the instructions of Engineer-In Charge. The company shall not entertain any claim or increase in the Work Order value due to execution of such additional work if the same is not approved by Engineer in Charge, in written form.

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42. FREE ISSUES OF MATERIAL AND/OR EQUIPMENT:

The Purchaser issued Free Issue Material/Equipment to Vendor in order that Vendor may fulfill its obligations under the Agreement, shall remain the property of Purchaser and shall be clearly labelled as such by Vendor until delivery of the completed Goods in accordance with the terms of the Agreement. Risk of loss in respect of all such Free Issue Items shall pass to Vendor upon receipt of such items by Vendor and remain with Vendor until delivery of the completed Goods to Purchaser in accordance with the terms of the Agreement. Vendor shall maintain all such Free Issue Items in good condition and shall use them solely in connection with the requirements of the Agreement. Disposal of surplus items shall be in accordance with written instructions from Purchaser. The vendor shall submit an Indemnity Bond to this effect, as per the format.

43. TERMINATION DUE TO NON PERFORMANCE:

"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 15 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.

44. TERMINATION BY EMPLOYER CONVENIENCE:

The owner at any time terminate the contract for any reason, by giving the contractor a notice of termination. Upon receipt of the notice of termination, the contractor shall either within 14 days of receipt of such notice, or on the date specified in the notice of termination, carry out the following : Cease all further work, except for such work as the owner may specify in the notice of termination for the sole purpose of protecting that part of the facilities already executed, or any work required to leave the site in a clean and safe condition.

- Terminate all subcontracts, except as mentioned below.
- Remove all Contractor's equipment from the site, repatriate the contractor's and its sub-contractor's personnel from the site, remove from the site any wreckage, rubbish and debris of any kind, and leave the whole of the site in a clean and safe condition.
- Deliver to the owner the parts of the facilities executed by the contractor up to date of termination.
- To the extent legally possible, assign to the owner all right , tile and benefit of the contractor to the facilities and to the plant and equipment as at the date of termination, and as may be required by the owner, in any subcontracts concluded between the contractor and its sub-contractors.

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- Deliver to the owner all non-proprietary drawings, specifications and other documents prepared by the contractor or its sub-contractors as at date of termination in connection with the facilities. In the event of termination of the contract by the owner, under this clause, the owner shall pay to the contractor the following amounts after setting off the owner's claim if any under the contract:

a) The contract price, properly attributable to the parts of the facilities executed by the contractor as of the date of termination.

b) The costs reasonably incurred by the contractor in the removal of the contractor's equipment from the site and in the repatriation of the contractor's and its sub contractors personnel.

c) Pre- approved and reasonable cost of satisfying all other obligations, commitments and claims that the contractor may in good faith have undertaken with third parties in connection with the contract and that are not covered above.

45. 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 Contractor'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 Contractor.

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

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Annexure - I

The Contractor must submit the following to Engineer-In-Charge before commencement of work:

- a) An Electrical license. (If applicable)
- 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) PAN No.
- f) Work Contract Tax/VAT Registration Number.
- g) Labor License under Contract Labor Act (R & A) Act 1970(All Engineer-in-charge responsible for execution of the job should obtain a copy of Labor License as per guidelines of HR department 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) Salary/ Wages to be distributed in presence of Company's representative not later than 7th of each month.
- 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) Labor license before start of work. (If applicable)
- i) Group personnel accident insurance shall have coverage of Rs. 10 Lacs (Table C-Death + Permanent Total Disability + Partial permanent Disability due to external accidents).

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Annexure – II

ON THE LETTER HEAD OF THE CIVIL CONTRACTOR

QUARTERLY COMPLIANCE CERTIFICATE

I, _____ (Name of Proprietor/Partner/Director with DIN number) of _____ (Firm/Company Name) duly certify that the Firm/Company has duly complied with all the applicable Central & State Acts, Rules, Regulations, Orders, Guidelines and any statutory modification or re-enactment thereof for the time being in force ("the Applicable Laws) for the quarter ended _____ including but not limited to:

Sr. No. Particulars*

- 1 The Companies Act, 2013 and rules thereof;
- 2 Workmen's Compensation Act, 1923 and rules thereof;
- 3 Contract Labour (Regulation and Abolition) Act, 1970
- 4 Delhi Contract Labour (Regulation and Abolition) Rules, 1972
- 5 Employees' Compensation Act, 1923 and rules thereof;
- 6 The Delhi Shops and Establishments Act, 1954 and rules thereof;
- 7 The Employees' Provident Funds And Miscellaneous Provisions Act, 1952 and rules thereof;
- 8 Equal Remuneration Act, 1976 and rules thereof;
- 9 Minimum Wages Act, 1948 and rules thereof;
- 10 Maternity Benefits Act, 1961 and rules thereof;
- 11 Building and Other Construction Workers (Regulation of Employment And Conditions of Service) Act, 1996 and Delhi Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Rules, 2002
- 12 Employees' State Insurance Act, 1948 and rules thereof;
- 13 The Payment of Gratuity Act, 1972 and rules thereof;
- 14 Equal Remuneration Act, 1976 and rules thereof;
- 15 The Payment of Bonus Act, 1965 and rules thereof;
- 16 Delhi Labour Welfare Fund Act and rules thereof; *strikeout whichever is not applicable

Further, it is certified that a system has been devised to ensure compliance with the provisions of all applicable laws & that system is adequate & operating effectively.

DECLARATION:

This is to declare that I, the undersigned am responsible to ensure that all the compliances of the Applicable Laws, has been done within the timeframe as given under the respective Acts.

Signature:

Name:

Employee ID:

Designation:

Department:

Date:

Place: New Delhi

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APPENDIX II

(To be executed on a Non-Judicial Stamp Paper of appropriate value)

FORMAT OF ADVANCE BANK GUARANTEE

This Guarantee made at _____ this [____] day of [____] 2016

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, Karkardooma, 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 Suppliers", 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 of the services on the terms and conditions as more particularly detailed therein.
3. AND WHEREAS in conformity with the provisions of clause ____ of conditions of Contract, the Suppliers has agreed to furnish a Bank Guarantee for an amount equivalent to the Advance Payment of Rs..... extended by the Owner to the Supplier for the faithful execution of the Contract.
4. AND WHEREAS the Suppliers have agreed to provide the Owner and the Owner has agreed to accept the Advance Bank Guarantee for ____ percent (____%) of the total Contract Value 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).

5. 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.
6. The decision of the Owner as to whether the Supplier has fulfilled its obligation or not towards set-off of Advance Payment extended by the Owner to the Supplier shall be final and binding on the Bank and the Supplier. 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.
7. 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.
8. 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.

9. 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.
10. 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
- 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.
11. This Guarantee 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, reorganisation, dissolution or insolvency of the Suppliers or any of them or any other circumstances whatsoever.
12. 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 obligations of the Suppliers under the Contract.
13. 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.

- 14. 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.
- 15. 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.
- 16. Owner may assign this Guarantee to any Person or body whether natural, incorporated or otherwise under intimation to the Bank. The Bank shall be discharged of its obligations hereunder by performance in accordance with the terms hereof to such assignee without verifying the validity / legality / enforceability of the assignment.
- 17. 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 2016 at

(Signature)

.....

(Name)

.....

(Designation with Bank Stamp)

Attorney as per

Power of Attorney No.....

Date.....

(To be executed on a Non-Judicial Stamp Paper of appropriate value)

FORMAT OF PERFORMANCE BANK GUARANTEE

This Guarantee made at _____ this [____] day of [____] 2016

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, Karkardooma, 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, reorganisation, 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. Owner may assign this Guarantee to any Person or body whether natural, incorporated or otherwise under intimation to the Bank. The Bank shall be discharged of its obligations hereunder by performance in accordance with the terms hereof to such assignee without verifying the validity / legality / enforceability of the assignment.

16. 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 of20XX at

(Signature)

.....

(Name)

.....

(Designation with Bank Stamp)

Attorney as per

Power of Attorney No.....

Date.....

BENEFICIARY'S 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: 911020005246567
5. IFSC Code: UTIB0000055



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 found any manufacturing defect during.....months from the date of dispatch of material or.....months from the data of commissioning whichever is earlier.

Vendors Name & Signature

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PRICE BID FORMATS (SUPPLY & SERVICES)

OF

SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT 33kV DMS GRID AND 66kV KHICRIPUR GRID SUB STATION, DELHI

IN

BSES YAMUNA POWER LTD.

NIT NO CMC/BY/19-20/RB/SV/019

Due Date for Submission: 10.06.2019, 14:30 HRS

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

GRAND SUMMARY OF THE QUOTED PACKAGE(S)

ALL PRICES IN INR (₹)

Package Number	Package Name	Supply Prices-Landed	Erection, Testing and commissioning prices	Civil Work (C)	Total Package Cost (D=A+B+C)
		(A)	(B)		
Package No A	DMS				
Total Package No A (₹)					
Package No B	KHICHRIPUR				
Total Package No B (₹)					
Grand Total [Package No A+B]					
Grand Total (In words)					

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

Date:

Bidders Name:

Place:

Bidders Address:

Signature:

Designation:

Printed Name:

Common Seal:

Note:

- 1) All prices for the packages quoted are inclusive of taxes and duties, GST and freight etc. Bidder shall include & indicate any others taxes under the applicable law(s) for supply and services to be performed in the purchaser's country.
- 2) Bidder shall include & indicate any others taxes under the applicable law(s) for supply and services to be performed in the purchaser's country.
- 3) The bidder shall, at its own, handle all imported equipment's and handle all formalities for custom clearances, port charges, etc if any
- 4) All prices for the packages quoted are against the scope of work under the contract shall be executed strictly as per the NIT conditions and the technical specification.

- 5) Quoted prices shall be as per the Bill of quantities (BOQ) as attached. However Any items/material/machinery, not specifically mentioned In BOQ as well as in the technical specifications but required for successful completeness, Erection, Testing and Commissioning of the package awarded shall be deemed to be in the scope of the bidder.
- 6) Insurance as per the clause defined in SCC and other contract conditions, is included in the quoted prices. However Bidder shall indicate the value of the insurance taken, separately.
- 7) Operation of the Package awarded for the period of Six (6) Months is included and bidders shall quote separately for the same as per the details specified.
- 8) Kindly refer the relevant layout drawing of existing foundations in Annexure of tender document. Site visit is advisable prior to submission of quotation.

PRICE FORMAT – SUPPLY (A) (Kindly refer detailed package wise SCOPE OF SUPPLY attached as Volume II for Indicative Description of Goods/BOM, BOQ)

DESCRIPTION OF GOODS	HSN CODE	QTY	UoM	UNIT RATE	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST)		UNIT LANDED COST (₹)	TOTAL LANDED COST (₹)
					%	AMT		
Items as per BOQ i.e. shall be utilized to furnish price break-up.								
GRAND TOTAL LANDED COST								
In words								

PRICE FORMAT – E/T/C (B) (Kindly refer detailed package wise SCOPE OF WORK attached as Volume II for Indicative Description of Services/BOM, BOQ)

DESCRIPTION OF SERVICES	SAC CODE	QTY	UoM	UNIT RATE	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST)		UNIT LANDED COST (₹)	TOTAL LANDED COST (₹)
					%	AMT		
Items as per BOQ i.e. shall be utilized to furnish price break-up.								
GRAND TOTAL LANDED COST								
In words								

PRICE FORMAT – Civil Works (C) (Kindly refer detailed package wise SCOPE OF WORK attached as Volume II for Indicative Description of Services, BOM, BOQ)

DESCRIPTION OF SERVICES	SAC CODE	QTY	UoM	UNIT RATE	UNIT GST & CESS AS APPLICABLE (CGST & SGST/UTGST or IGST)		UNIT LANDED COST (₹)	TOTAL LANDED COST (₹)
					%	AMT		
Items as per BOQ i.e. shall be utilized to furnish price break-up.								
GRAND TOTAL LANDED COST								
In words								

VOLUME – II

SCOPE OF TURNKEY EXECUTION

FOR

SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT 33kV DMS GID AND 66kV KHICRIPUR GRID SUB STATION, DELHI

NIT NO CMC/BY/19-20/RB/SV/39

Due Date for Submission: 22.08.2019, 14:30 HRS

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

SCOPE OF TURNKEY EXECUTION

FOR

CONTROL AND RELAY PANEL

Department	Prepared By	Reviewed By	Approved By	Rev	
CES	AH	GS	AA		1
P&E	-	MR	PB	Date	03 Jul 2019

Contents

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SCOPE OF TURNKEY EXECUTION FOR CONTROL AND RELAY PANEL**1.0 INTENT**

- This document defines the scope for turnkey execution of Control and Relay Panel at
 - 33 KV /11 KV DMS Grid S/S (Address- Near Overhead Tank, Block B Shadipur, Delhi 110008, Coordinate- **28°39'18.7"N 77°09'12.3"E**)
 - 66 KV /11 KV Khirchripur Grid S/S(Address- Near Lal Bahadur Shastri Hospital, Kalyanvas Colony, Mayur Vihar Phase II, Mayur Vihar, Delhi, 110091, Coordinate- **28°37'06.9"N 77°18'29.4"E**)
- This document shall be read in conjunction with all technical documents enclosed in tender. In event of any contradiction between tender documents, the most stringent one shall govern.

2.0 BIDDER'S SCOPE

- Bidder's Scope includes design, engineering, manufacture, shop testing, inspection, packing, dispatch, supply, loading, unloading, storage at site, assembly, erection, , complete pre-commissioning checks, testing & commissioning at site, obtaining statutory clearance & certification from Electrical Inspector and handing over of equipment covered under scope of this document to BSES Yamuna Power Ltd.
- Details are given in subsequent sections. It shall be noted that project execution shall ensure uninterrupted operation of grid. All quantities mentioned in scope of Supply/ work are estimated quantities. Actual quantities may vary as per site requirement. ETC of all supplied items shall be in Bidders scope
- Bidder shall depute its representative at site to assess the condition of existing infrastructure in detail prior to submission of bid.

2.1 DESIGN & ENGINEERING

- Detailed design and engineering of complete project as per tender requirements shall be in bidder's scope.
- General guidelines for design are given below

2.1.1 CODES AND STANDARDS

- The bidder shall comply with latest Indian/International standard and CEA regulations.
- Refer respective equipment specification for applicable standards.

2.1.2 SERVICE CONDITIONS

2.1.2.1	Average grade atmosphere	Heavily polluted, Dry
2.1.2.2	Maximum altitude above sea level	1000M

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

2.1.2.3	Ambient air temperature	Highest 50Deg C, Average 40Deg C
2.1.2.4	Minimum ambient air temperature	0 Deg C
2.1.2.5	Relative Humidity	100%
2.1.2.6	Rainfall	750mm concentrated in four months
2.1.2.7	Seismic Condition	Zone IV
2.1.2.8	Max. Relative Humidity	100%

2.1.3 SYSTEM PARAMETERS

2.1.3.1	Nominal Voltage kV	66	33	11
2.1.3.2	Rated voltage kV	72.5	36	12
2.1.3.3	Power Frequency (kV rms) with stand voltage	140	70	28
2.1.3.4	Basic Insulation Level KVp	325	170	75
2.1.3.5	Rated Frequency Hz	50±5%	50±5%	50±5%
2.1.3.6	System Neutral Earthing	Solidly Grounded	Solidly Grounded	Solidly Grounded

2.1.4 SCOPE OF SUPPLY

S No.	Items	Remarks	UOM	Qty		
				DMS	Khichripur	Total
2.1.4.1	C&R Panel 33KV Line Feeder		Nos	4	0	4
2.1.4.2	C&R Panel 33KV Transformer		Nos	3	0	3
2.1.4.3	C&R Panel 33kV Bus coupler		Nos	1	0	1

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S No.	Items	Remarks	UOM	Qty		
				DMS	Khichripur	Total
2.1.4.4	C&R Panel 66KV Line Feeder		Nos	0	4	4
2.1.4.5	C&R Panel 66KV Transformer		Nos	0	2	2
2.1.4.6	C&R Panel 66kV Bus coupler		Nos	0	1	1
2.1.4.7	C&R Panel 66kV Capacitor Bank		Nos	0	1	1
2.1.4.8	Bay Marshalling Box		Nos	8	8	16
2.1.4.9	MOM Box of Isolator		Nos	16	24	40
2.1.4.10	ACDB	It includes Disconnection of existing cables and reconnection to New ACDB	Nos	1	1	2
2.1.4.11	Exhaust Fan	(a) To be installed at Existing wall of CRP Room (b) It includes Civil work of dismantling some portion of wall (c) It should be single phase operated with 450 mm sweep	Nos	4	4	8
2.1.4.12	Control Cables with proper ferruling and tagging along with glands and lugs	Cabling shall be considered from (a) C&R panel to Transformer Marshalling Box & Bay Marshalling Box (b) Bay Marshalling Box to CT, PT, CB, Isolator, Earth switch etc.	Lot	1	1	2
2.1.4.13	Auxiliary Power Cable	For providing Auxiliary powers to items specified in "Scope of Supply"	Lot	1	1	2
2.1.4.14	Fire Resistant Coating	For cables specified in "Scope of Supply"	Lot	1	1	2
2.1.4.15	Cable Tray including bends	a) For routing Auxiliary Power Cable and Control Cables b) 50% spare capacity in each is tray is required	Lot	1	1	2

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S No.	Items	Remarks	UOM	Qty		
				DMS	Khichripur	Total
2.1.4.16	Earthing	(a) Earthing for Items specified in "Scope of Supply" with 50x6 GI flat (b) Two earthing per equipment shall be considered (c) Connection of GI Flat with existing earth mesh shall be in vendors scope	Lot	1	1	2
2.1.4.17	Drawings pertaining to Civil Work	(a) Foundation Plan of Supplied Equipment (b) Control Cable trench (c) Any other civil drawing pertaining to job completion	Lot	1	1	2
2.1.4.18	SCADA Works	As per Specification	Lot	1	1	2
2.1.4.19	Painting of Feeder names (SCADA code, Asset Code, etc)	As per Engineer Incharge Guidance	Lot	1	1	2
2.1.4.20	Licensed programming software and communication cord for offered numerical relays		No	1	1	2
2.1.4.21	Recommended & Mandatory Spares as per Specification of Supplied items	Refer all attached specifications	Lot	1	1	2

2.1.5 SCOPE OF WORK

S. No	Items	Remarks	Unit	Qty		
				DMS	Khichripur	Total
2.1.5.1	Erection, Testing and Commissioning of all items specified in "Scope of Supply"		Lot	1	1	2
2.1.5.2	Training on application, programming, testing and commissioning of	One day classroom training at BYPL Training Centre and one day onsite training. Training shall be	Days	1	1	2

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S. No	Items	Remarks	Unit	Qty		
				DMS	Khichripur	Total
	Numerical Relays	provided by Domain experts only				
2.1.5.3	Dismantling of Existing CRPs		Nos	8	8	16
2.1.5.4	Dismantling of Existing RTCC panel		Nos	3	2	5
2.1.5.5	Dismantling of ACDB		Nos	1	1	2
2.1.5.6	Dismantling of Existing Bay Marshalling Box		Nos	8	8	16
2.1.5.7	Dismantling of Existing Control Cables		Lot	1	1	2
2.1.5.8	Dismantling of Existing MOM Box of Isolator		Nos	16	24	40
2.1.5.9	Aligning of Existing CRP	Existing Schneider Make CRP must be aligned with New CRPs	Nos	0	1	1
2.1.5.10	Painting of nomenclature	As per Engineering Incharge Guidance	Lot	1	1	2
2.1.5.11	Support Structure and appropriate clamping arrangement	For proper termination of all power and control cables	Lot	1	1	2

2.2 SCOPE DEMARCATION

S. No	Head	BYPL	Bidder's Scope	Remarks
2.2.1	Testing Equipments	✘	✓	
2.2.2	Lighting Arrangement	✘	✓	
2.2.3	Construction Power and Construction Water	✘	✓	
2.2.4	Safety and Security of Manpower(Labor, Engineers, Supervisors etc)	✘	✓	(a) Safety Supervisor/ Officer required at Site. (b) PPE is mandatory.
2.2.5	Various Tools and Tackles related to Job	✘	✓	

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S. No	Head	BYPL	Bidder's Scope	Remarks
2.2.6	Loading, Unloading and Transportation of Material	x	✓	It includes transportation of dismantled equipment to BYPL store in stacked manner.
2.2.7	Cleanliness around work premises	x	✓	
2.2.8	Document/Drawing Submission	x	✓	
2.2.9	Document/Drawing Approval	✓	x	
2.2.10	Security and Safety of material until handover	x	✓	
2.2.11	Various Machines e.g. Crane, Hydra, JCB etc to complete the Job	x	✓	
2.2.12	Maintenance of Equipments Until Handover to Engineer Incharge and EHV O&M	x	✓	
2.2.13	Electrical Inspector Clearance	x	✓	Only statutory fees will be borne by BYPL
2.2.14	Permit issuing agency for Works inside BYPL Premises	✓	x	
2.2.15	Permit requesting Agency	x	✓	Permit Should be applied to Engineer In charge prior to start of work. Isolation & permit of only one Feeder at a time, shall be given at a time, during final hook up. All necessary preparation works to be made, in order to minimize the Shutdown Time.
2.2.16	Temporary office near work premises	x	✓	After handing over the equipments, contractor has to evacuate the premises within one week otherwise deemed fit action will be taken
2.2.17	Temporary store near work premises	x	✓	
2.2.18	Yard aesthetics at work place should be maintained at the time and after the completion of Work	x	✓	Disposal of Scrap/Debris etc from site and complete cleaning of working area till handover
2.2.19	Any damages done to the existing system, shall be repaired/ rectified/ replaced	x	✓	

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S. No	Head	BYPL	Bidder's Scope	Remarks
2.2.20	Clearance certificate	x	✓	Clearance Certificate shall be taken from BYPL Departments (Quality, Safety, Protection, O&M, SCADA, EHV, Civil, etc) before Final Charging of the Systems. Any Site Observations/ Punch points, observed during execution, shall be attended.
2.2.21	Various compliances pertaining to Job	x	✓	IE rules, CEA Regulation 2010

2.3 DOCUMENTATION

- Document checklist for each stage is given in table below. (Refer equipment specification for details)
- Document check sheet compliance shall be the first sheet for each submission stage i.e. Technical bid, Drawing Approval, Pre Dispatch, Pre closure.
- No submission is acceptable without check list compliance.
- Deficient/ improper document/ drawing submission shall be liable for rejection.
- Order of documents shall be strictly as per the check list with in Soft copy with separate folder in proper nomenclature.
- Any drawing not included in the below table but necessary for detailed engineering shall be deemed to be included in bidder's scope.

S. No.	Description	Technical Bid	Drawing Approval	Pre-Dispatch	Pre-Closure
2.3.1	Tender No.	Required			
2.3.2	Communication Details				
2.3.2.1	Name of the Bidder	Required			
2.3.2.2	Name of Authorized contact person	Required			
2.3.2.3	Contact No. of Authorized contact person	Required			
2.3.2.4	E-mail id of Authorized contact person	Required			
2.3.3	Qualifying Requirement Compliance				
2.3.3.1	Summary of compliance of qualifying criteria in tabular form along with summary of documentary proof provided	Required			
2.3.3.2	Detailed Documents supporting compliance of qualifying criteria	Required			

SCOPE OF TURNKEY EXECUTION FOR CONTORL AND RELAY PANEL

S. No.	Description	Technical Bid	Drawing Approval	Pre-Dispatch	Pre-Closure
2.3.4	Drawings/ Documents as per Technical Specification.				
2.3.4.1	Type Test reports of offered model/ type/ rating	Required	Required		
2.3.4.2	Deviation Sheet	Required	Required		
2.3.4.3	Detailed Drawings	Required	Required		
2.3.4.4	Other drawing/ documents mentioned in technical specification	Required	Required		
2.3.4.5	Samples as per technical specification.	Required			
2.3.4.6	Design Calculation		Required		
2.3.4.7	Manufacturer's quality assurance plan		Required		
2.3.4.8	GTP		Required		
2.3.4.9	Inspection Reports			Required	
2.3.4.10	As manufacturing Drawings			Required	
2.3.4.11	Operation and Maintenance Manual			Required	
2.3.4.12	Site Commissioning Reports (Relay Testing, etc), with Joint witness.				Required
2.3.4.13	Electrical Inspector Clearance Certificate				Required
2.3.4.14	As built Drawings				Required
2.3.5	Soft Copy				
2.3.5.1	In Pen drive	Required			
2.3.5.2	Through Mail		Required	Required	Required

3.0 APPROVED MAKE LIST

- Following table contains Approved Make List. Although, any make other than specified in table shall be subject to BSES Yamuna Power Limited Approval.

S. No	Equipment	MAKE
3.1	Numerical relays	ABB (R series), Siemens (Siprotec series) and Schneider/GE / Alstom (Micom Series)
3.2	Fire retardant coating for cables	3M/Demech/Stanvac
3.3	Control cable	Universal/KEI/GEMSCAB/Polycab/ Cords Cable

VOLUME – III

TECHNICAL SPECIFICATIONS

FOR

SURVEY, DESIGN, ENGINEERING, SUPPLY, ERECTION, TESTING, & COMMISSIONING OF NEW CONTROL & RELAY PANELS ALONG WITH OTHER MATERIALS, DISMANTLING OF EXISTING EQUIPMENTS AS PER THE SCOPE OF WORK ON TURNKEY BASIS AT 33kV DMS GID AND 66kV KHICRIPUR GRID SUB STATION, DELHI

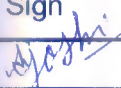
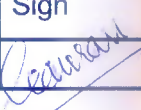
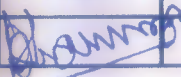
NIT NO CMC/BY/19-20/RB/SV/39

Due Date for Submission: 22.08.2019, 14:30 HRS

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING, KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsedelhi.com**

**Specification
for
Bay Marshalling Box**

Specification no – SP- PTHU-01-01

Prepared by:		Reviewed by:		Approved by:		Rev	Date
Name	Sign	Name	Sign	Name	Sign	1	20 th January 2012
Ashish		Gaurav		DS			

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1.0.0 Codes & standards

Materials, equipment and methods used in the manufacture of Bay Marshalling Kiosk shall conform to the latest edition of following –

Indian Standards

IS 12063	Classification of degrees of protection provided by enclosure of electrical equipment
IS 5039	Distribution pillars for voltage not exceeding 1000V AC and 1200V DC
IS 2147	Degree of Protection provided by enclosures for low voltage switchgear and controlgear.
IS 5133 Part I	Boxes for enclosure of the electrical accessories: Steel and Cast iron boxes
IS 8828	Circuit breaker for overcurrent protection for household & similar installations.
IS 6005	Code of practice for phosphating iron and steel.
IS3202	Code of practice for climate proofing.
IS 2551	Danger Notice Plates
IS 4237	General requirement for switchgear & controlgear for voltage not exceeding 1000V AC & 1200V DC.
IS 8623	Low voltage switchgear & controlgear assemblies
	Indian Electricity Rules
	Indian Electricity Act

2.0.0 Major Design Criteria & Parameters of the Bay Marshalling Kiosk

2.1.0	Type	Bay marshalling Kiosk shall be made out of sheet metal, suitable for Outdoor application, vertical self standing enclosure.
2.1.1	Service condition	Refer annexure B
2.2.0	Major Parts	
2.2.1	Enclosure	Made out of CRC sheet metal of not less than 2mm thick at the side and Top.
2.2.2	Design	Shall be dust and vermin proof, suitable for humid, dusty and tropical atmosphere. Lifting lugs shall be provided to the top. It shall have domed or sloping roof. Hinged type door shall be provided in front of enclosure. Door shall have handle and provision of padlocking arrangement. (see fig 1)

2.3.0	Internals of marshalling Kiosk	
2.3.1	Terminal block	MB shall have three distinct sets of Terminal block in vertical formation required for a) AC & DC Distribution up to 415V for AC and 220V for DC. b) For CT & PT connections c) For other potential free contacts. (see fig 1)
2.3.2	Type of Terminal	i) AC and DC distribution terminals shall be non disconnecting stud type. Refer figure-1 for terminal sizes. ii) CT & PT terminals shall be disconnecting Stud type suitable for 6mm ² copper cable. iii) For other potential free contacts terminals shall be stud type suitable for 6 mm ² copper cable.
2.3.3	Design	The terminal blocks shall be made of non-inflammable, molded resin / polyamide with integrally molded barriers, brass inserts & removable transparent covers. Each terminal shall be clearly marked with identification number or letters Each terminals shall have provision for insertion of banana plugs for testing. Marshalling Kiosk shall have followings: - -To receive 415V AC 3phase 4wire and distribution as per scheme in figure -1. - To receive DC supply and distribution as per scheme in figure-1.
2.3.4	Distribution MCB	The MCB for AC and DC power supply shall be mounted in horizontal configuration at the bottom. For AC circuit MCB shall be 4Pole and 2Pole. For DC it shall be 2 Pole. Partition barrier shall be provided for identification of AC and DC (see fig 2)
2.3.5	Wiring	Copper flexible 1.1Kv grade PVC insulated, FRLS grade. The wiring shall be neatly bunched, supported and should be readily accessible, PVC troughs shall be provided.
2.4.0	Cable Entry	Removable cable gland plate shall be provided at the bottom made out of not less than 2.5mm thick sheet. Proper PVC conduit shall be provided for dressing of wires up to the terminals.
2.5.0	Panel Illumination	A lamp with Door limit switch shall be provided for illumination of panel. A 5/15 power socket shall also be provided.
2.6.0	Heater	A heater with thermostat and Fuses shall be provided inside the panel.

2.7.0	Earthing	Two (02) no's earthing terminals shall be provided at both side for earthing.
2.8.0	Painting	
2.8.1	Painting surface preparation	The cubicle shall be painted by chemical 7 tank process with minimum 75 micron thickness.
2.8.2	Painting external finish	692 as per IS 5 on external side and Glossy white inside enclosure.

3.0.0 Fittings and Accessories on Bay Marshalling Kiosk

3.1	Rating and Diagram Plate	Required
3.1.1	Material	Anodized aluminum 16SWG
3.1.2	Background	SATIN SILVER
3.1.3	Letters, diagram & border	Black
3.1.4	Process	Etching
3.2	Name plate details	Required

4.0.0 Approved make of components

4.1	Connectors	Connectwell, Elmex, Phoenix
4.2	Flexible wire	Finolex, Lapp Kabel
4.3	MCB	Schneider, L&T, Siemens, Legrand
4.4	Space heater with thermostat	Elcon, Girish

Note – Any other make of component to be approved by purchaser

5.0.0 Quality assurance

5.1	Vendor quality plan	To be submitted for purchaser approval.
5.2	Inspection point	To be mutually identified and agreed in quality plan

6.0.0 Progress Reporting

6.1	Outline Document	To be submitted for purchaser approval for outline of production, inspection, testing, packing, dispatch, documentation programme
6.2	Detailed Progress report	To be submitted to Purchaser once a month containing i) Progress on material procurement ii) Progress on fabrication (As applicable) iii) Progress on assembly (As applicable) iv) Progress on internal stage inspection v) Reason for any delay in total programme vi) Details of test failures if any in

		<p>manufacturing stages.</p> <p>vii) Progress on final box up Constraints / Forward path</p>
--	--	--

7.0.0 Drawing, Data & manuals

7.1.0	To be submitted along with bid	<p>Seller has to submit:</p> <ul style="list-style-type: none"> i) Tentative GA / cross sectional drawing of product showing all the views / sections ii) Detailed reference list of customers already using the offered product during the last 5 years with particular emphasis on units of similar design and rating iii) Completely filled GTP iv) Deviations from this specification. Only deviations approved in writing before award of contract shall be accepted v) Details of manufacturer's quality assurance standards and programme and ISO 9000 series or equivalent national certification vi) Type test reports shall be submitted for the type, size & rating of product / equipment offered along with bid. In case the type test report for identical product is not available then type test report of nearby size /rating shall be submitted for review. They shall be considered valid for 5 years from date of test performed on product /equipment. vii) Complete product catalogue and Manual along with the bid.
7.2.0	After award of contract, seller has to submit mentioned drawings for buyer's Approval (A) / Reference (R)	<ul style="list-style-type: none"> i) Programme for production and testing (A) ii) Guaranteed Technical Particulars (A) iii) Calculations to substantiate choice of electrical, structural, mechanical component size / ratings (A) iv) Detailed dimensional drawing for all components, general arrangement drawing showing detailed component layout and detailed schematic and wiring drawings for all components. v) Terminal arrangement details etc (as applicable) (A) vi) Drawing of major components (A) vii) Rating and diagram plate (A) viii) Detailed loading drawing to enable the buyer to design and construct foundations (as applicable) (R) ix) Transport / Shipping dimensions with weights. etc (As applicable) (R) x) List of makes of all components (A) xi) Detailed installation and commissioning instructions (R) xii) Quality plan
7.3.0	Submittals required prior to	i) Inspection and test reports, carried out in

	dispatch	manufacturer's works (R) ii) Test certificates of all bought out items iii) Operation and maintenance Instruction as well as trouble shooting charts/ manuals
7.4.0	Drawing and document sizes	Standard size paper A0, A1, A2, A3, A4
7.5.0	No of drgs. /Documents required at different stages	As per Annexure A Scope of Supply

8.0.0 Inspection & testing

8.1.0	Inspection and Testing during manufacture	
8.2.0	Sheet metal Box / Panel	i) Checking of dimensions as per approved drawing. ii) Checking for thickness of sheet metal. iii) Thickness of Paint as applicable
8.3.0	Connectors/MCB/Wire	i) Check for routine electrical test.
8.4.0	Routine tests	Following routine test shall be conducted on each BMK :- - Dimensional Checks - Degree of protection for enclosure (paper insertion test) - Test for paint thickness. - HV/IR tests - Functional tests.
8.5.0	Type Tests	a) On cubicle of each rating and type (In Govt. recognized independent test laboratory) i) IP Protection test. b) In case the product is never type tested earlier, seller has to conduct the type tests from govt. recognized / internationally accredited test labs at their own cost, before commencement of supply. c) If the manufacturer's lab is accredited by govt. / authorized body then it shall be acceptable for type testing.
8.6.0	Acceptance test	Following routine test shall be conducted on each BMK :- - Dimensional Checks - Degree of protection for enclosure (paper insertion test) - Test for paint thickness. - HV/IR tests

		- Functional tests.
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9.0.0 Packing , Shipping, Handling and Storage

9.0.0	Packing	
9.1.1	Packing protection	Against corrosion, dampness, heavy rains, breakage and vibration
9.1.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection and identification labels.
9.1.3	Packing identification label	In each packing case, following details are required : <ul style="list-style-type: none"> i) Individual serial number ii) Purchaser's name iii) PO number(along with SAP item code, if any) & date iv) Equipment Tag no. (if any) v) Destination vi) Manufacturer/Supplier's name vii) Address of manufacturer/supplier's / its agent viii) Description and quantity ix) Country of origin x) Month and year of manufacturing xi) Case measurements xii) Gross and net weights in kilograms xiii) All necessary slinging and stacking instructions.
9.1.4	Shipping	i) The bidder shall ascertain at an early date and definitely before the commencement of manufacture, any transport limitations such as weights, dimensions, road culverts, Overhead lines, free access etc. from the manufacturing plant to the project site; and furnish to the Purchaser confirmation that the proposed packages can be safely transported, as normal or oversize packages, up to the plant site. Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser. ii) The seller shall be responsible for all transit damage due to improper packing.
9.1.5	Handling and Storage	Manufacturer instruction shall be followed. Detail handling & storage instruction sheet / manual needs to be furnished before commencement of supply.

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 by the Buyer that the Seller complies fully with this specification.

Annexure - A - Scope of supply

1.0 The scope of supply shall include following

1.1 Design, manufacture, assembly, testing at stages of manufacture as per Cl. 12 of this specification, final testing at manufacturer works on completely assembled bay marshalling Kiosk before dispatch, packing, delivery and submission of all documentation for the bay marshalling Kiosk.

1.2 BOQ as following -

Sr No	Purchaser Equipment Tag No / SAP code	Location / Substation name	Unit	Quantity
1		e.g. Santacruz	No	e.g. 1
2		e.g. Alaknanda	No	e.g. 1
3				

2.0 Submission of documents

Submission of drawings, calculations, catalogues, manuals, test reports shall be as follows

	Along with offer	For Approval after award of contract	Final after approval	Remarks
Drawings	3 copies (Typical drgs)	4 copies	6 copies + 1 soft copy in CD	
Calculations	3 copies (Typical)	4 copies	6 copies + 1 soft copy in CD	See Clause 5.0 for details
Catalogues	1 copy		6 copies + 1 soft copy in CD	
Test Report	2 copies		6 copies + 1 soft copy in CD	Type test and sample routine test reports

3.0 Delivery schedule

- 3.1 Delivery period start date - From date of purchase order
- 3.2 Delivery period end date - as agreed with supplier
- 3.3 Material dispatch clearance - after inspection by purchaser and written dispatch clearances from purchaser

Annexure – B - Service Conditions

1.0.0	Delhi Atmospheric conditions	
a)	Average grade atmosphere:	Heavily polluted, dry
	Maximum altitude above sea level	1000 M
b)	Ambient Air temperature	Highest 50 deg C, Average 40 deg C
	Minimum ambient air temperature	0 Deg C
c)	Relative Humidity	100 % Max
d)	Thermal Resistivity of Soil	150 Deg.C cm/W
e)	Seismic Zone	4 as per IS 1893
f)	Rainfall	750 mm concentrated in four months
g)	Wind Pressure	195Kg/m ² up to 30M elevation as per IS 875-1975

Annexure – C - Guaranteed Technical Particulars

Sr No	Description	Data by purchaser	Data by Supplier
1.0	Location of equipment	Project specific to be filled up	
2.0	Name of manufacturer		
2.1	Address & contact details		
3.0	Type		
3.1	Manufacturer Model no		
4.0	Degree of protection of enclosure	IP55	
5.0	Thickness of sheet metal enclosure		
5.1	- Top & side sheet	2.0mm min.	
5.2	- Bottom sheet	2.5mm min.	
6.0	Internal lamp with door switch provided		
7.0	Rating of space heater with thermostat		
8.0	Rating of plug and socket	5/15 Ampere	
9.0	Terminal Blocks		
9.1	Make and type		
9.2	Rating		
9.3	Number of terminals provided	As per Fig 2	
9.4	Suitable for conductor size		
9.5	20% spare terminals provided for scheme furnished		
10.0	Miniature circuit breaker		
10.1	Make and type		
10.2	Rated voltage & frequency		
10.3	No. of poles		
10.4	Current rating		
	- Continuous at 50DEG C		
	- Short time for 1 sec.		
10.5	Breaking capacity		
	- Symmetrical		
	-Assymeterical		

10.6	Type of blow out device		
10.7	Type of overload device		
10.8	Terminals suitable for cable size		
10.9	Whether provided with 2NO/2NC aux. Contacts		
11.0	Cables and Wire		
11.1	Voltage grade	1.1KV	
11.2	Conductor		
11.3	-Material	Copper	
11.4	-Size	10 & 6mm ²	
12.0	Overall dimensions (depth, width & height)		
13.0	Details of earthing studs		

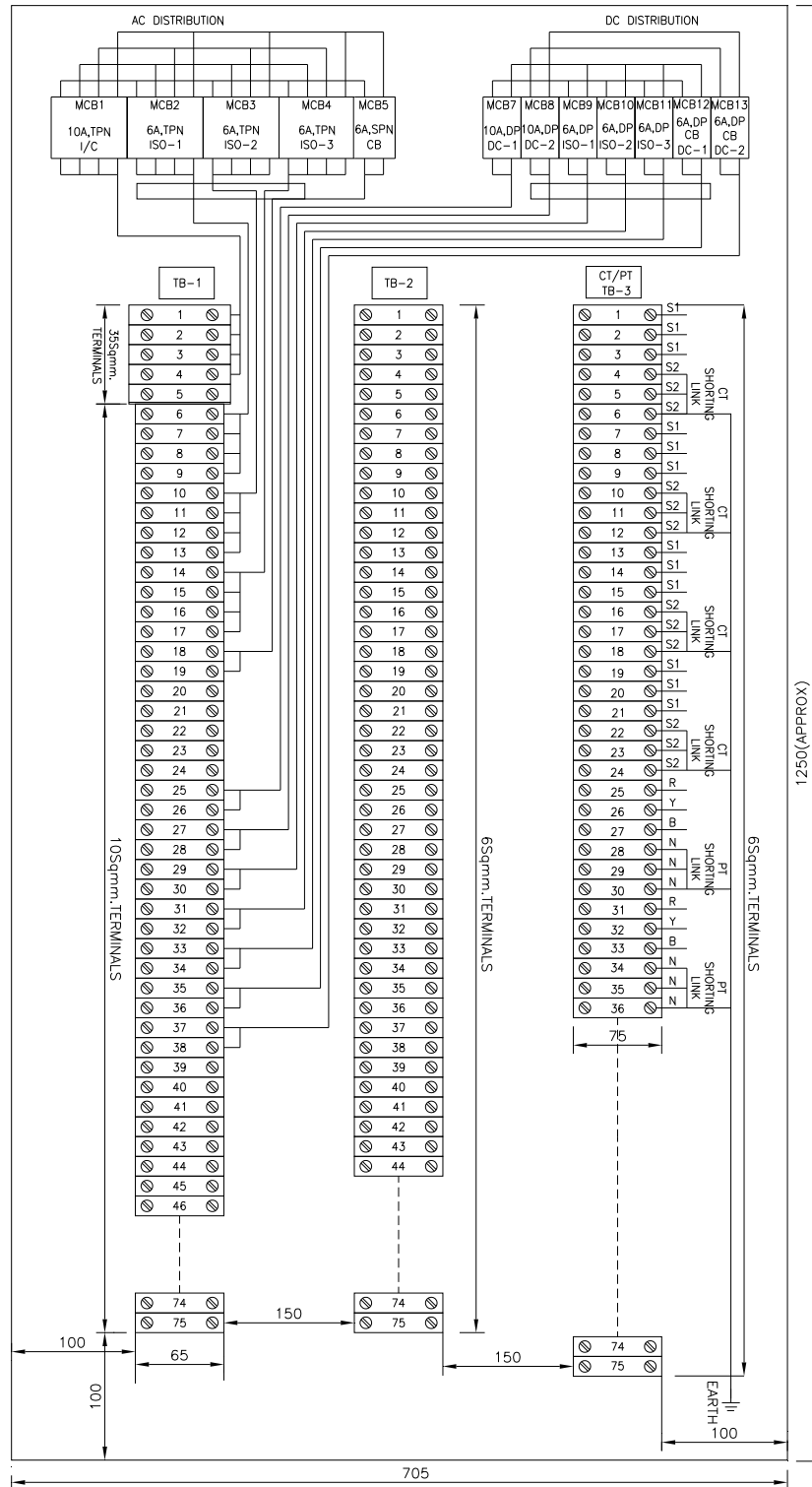


FIGURE-1 – SCHEMATIC DIAGRAM

Note –

1. Terminal block TB-1(75 nos), TB-2(75nos), shall be non disconnecting stud type
2. Terminal block TB-3 (75 nos) shall be disconnecting stud type.
3. Cable Trough shall be provided along the terminal blocks.
4. Busbar type links should be used for CT/PT star point formation. 6 nos. spare links to be provided for shorting of spare core of CT.
5. All dimensions are in mm.

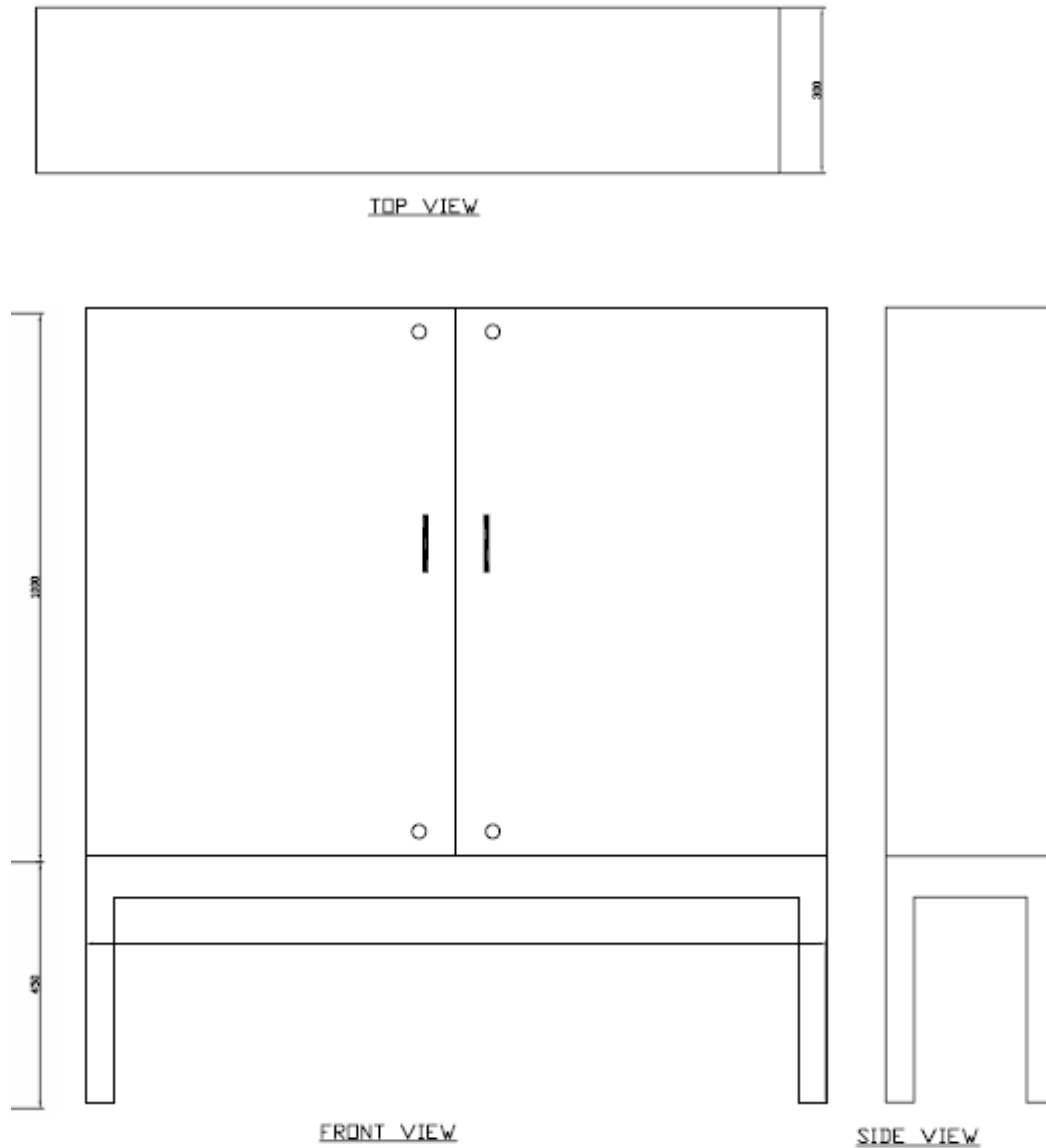


FIGURE -2 – DIMENSION DRAWING

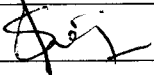
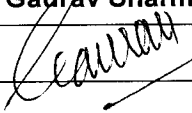
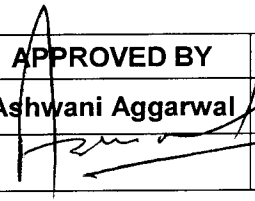
Note –

- 1. Panel should be suitable for outdoor application. Degree of protection for enclosure should be IP55.**
- 2. Color shade should be 692 as per IS5. Internal paint shall be glossy white.**
- 3. Rain canopy of appropriate size should be provided at the top of panels.**
- 4. All dimensions are in mm.**

TECHNICAL SPECIFICATION

FOR

415V AC DISTRIBUTION BOARD

PREPARED BY	REVIEWED BY	APPROVED BY	REV	0
Srinivas Gopu	Gaurav Sharma	Ashwani Aggarwal	DATE	04/12/2017
			PAGE	Page 1 of 13

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TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD**1.0 SCOPE**

This specification covers the design, engineering, manufacture, assembly and testing at manufacturer's works and supply of 415V AC Distribution board (ACDB) along with all hardware and accessories required for installation and operation.

2.0 STANDARDS & CODES

2.1	IS:8623	Specification for factory built assemblies of switchgear & control gear for voltages up to and including 1000V AC/1200 V DC.
2.2	IS 60947-1	Specification for Low-voltage Switchgear and Controlgear - Part 2 : Circuit Breakers
2.3	IS:10118	Code of practice for selection, installation and maintenance switchgear and controlgear
2.4	IS:2705	Current transformers
2.5	IS:3231	Electrical relays for power system protection
2.6	IS:1248	Electrical Indicating instruments
2.7	IS:4794	Switches and push buttons
2.8	IS:6005	Code of practice of phosphating iron and steel
2.9	IS:5082	Wrought Aluminium and aluminium alloys for electrical purposes
2.10	IS 3043	Code of practice for Earthing

3.0 SERVICE CONDITIONS

3.1	System Configuration	3 Phase 4 Wire with neutral solidly grounded
3.2	Supply Voltage	415 volt +/- 10%
3.3	Supply frequency	50Hz
3.4	Location	Indoor
3.5	Average grade atmosphere	Heavily polluted, Dry
3.6	Maximum altitude above sea level	1000M
3.7	Ambient air temperature	Highest 50Deg C Average 40Deg C
3.8	Minimum ambient air temperature	0 Deg C
3.9	Relative Humidity	100%
3.10	Rainfall	750mm concentrated in four months

4.0 CONFIGURATION

4.1	Incomers	Two incomers, each having motorized 630A MCCB. MCCBs shall have microprocessor based over current and earth fault release. Auto changeover shall be provided between the two incomers alongwith necessary electrical interlocks in event of
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TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

		failure of either of the two			
4.2	Outgoing feeders	The number of outgoing feeders from AC boards shall be such that each substation equipment is fed by separate feeder (refer below).			
	Application	Type of Switchgear	No of Poles	Rating (A)	Quantity
	Transformer Oil filtration	MCCB	4	100	2
	Welding(Outdoor)	MCB	2	63	4
	Power Socket(Indoor)	MCB	4	32	5
	Outdoor Lighting	MCB	4	32	2
	Indoor Lighting	MCB	4	32	2
	Battery Charger	MCB	4	32	2
	BMK	MCB	4	32	8
	Marshalling Box(PTR)	MCB	4	32	3
	AC Supply	MCB	4	32	2
	UPS	MCB	2	16	1
	11kV Switchgear	MCB	2	16	3
	CRP	MCB	2	16	2
	RTU/SCADA	MCB	2	16	2
	Fire Fighting	MCB	2	16	2
	EPAX	MCB	2	16	1
	Power Socket	MCB	2	16	4

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD**5.0 CONSTRUCTION**

5.1	General construction	Board shall be of modular construction with provision for complete compartmentalization of all feeders. It shall be free-standing type comprising dust-tight and vermin-proof sheet steel cabinets suitable for indoor installation with IP-54 degree of protection. Necessary busbar support insulators, cable glands, cable supports and terminal blocks etc. The board shall preferably be of single front type.
5.2	Material	The Board shall be made out of at least 2.0 mm thick cold rolled steel sheet, suitably reinforced to provide flat level surfaces. No welds, rivets, hinges or bolts shall be visible from outside.
5.3	Equipment Mounting	All switches provided on the distribution board shall be on front side of the cabinets, operable from outside. All instruments and control devices shall be mounted on the front of cabinets and fully wired to the terminal blocks.
5.4	Busbar housing	The busbars shall be housed in totally enclosed busbar chambers. Incoming connections from the busbar to various feeders shall be designed so as not to disturb cable connections. Busbar arrangement should ensure safety of the operation/maintenance personnel and facilitate working on any outgoing module without the need for switching off in-feed to the adjacent modules, as far as possible
5.5	Cable alleys	A cable alley preferably 230 mm wide shall be provided in each vertical section for taking cables into the compartments. Cable alleys shall be provided on sides of busbar chamber
5.6	Cable glands	Compression type cable glands shall be provided to hold the cables to avoid any pressure or tension on the terminal block connections.
5.7	Gland Plate	Gland plate shall be 3.0mm thick.
5.8	Doors	The doors of cabinets shall be lockable and shall be fitted with double lipped gaskets.

6.0 BUSBAR

6.1	Material	Busbar shall be of tinned electrolytic copper or aluminium.
6.2	Size	Busbar shall be of tinned electrolytic copper or aluminium.
6.3	Supports	The busbar shall be supported by means of durable non-hygroscopic, non-combustible and non-tracking polyester fibreglass material or porcelain. Supports shall be capable of withstanding the maximum short circuit stresses
6.4	Sleeves and shrouds	Busbars shall be encased in heat-shrinkable sleeves of insulating material which shall be suitable for the operating temperature of busbars during normal service. The busbar joints shall be provided with removable thermosetting plastic shrouds.

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD**7.0 CURRENT TRANSFORMER**

7.1	Type	Cast-resin type, Class-E insulation, rated for 120% current continuous
7.2	Provision	Shall be provided in incomer for metering. Separate Neutral CT shall be connected in the neutral for detecting earth fault for both the incomer.
7.3	Secondary current	5A
7.4	Metering CT Class	1.0
7.5	Burden	Based on requirement

8.0 TERMINALS AND WIRING

8.1	Secondary Wiring	
8.1.1	Grade and type	1100 V grade, PVC insulated, FRLS type stranded flexible copper wire.
8.1.2	Ferruling	Each wire shall bear an identifying ferrule or tag at each end or connecting point.
8.1.3	Size	2.5sqmm copper (minimum)
8.2	Terminals	Terminals of appropriate size shall be provided inside each cabinet for incoming and outgoing cables.
8.2.1	Grade	1100 V grade, moulded piece terminals complete with insulated barriers, washers, nuts and lock nuts.
8.2.2	Power Terminals type	Stud type, nut driver operated
8.2.3	Control terminals type	Stud type, screw driver operated suitable for minimum 6sqmm wire.
8.2.4	Spare terminals	20% spare terminals should be provided in each terminal block.
8.2.5	Accessibility	Placement of terminals shall enable proper cable termination. Terminals shall be readily accessible for inspection and maintenance.
8.2.6	Marking	The terminals shall be serially numbered to facilitate installation and maintenance.

9.0 METERS, INDICATIONS AND PUSH BUTTONS

9.1	Meters	
9.1.1	Multifunction Meter	For incomer feeders. Meter should have facility to store peak load current in memory.
9.1.2	Type	Digital with inbuilt phase selector
9.1.3	Accuracy Class	1.0
9.1.4	Auxiliary supply	240VAC with 10 % tolerance

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

9.2	Indicating lamps	Indicating lamps shall be of low wattage cluster LED type.
9.2.1	Incomer/ Outgoing On	Red
9.2.2	Incomer/ Outgoing Off	Green
9.2.3	Incomer/ Outgoing Trip	Amber
9.3	Push buttons	For manual operation of incomer

10.0 NAME PLATES & MARKINGS

10.1	Panel nameplate	Panel shall have a nameplate clearly indicating the following: a. Panel Serial No.- b. Customer Name - BSES Yamuna Power Ltd c. PO No. & date - d. Type of Panel - e. Current rating - f. Guarantee period -
10.2	Feeder nameplate	Large and bold name plate carrying the feeder identification shall be provided on the top of each module. Blank insert type name plates shall be provided on each outgoing feeder.
10.3	Equipment nameplate	a. All equipment mounted on front side as well as equipment mounted inside the panels shall be provided with individual name plates with equipment designation engraved. b. All front mounted equipment shall also be provided at the rear with individual name plates engraved with tag numbers corresponding to the one shown in the panel internal wiring to facilitate easy tracing of the wiring.
10.4	Danger plate	Panel shall have a danger plate of anodized Aluminium clearly indicating the danger logo and voltage details.
10.5	Material	Non-rusting metal or 3 ply lamicaid. Nameplates shall be black with white engraving lettering. Stickers are not allowed.
10.6	Fixing	All nameplates/rating plates shall be riveted to the panels at all four corners. Bolting/screwing is not acceptable.
10.7	Markings	Each switch shall bear clear inscription identifying its function. Similar inscription shall also be provided on each device whose function is not otherwise identified. If any switch or device does not bear this inscription separate nameplate giving its function shall be provided for it. Switch shall also have clear inscription for each position indicating e.g. Trip-Neutral close, ON-OFF etc.

11.0 FINISHING

11.1	Primer	Two coats
11.2	Finish	Powder Coating
11.3	Colour shade	RAL 7032 (Siemens Grey)

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

11.4	Paint thickness	70 microns (minimum)
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12.0 APPROVED MAKE OF COMPONENTS

12.1	Switch	Siemens / L&T (Salzer)
12.2	HRC Fuse Links	GE/ Siemens/ L&T
12.3	Meters	Rishabh/Schneider/AE
12.4	AC Contractors	L&T/Siemens/Telemecanique/GE/ABB
12.5	Terminals	Connectwell/Elmex/Wago/Phoenix
12.6	Push buttons / Actuator	L&T/Siemens/Vaishno/Schneider
12.7	MCCB	L&T/Siemens/ ABB/GE/Schneider
12.8	MCB	Datar/Legrand/Hager/Schneider/ABB
12.9	Indicating lamps	Vaishno/Binay/Teknic/Siemens/Mimic/C&S

13.0 INSPECTION AND TESTING

13.1	Type test	Equipment should be of type tested quality only, type test certificate to be submitted along with offer. If the manufacturer's lab is accredited by govt. / authorized body then it shall be acceptable for type testing.
13.2	Acceptance & Routine tests	As per relevant Indian standard

14.0 PACKING, SHIPPING, HANDLING & SITE SUPPORT

14.1	Packing Protection	The packing shall be fit to withstand rough handling during transit and storage at destination. The test set should be properly protected against corrosion, dampness & damage.
14.2	Packing for accessories and spares	Robust non-returnable packing case with all the above protection & identification Label. The bidder should get the packing list approved before dispatching the material.
14.3	Packing Identification Label	On each packing case, following details are required:
14.3.1	Individual serial number	
14.3.2	Purchaser's name	
14.3.3	PO number (along with SAP item code, if any) & date	
14.3.4	Equipment Tag no. (if any)	

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

14.3.5	Destination	
14.3.6	Manufacturer / Supplier's name	
14.3.7	Address of Manufacturer / Supplier / it's agent	
14.3.8	Description	
14.3.9	Country of origin	
14.3.10	Month & year of Manufacturing	
14.3.11	Case measurements	
14.3.12	Gross and net weight	
14.3.13	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	Manufacturer instruction shall be followed.
14.6	Detail handling & storage instruction sheet / manual to be furnished before commencement of supply.	

15.0 DEVIATIONS

15.1	Deviation	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. No deviation will be acceptable post order.
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16.0 DOCUMENTS SUBMISSION

The bidder has to submit the following documents along with bid:-

16.1	List of major customers using the offered product from last 5 years specifying details like customer name, PO no. and PO date, year of supply and supply quantity
16.2	Completely filled compliance GTP sheet as per clause 16.0 of this specification
16.3	Complete product catalogue, Manual and calibration certificate of the equipment
16.4	Type test reports
16.5	Deviation Sheet (if any)

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD**17.0 GUARANTEED TECHNICAL PARTICULARS**

S. No.	Description	Specification requirement	Bidder's Data
1	GENERAL FEATURES		
1.1	Make		
1.2	Type		
1.3	Reference Standard		
1.4	Rated Operational voltage	415V AC \pm 10%	
1.5	Rated Nominal Current	630A	
1.6	Rated frequency	50 Hz (+3%, -5%)	
1.7	Rated Insulation voltage	1100V	
1.8	Rated Impulse withstand voltage	8kV	
1.9	Service supply for heating, lighting and power sockets	240VAC \pm 10%,	
1.10	Mounting	Floor (Free standing)	
1.11	Connections	Cable entry – Bottom	
1.12	Configuration	Single front	
1.13	Enclosure thickness		
1.13.1	Load Bearing Member	\geq 2.5mm	
1.13.2	Doors and Covers	\geq 2 mm	
1.14	Enclosure Material	CRCA Sheet	
1.15	Enclosure degree of protection	IP 54	
1.16	Mechanical safety interlocks	As specified in technical specification	
1.17	Power Cable Termination	Shall be as per the specification	
1.18	Paint shade	RAL 7032 (Siemens Grey)	
1.19	Typical vertical section (Overall dimension (mm) and weight (Kg))	Required	
1.19.1	Incomer		
1.19.2	Outgoings		
1.20	Dimensions of the ACDB Panel	L (mm) X D (mm) X H (mm)	
1.21	Weights of the ACDB Panel	(in kg.)	
1.22	Marking on the panel	As per the specification	
2	INCOMER MCCB		
2.1	Make & Model of MCCB	Required	
2.2	Catalogue of MCCB	Required	

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

2.3	Continuous Current at 40 deg C/ 50 deg C	630A	
2.4	Rated ultimate breaking capacity at rated voltage	50kA	
2.5	Rated service breaking capacity Ics	Ics = 100% Icu at rated voltage	
2.6	Rated making current	Icm = 220% Icu	
2.7	Utilization Category	A	
2.8	Overload setting	50 -100% (Inverse time characteristics)	
2.9	Overcurrent setting	200-1000% (Instantaneous characteristics)	
2.10	Earthfault setting	20-100% (Instantaneous)	
2.11	Dimension(HxWxD)	Required	
2.12	Weight	Required	
4	BUS AND BUS TAPS		
4.1	Make		
4.2	Material and grade of buses and joints	High conductivity electrolytic grade aluminium	
4.3	Reference standard		
4.4	Continuous Current (at site condition, 50°C ambient) within cubicle	630A	
4.5	Cross sectional Area		
4.6	DC resistance	ohm/m/ph	
4.7	Skin-effect ratio		
4.8	Reactance	ohm/m/ph	
4.9	Losses-middle phase	w/m/ph	
4.10	Minimum clearance of bus bar and joints	Required	
4.10.1	Phase to phase (mm)		
4.10.2	Phase to earth (mm)		
4.11	Bus bar insulation	i. Heat shrinkable sleeves rated for maximum operating voltage	
		ii. Cast resin shrouds for joint	
4.12	Bus joints	Silver	
4.13	Bus bar support insulator	Required	
4.13.1	Spacing (mm)		
4.13.2	Make		
4.13.3	Type		
4.13.4	Reference standard		

TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

4.13.5	Voltage class (kV)		
4.13.6	Minimum creepage distance (mm)		
4.13.7	Cantilever strength (Kg/sq.cm.)		
5	CURRENT TRANSFORMER		
5.1	Make		
5.2	Type	Resin Cast	
5.3	Reference standard		
5.4	CT ratios		
5.5	Class of Insulation	Class-E	
5.6	Protection class	5P20	
5.7	Metering class	5	
5.8	VA burden for Relaying CT-Incomer	Based on requirement.	
6.0	AMMETERS/MULTIFUNCTION METERS AND VOLTMETERS		
6.1	Make & Model no.		
6.2	Type	Digital	
6.3	Accuracy class	1	
7.0	CONTROL & INDICATIONS		
7.1	Push button		
7.1.1	Make and model no.		
7.1.2	Type	Flush mounted type with touch proof terminals	
7.2	LEDs		
7.2.1	Make & Model no.		
7.2.2	Type	Flush mounted type with touch proof terminals	
8.0	TERMINAL BLOCKS		
8.1	Make & Model no.		
8.2	Spare terminals	Equal to 20% of active terminals in each TB	
8.3	Power terminals	Stud type, nut driver operated	
8.4	Control terminals	Stud type, screw driver operated suitable for minimum 6sqmm wire.	
9.0	TESTS		
9.1	Confirmation of routine tests to be performed as per IS 60947	Yes/No	
9.2	IP 55 test shall be carried out during inspection	Yes/No	
9.3	Confirmation of Type tests to be performed (or report submitted)	Type test report no./date	

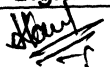
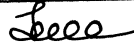
TECHNICAL SPECIFICATION FOR 415V AC DISTRIBUTION BOARD

	as per IS 60947		
9.4	Confirmation of Acceptance tests to be performed during inspection as per IS 60947	Yes/No	
9.5	Temperature rise test to be carried out at NABL accredited lab.	Yes/No	
10.0	Deviation sheet against each clause of the specification	To be submitted	

BSES

Specification Of Control Cables

Specification no : SP-EWLP-01-R1

Prepared by		Approved by		Revision	Date
Name	Sign.	Name	Sign.		
Hemanshi Kaul		K Sheshadri		01	23, April'2012

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General Specification

1.0.0 Codes & Standards : The cables shall be designed, manufactured and tested in Accordance with the following Indian & IEC standards.

National Standards

Indian Standards	
IS- 1554 Part-1	PVC insulated Cables
IS- 5831 : 1984	PVC insulation & sheath of electric cables.
IS- 10810 : 1984	Methods of test for cables.
IS- 8130 : 1984	Conductors for insulated electric cables and flexible cords.
IS- 3975 : 1999	Mild steel wires, formed wires and tapes for armouring of cables.

International Standards

IEC 60228 Ed.3.0 b	Conductors of insulated cables.
IEC 60332-3-21 Ed.1.0 b	Tests on electric cables under fire conditions. Part 3-21. Tests on bunched wires or cables.
IEC 60502-1 Ed. 2.1 b	Power cables with extruded insulation and their accessories for rated voltage from 1kV upto 30kV –Part 1: cables for rated voltages of 1kV and 3kV
IEC 60811	Common test methods for insulating and sheathing materials of electric cables.
IEC 60885 Ed.1.0 b	Electric test methods for electric cables.
IEC 60227	PVC insulated cables of rated voltages up to and including 450/750 V.
IEC 60028 Ed. 2.0 b	International Standard of Resistance for Copper

2.0.0	Cable construction Features	Size & dimensions of each item mentioned under this clause shall be followed as detailed out in GTP, refer Annexure B
2.1.1	Conductor	
	Stranded, plain copper, circular	Shall be made from high conductivity copper rods
2.1.2	Insulation	Extruded PVC Insulation Type A as per IS 5831
2.1.3	Core Identification	As per Cl.10.1 (f) of IS-1554 Part-1
2.1.4	Inner Sheath	Extruded Inner Sheath of Black PVC type ST-2 as per IS 5831
2.1.5	Armour	a) As per Cl 13.2 of IS 1554 Part-1: Galvanized steel round wire armour. b) Minimum area of coverage of armouring shall be 90 %.
2.1.6	Outer Sheath	a) Extruded outer sheath of PVC type ST-2 as per IS 5831
		b) Colour : Black
		d) The Outer Sheath shall be embossed with:
		d-1 : The voltage designation
		d-2 : Type of construction / cable code (for e.g. AYWY)
		d-3 : Manufacturers Name or Trade mark
		d-4 : Number of Cores and nominal cross sectional area of conductors

	Continue...Outer Sheath	d-5 : The drum progressive length of cable at every metre.
		d-6 : Name of buyer i.e. BSES
		d-7 : Month & Year of Manufacturing
		d-8: P.O.No. and P.O.Date
2.1.7	Sealing of Cable end	Both ends of the cable shall be sealed with PVC Cap.
4.0.0	Testing & Inspection	Tests shall be carried out in accordance with IEC / IS standards.
		a) Routine Test: As per IS 1554 part -1
		b) Type Test
		b-1: Cables must be of type tested quality . Type test reports shall be submitted for the type, size & rating of cable offered along with bid.
		b-2 : If the manufacturer's lab is accredited by govt. /authorised body then it shall be acceptable for type testing.
		b-3 : Type test on one cable drum of each rating and type , from first lot, shall be conducted at Govt. approved / Internationally accredited labs.
		c) Acceptance test : Shall be conducted as per IS 1554 Part-1 for each lot of cable
		c1) A minimum of two samples per Purchase order shall be drawn after receipt of cable in BSES stores for chemical composition and purity test of aluminium. Bidder to bear cost of test.
		d) Inspection
		d-1 :The Buyer reserves the right to witness all tests specified on completed cables
		d-2 : The Buyer reserves the right to inspect cables at the Sellers works at any time prior to dispatch, to prove compliance with the specifications.
		d-3 : In-process and final inspection call intimation shall be given in advance to purchaser.
		e) Test certificates: Three sets of complete test certificates (routine & acceptance tests) need to be submitted along with the delivery of cables.

5.0.0	Drawing, Data & Manuals	
5.0.1	To be submitted along with bid	The seller has to submit: a) Cross section drawing of cable b) Completely filled GTP c) Type test certificates d) Complete cable catalogue and Manual along with the bid.
5.0.2	After award of contract	Within 15 days, the seller has to submit four sets of above-mentioned drawings for buyer's approval.
5.0.3	Final As Built	6 sets hardcopy + One Soft copy of all documents including type test certificates
6.0.0	Drum Length & tolerance	500+ - 5% Mtr.
6.0.1	Overall tolerance in cable Length	- 2 %
6.0.2	Short length of cables	a) Minimum acceptable short length shall be above 100 Mtrs. Manufacturer shall be required to take prior approval from Engineering for any short length supply. b) Manufacturer shall not be allowed to put two cable pieces of different short lengths in same cable drum.
7.0.0	Packing, Shipping, Handling & Storage	
	a) Drum Identification Labels	
		a-1 Drum identification number
		a-2 Cable voltage grade
		a-3 Cable code (e.g. YWY)
		a-4 Number of cores and cross sectional area
		a-5 Cable quantity (Metres)
		a-6 Purchase order number and SAP item code
		a-7 : Total weight of cable and drum (kg)
		a-8 : Manufacturer's & Buyer's name
		a-9 : Month & Year of Manufacturing
		a-10 : Direction of rotation of drum
		a-11 : Cable length initial reading & end reading shall be marked on drum. Cable starting end shall be taken out from winding to read this drum reading with proper sealing to protect against external damage.
	b) Shipping information	The seller shall give complete shipping information

		concerning the weight, size of each package.
	c) Transit damage	The seller shall be held responsible for all transit damage due to improper packing.
	d) Type of Drum	Wooden drums with anti termite treatment. (The drums shall be with M.S. spindle plate with nut-bolts)
8.0.0	Quality Assurance	
8.0.1	Vendor quality plan	To be submitted for purchaser approval
8.0.2	Inspection points	To be mutually identified & agreed in quality plan
9.0.0	Progress reporting	
9.0.1	Outline Document	To be submitted for purchaser approval for outline of production, inspection, testing, inspection, packing, dispatch, documentation programme
9.0.2	Detailed Progress report	To be submitted to Purchaser once a month containing <ul style="list-style-type: none"> i) Progress on material procurement ii) Progress on fabrication (As applicable) iii) Progress on assembly (As applicable) iv) Progress on internal stage inspection v) Reason for any delay in total programme vi) Details of test failures if any in manufacturing stages vii) Progress on final box up Constraints / Forward path
10.0.0	Deviation	a) Deviations from this specification are only acceptable where the Seller has listed in his quotation the requirements he cannot, or does not, wish to comply with and the Buyer has accepted, in writing, the deviations before the order is placed.
		b) In the absence of a list of deviations, it will be assumed by the Buyer that the Seller complies fully with this specification.

Annexure – A**Scope & Project Specific Details****1.0.0 Scope**

1.0.0	Scope	Design, manufacture, testing & supply of Control cables
2.0.0	Delivery Schedule	To be filled up as per purchase requisition.

2.0.0 Document Submission

Submission of drawings, calculations, catalogues, manuals, test reports shall be as follows

	Along with offer	For Approval after award of contract	Final approval after	Remarks
Drawings	2 copies (Typical drgs)	2 copies	2 copies + 1 soft copy in CD	See Clause 5.0.0 for details of required drawings
Calculations	2 copies (Typical)	2 copies		
Catalogues	1 copy			
Type Test Report	2 copies			Type test and sample routine test reports

Annexure- B**GUARANTEED TECHNICAL PARTICULARS**

(Standard Cable sizes are 4c x2.5, 8c x 2.5, 12c x2.5, 16c x 2.5, 19 c x 2.5, 27c x 2.5 Sqmm & 4c x 4, 8c x 4, 10c x 4 Sqmm)

For each size separate GTP need to be furnished

Sr.	Description	Buyer's requirement	Seller's data
	Purchase Req. No.	....
	Guarantee Period: 5 Years	60/66 Months	
1.0	Make	....
2.0	Type (AS PER IS 1554 part -1)	YWY	
3.0	Voltage Grade (KV)	1.1	
4.0	Maximum Conductor temperature		
A	Continuos (° C)	70°C	
B	Short time (° C)	160°C	
5.0	Conductor		
A	Size (mm ²)	2.5 / 4 sq mm	
B	No. of wires in each conductor Nos.	As per Manufacturer standard	
C	Dia. of wires in each conductor before compaction (mm)	As per Manufacturer standard	
D	Shape of Conductor	As per Cl.2.1.1 of specification	
E	Diameter over conductor mm	....
F	Maximum Conductor resistance at 20 ° C (Ohm/Km)	As per Table 2 of IS 8130	
6.0	Insulation	As per Table 1 of IS:5831 – 1984	
A	Nominal thickness (mm)	As per Cl.2.1.2 of specification & Table 2 of IS 1554(Part-1)	
B	Minimum thickness (mm)		
C	Core Identification	As per Cl.10.1 (f) of IS: 1554 (Part-1)	
D	Diameter over Insulation (mm) Approx.	....
7.0	Inner Sheath	As per Table 2 of IS:5831 – 1984	
A	Minimum thickness (mm)	As per Table 4 of IS 1554(Part-1)	

B	Approx. dia. Over sheath (mm)- Apprx.	....
8.0	Galvanised Steel Armour	As per Cl 2.1.5 of specification	
A	Number of armour wire	As per Manufacturer Std.	
B	Nominal Dia of Round Wire	As per Table 5 of IS 1554(Part-1)	
C	Dia. over Armour – Apprx.	....
D	Lay Ratio	....
E	Confirm minimum 90% coverage (submit calculation)		
9.0	Outer Sheath	As per Table 2 of IS:5831 – 1984	
A	Thickness (Minimum)	As per Table 7 of IS 1554(Part-1)	
B	Colour	Black	
10.0	Approx. overall dia. (mm)	....
11.0	Drum Length & tolerance	As per Spec.Cl. 6.0.0	
12.0	End Cap	Required	
13.0	Drums provide with MS Spindle plate & Nut bolts arrangement	Required	
14.0	Net Weight of cable (Kg/Km.) – Apprx.	....
15.0	Continuous current rating for standard I.S. condition laid Direct		
	a) In ground 30° C Amps	....
	b) In duct 30° C Amps	....
	c) In Air 40° C Amps	....
16.0	Short circuit current for 1 sec of conductor. (KAmp)	....
17.0	Electrical Parameters at Maximum Operating temperature:		
A	Resistance (Ohm/Km) (AC Resistance)	....
B	Reactance at 50 C/s (Ohm/Km )	....
C	Impedance (Ohm/Km )	....
D	Capacitance (Micro farad / KM)	....
18.0	Recommended minimum bending radius	.... x O/D	

TECHNICAL SPECIFICATION**FOR****FIRE RETARDANT COATING****ON CABLES**

Prepared by <i>ah</i>	Reviewed by <i>GS</i>	Approved by <i>AA</i>	Page 1 of 8	
<i>ah</i>	<i>GS</i>	<i>AA</i>	Rev	0
AH	GS	AA	Date	26 Apr 2019

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TECHNICAL SPECIFICATION FOR FIRE RETARDANT COATING ON CABLES

1.0 SCOPE

- This specification covers the design, manufacture, testing, supply, erection & commissioning of Fire retardant coating on cables and its accessories.

2.0 CODES & STANDARDS

- Material, equipment and methods used in the manufacturing of fire retardant coating on cables shall confirm to the latest edition of following standard

Standard Name / No	Standard's Description
Indian Electricity Act	Latest Edition
CBIP manual	Latest Edition
IEC 60331-11	Tests for electric cables under fire conditions – Circuit integrity – Part 11: Apparatus – Fire alone at a flame temperature of at least 750 degree C
IEEE 383	IEEE Standard for Qualifying Electric Cables and Splices for Nuclear Facilities
IEC 60754-1	Test on gases evolved during combustion of materials from cables
ASTM D2843	Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics
ASTM D2863	Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)

3.0 SERVICE CONDITIONS

3.1	Max Ambient Temperature	50 deg C
3.2	Max Daily average ambient temp	40 deg C
3.3	Min Ambient Temp	0 deg C
3.4	Maximum Humidity	95%
3.5	Minimum Humidity	10%
3.6	Maximum annual rainfall	750 mm
3.7	Average no of rainy days per annum	60
3.8	Rainy months	June to Oct
3.9	Altitude above MSL	300 M
3.10	Seismic Zone	IV

4.0 GENERAL FEATURES

4.1	Base Type	Water based Intumescent coating
4.2	Color	Off white
4.3	Density	1.3 ± 0.05 g/cc
4.4	Mix ratio by weight	Single component
4.5	Solids by weight	64 ± 2 %
4.6	ph	8
4.7	Toxicity	Non-toxic, asbestos and lead free
4.8	DFT	1.6 mm
4.9	Coverage	3.2kg±0.10 kg/m ² @1.6mm DFT
4.10	Drying time	Surface dry in 30 mins
4.11	Functional Cure Time	48 hours
4.12	Application temperature	10-30°C
4.13	Temperature endurance	>1100°C
4.14	Application method	Brushing, Airless spraying
4.15	Fire Rating	2 Hours
4.16	Features	
4.16.1	Solvent free	Required
4.16.2	Eco friendly	Required
4.16.3	Free of any fibers including asbestos	Required
4.16.4	Single component, ready to apply/use	Required
4.16.5	Easy to apply using a paint brush/spray	Required
4.16.6	No de-rating effect on cables	Required
4.16.7	Added fire protection for existing cables	Required
4.16.8	Compatible with different sheathing chemistries of electrical cables	Required
4.17	Test	
4.17.1	Fire Resistance/Circuit Integrity	As per IEC 60331-11
4.17.2	Flame Retardance	As per IEEE 383
4.17.3	Flammability	As per IS 10810 (P-53)
4.17.4	HCL	As per IEC 60754-1
4.17.5	Smoke density	As per ASTM D2843
4.17.6	Limiting oxygen index	As per ASTM D2863
4.18	Make	Stanvac/3M/Demech

- Note- Any make other than specified in table above shall be subject to BSES Yamuna Power Limited Approval.

TECHNICAL SPECIFICATION FOR FIRE RETARDANT COATING ON CABLES**5.0 DEVIATIONS**

Deviation from this specification shall be stated in writing with the tender by reference to the specification clause/ GTP/ Drawing and description of alternative offer. In absence of such a statement, it shall be assumed by the buyer that the seller complies fully with this specification.

6.0 QUALITY, INSPECTION & TESTING

6.1	Vendor quality plan	To be submitted for purchaser approval
6.2	Inspection points	To be mutually identified & agreed in quality plan
6.3	Type test	Equipment shall be type tested from CPRI/ERDA/NABL accreted lab as per IEC/IS/UL standard.
6.4	Routine test	As per relevant standard
6.5	Acceptance test	To be performed in presence of Owner at manufacturer works shall be as per approved QAP

7.0 GTP

Vendor must submit clause wise compliance against specification at the time of drawing approval.

8.0 DRAWING AND DATA SUBMISSION MATRIX

S. No	Head	Bid	Drawing Approval	Pre Dispatch	Pre Closure
8.1	Contact Person Name, Email ID and Mobile Number	Required	Required		
8.2	Deviation Sheet (as per "Deviations" Clause)	Required			
8.3	GTP	Required	Required		
8.4	Relevant Type Test as per IS/IEC/UL	Required	Required		

TECHNICAL SPECIFICATION FOR FIRE RETARDANT COATING ON CABLES

S. No	Head	Bid	Drawing Approval	Pre Dispatch	Pre Closure
8.5	Manufacturer's quality assurance plan and certification for quality standards		Required		
8.6	Sizing Calculation of Associated Equipment		Required		
8.7	Recommended Spares for five years of operation)		Required		
8.8	Drawings	Required	Required		
8.9	QAP		Required		
8.10	BOQ		Required		
8.11	Make of all Component as per specification		Required		
8.12	Installation, erection and commissioning manual		Required		
8.13	Inspection Reports			Required	
8.14	As manufacturing Drawings			Required	
8.15	Operation and Maintenance Manual			Required	
8.16	Trouble shooting manual			Required	
8.17	As built Drawings				Required

9.0 PACKING

9.1	Packing Protection	Against corrosion, dampness, heavy rains, breakage and vibration. During transportation/ transit and storage, module may be subjected to outdoor conditions. Hence, packing of each panel shall be weatherproof.
9.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection & identification Label

TECHNICAL SPECIFICATION FOR FIRE RETARDANT COATING ON CABLES

9.3	Packing Identification Label to be provided on each packing case with the following details
9.3.1	Individual serial number
9.3.2	Purchaser's name
9.3.3	PO number (along with SAP item code, if any) & date
9.3.4	Equipment Tag no. (if any)
9.3.5	Destination
9.3.6	Project Details
9.3.7	Manufacturer / Supplier's name
9.3.8	Address of Manufacturer / Supplier / it's agent
9.3.9	Description and Quantity
9.3.10	Country of origin
9.3.11	Month & year of Manufacturing
9.3.12	Case measurements
9.3.13	Gross and net weights in kilograms
9.3.14	All necessary slinging and stacking instructions

10.0 SHIPPING

10.1	Shipping	<p>The bidder shall ascertain at an early date and definitely before the commencement of manufacture, any transport limitations such as weights, dimensions, road culverts, Overhead lines, free access etc. from the Manufacturing plant to the project site. Bidder shall furnish the confirmation that the proposed Packages can be safely transported, as normal or oversize packages, up to the site. Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser.</p> <p>The seller shall be responsible for all transit damage due to improper packing.</p>
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11.0 HANDLING AND STORAGE

11.1	Handling and Storage	Manufacturer instruction shall be followed. Detail handling & storage instruction sheet / manual needs to be furnished before commencement of supply.
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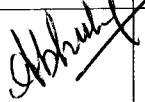
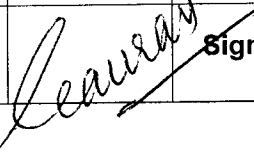
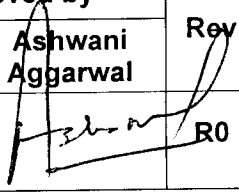
BSES

SP-MOM-114-R0

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX

TECHNICAL SPECIFICATION
OF
MANUAL OPERATING MECHANISM BOX
FOR 66& 33 KV ISOLATOR

SPECIFICATION NO. – SP-MOM-114-R0

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Abhishek Vashistha	Name	Gaurav Sharma	Name	Ashwani Aggarwal		
Sign		Sign		Sign		R0	30.01.2018

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Annexure-A: SCHEMATIC ARRANGEMENT

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX**1.0. SCOPE OF SUPPLY**

The scope of supply includes the following-

- 1.1 Design, Engineering, Manufacturing, Assembly, Inspection, Testing of manual operated mechanism for 33 & 66 kV isolator at manufacturer's works, Packing and Transportation, supervision of testing, erection and commissioning at site.
- 1.2 Supply of the following accessories with complete MOM box unit
 - a. Clamp and connectors
 - b. Stainless steel hardware like nut bolts, washers, etc. for fixing of all equipment/accessories in the scope of the bidder.
 - c. Any other item necessary for usual for efficient performance and satisfactory maintenance under the various operating and atmospheric conditions.
- 1.3 Civil foundation or works is excluded from supply unless otherwise specified in bid document.

2.0. STANDARDS & CODES

Materials, equipment and methods used in manufacturing of MOM box shall conform to the latest edition of following-

STANDARD CODE	STANDARD DESCRIPTION
Latest Edition	Indian Electricity Rules
Latest Edition	Indian Electricity Act
Latest Edition	CBIP Manual
IEC : 62271 - 102	High-Voltage Switchgear and Controlgear Alternating current Disconnectors and Earthing Switches
IS : 9921 - Part I to V	Specification for Alternating Current Disconnectors (Isolators) and Earthing Switches
IS : 996 - 1979	Single Phase Small AC and Universal Electric Motors.
IS : 7572 - 1974	Guide for Testing Single Phase AC and Universal Motors.
IS : 4237 - 1967	General Requirement for Switchgear for voltage not exceeding 1.1 kV.
IS : 2147 - 1962	Degree of protection provided by enclosure for low-voltage switchgear control gear
IS : 2544	Porcelain Post Insulator
IS : 2629 - 1985	Recommended Practice for Hot-Dip Galvanizing of Iron and Steel
IS : 6639 - 1972	Specification for Hexagon Bolts for Steel Structures

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX**3.0. SERVICE CONDITIONS**

MOM boxes to be supplied against this specification shall be suitable for satisfactory operation under the following conditions-

S No.	PARAMETERS	CONDITION
3.1	Average grade atmosphere	Heavily polluted, Dry
3.2	Maximum altitude above sea level	1000M
3.3	Ambient Air Temperature	Highest 50Deg C, Average 40Deg C
3.4	Minimum Ambient air Temperature	0 Deg C
3.5	Maximum Relative Humidity	100%
3.6	Rainfall	750mm concentrated in four months

4.0. DESIGN FEATURES

S No.	DESCRIPTION	BSES REQUIREMENT	DATA BY VENDOR
4.1	Application	Outdoor type Manual	
4.2	Interlock with circuit breakers	Electrical interlock with solenoid	
4.3	operating DC voltage for solenoid	220V / 48 V	
4.4	Solenoid to be operable in range of 70% to 120% rated DC voltage	154V - 264V / 35-60 V	
4.5	Dimensions (Height X Breadth X Depth)	400X350X250mm (approx.)	
4.6	Enclosure Material	Aluminium alloy (corrosion resistant)	
4.7	Sheet thickness of body and door	3 mm	
4.8	Door gasket	15mm EPDM	
4.9	Powder coating	Shade 692 of IS 5	
4.10	Ingress Protection rating	IP 55	
4.11	Output flange 127pcd 12 holes dia 18mm (one spare flange to be provided)	2 no's 10mm thick	
4.12	MS detachable Gland Plate	3mm	
4.13	Copper braided flexible strip for earthing of operating handle with both ends fixing holes and GI nut bolt washer shall be provided.	2 No's 25X3mm and 1 metre long(Tinned)	

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX

4.14	MS Operating handle	40NB with 3.2mm thickness & 850mm length Hot dip galvanized	
4.15	ON-OFF position stoppers (rotation) with adjustment provision	To be provided	
4.16	Auxiliary Switch with 6 no's NO, 6 no's NC contacts, CB interlock, Supply contacts, spare	MANI/SHIRKE make	
4.17	Terminal Block	Stud type screw driver operated suitable for 6sqmm wire, Make: Connectwell / Elmex	
4.18	Terminal Block Make	Connectwell/Elmex make	
4.19	DC MCB	2 No's 2A DC MCB Make: Merlin Gerin / Siemens / Schneider/ ABB/C&S	
4.20	Push button	Required	
4.21	Mechanical interlock to be provided with electrical interlocking	Electrical interlocking and mechanical locking using key	
4.22	Earthing Bolt	M12 size	
4.23	Operating rod length	100mm length below flange	
4.24	Wiring to be done using	1100V 1.5sqmm Cu wire	
4.25	Circuit Diagram to be provided by screen printing on Aluminium sheet and to be pasted on inner side of the door	To be Provided	

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX

4.26	Rating Plate shall be Screen Printed 1.5 mm thick Anodized Aluminum with minimum following details: a. Item Name: Manual Operated Mechanism Box b. Manufacturer's Name & Address c. Purchase name- BSES Yamuna Power Ltd, Delhi d. Auxiliary Voltage Rating: 220 V / 50 V DC e. Month & Year of Manufacturing f. Purchase order no. and date g. Box Serial Number	To be Provided	
4.27	Rating plate shall be affixed on both inside and outside of MOM box door.	To be Provided	
4.28	All control wiring must be covered with insulating sleeve.	To be Provided	
4.29	All nuts/Bolts/screws installed inside box shall be of Stainless steel	To be Provided	
4.30	All nuts/Bolts/screws installed outside box shall be of Galvanized Iron.	To be Provided	
4.31	Push button & Indicator must be of good quality. Indicator must be suitable for DC voltage rating of the MOM box.	To be Provided	
4.32	Tinned plated copper braid shall be provided with each MOM box.	To be Provided	
4.33	Ends of rubber gaskets shall be fixed with gasket lock.	To be Provided	

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX**5.0. SHIPPING, HANDLING & SITE SUPPORT**

5.1	Packing Protection	Against any damage, corrosion & heavy rains.
5.2	Packing for accessories and spares	Robust non returnable packing case with all the above protection & identification label.
5.3	Packing Identification Label	Following details to be provided on the packing identification label:- 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 and quality 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
5.4	Shipping	The bidder shall ascertain at an early date and definitely before the commencement of manufacture, any transport limitations such as weights, dimensions, road culverts, overhead lines, free access etc. from the manufacturing plant to the project site. Bidder shall furnish the confirmation that the proposed Packages can be safely transported, as normal or oversize packages, up to the site. Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser. The seller shall be responsible for all transit damage due to improper packing.
5.5	Handling and Storage	Manufacturer instruction shall be followed. Detail handling & storage instruction sheet / manual needs to be furnished before commencement of supply.

6.0. DEVIATIONS

List of deviations shall be stated in writing with the tender by reference to the Specification clause / GTP/ Drawing. In absence of such a statement, requirements of the Specification shall be assumed to be met without exception by the vendor.

7.0. DOCUMENT SUBMISSION

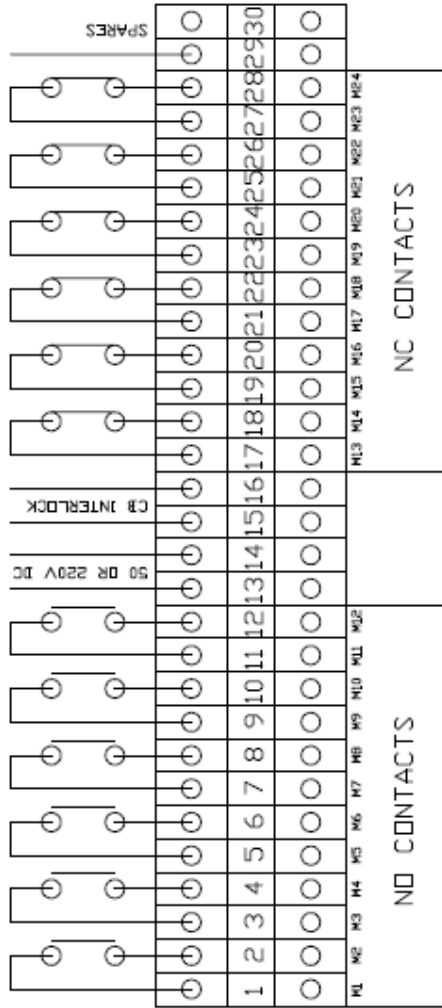
7.1	The seller has to submit the following documents along with bid
7.1.1	GA / cross sectional drawing of Disconnecting Switch with all its accessories showing all the views / sections / parts

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX

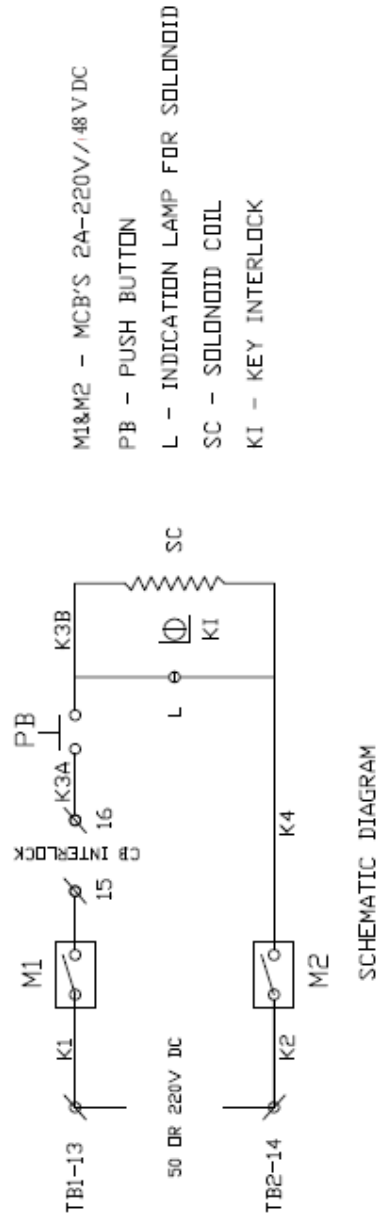
7.1.2	Detailed reference list of customers using the offered product during the last 5 years with similar design and rating
7.1.3	Completely filled GTP
7.1.4	Manufacturer's quality assurance plan and certification for quality standards
7.1.5	Type test reports for the offered disconnecting switch and other accessories
7.1.6	Complete product catalogue and Manual
7.1.7	Bill of material with make, model & quantity of items.
7.2	After award of contract, seller has to submit the following documents for buyer's Approval {A} / Reference {R}.
7.2.1	Program for production and testing (A)
7.2.2	Guaranteed Technical Particulars (A)
7.2.3	Calculations to substantiate choice of electrical, structural & mechanical component size/ratings (A)
7.2.4	Detailed dimensional drawing of components (A) GA drawing of major components (R) Rating and Diagram plate (R)
7.2.5	Detailed loading drawing to enable the buyer to design and construct foundations (as applicable) (R)
7.2.6	Detailed installation & commissioning instructions
7.2.7	Quality Assurance Plan (A)
7.2.8	Operation Manual
7.2.9	Inspection and routine test reports, carried out in manufacturer's works
7.2.10	Test certificates of all bought out items
7.2.11	Detailed bill of material for all fittings & accessories with their make & model
7.2.12	Drawing and document sizes
7.2.13	Number of Documents required at different stages shall be as per scope of supply.
7.2.14	Duly signed & stamped copies of the drawings / documentation are required to be submitted to BSES for approval.

TECHNICAL SPECIFICATION OF MANUAL OPERATING MECHANISM BOX

Annexure A - SCHEMATIC ARRANGEMENT



SCHEMATIC DIAGRAM SHALL BE PRINTED BY INDELIBLE INK ON POLYVINYL STICKER. AFFIX STICKER ON MOM BOX INSIDE DOOR

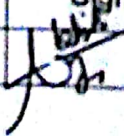




SCHEMATIC DIAGRAM

TECHNICAL SPECIFICATION

FOR

66/33KV CONTROL & RELAY PANEL

Prepared by		Reviewed by		Approved by		Rev	04
Name	Sign	Name	Sign	Name	Sign	Date	12 th Jul 2019
AH		GS		AA		Page	1 of 37

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1.0 REVISION OF RECORD

S. No	Item/ Clause No	Change/ Addition	Reason of Change/Addition	Revision
1.1	6.7	Segregation of TBs	For ease of Maintenance	R4
1.2	9.1.2	Feeder Name plate has been made elaborative	Control Voltage and Customer care No Head has been added in Name Plate	R4
1.3	11.4	Freezing Energy meter space	For clarity of Space	R4
1.4	NA	Ammeter requirement has been removed from specification	As MFM is integral part of C&R Panel, hence Ammeter not required	R4
1.5	12.0	Bay control unit added in each type of panel	To enable bay control from single relay	R4
1.6	12.0	Reverse blocking scheme	For relay coordination margins	R4
1.7	12.1.6	Data Type 9 has been added in IEC 103 Protocol	For clarity on communication protocol	R4
1.8	12.1.9	GOOSE messaging capability added for all protection relays	To enable soft interlocks	R4
1.9	12.10.1	Auxiliary supply of relay/contactor without External Resistors	For clarity on Auxiliary Supply voltage	R4
1.10	13.0	Synch Check Philosophy	For Clarity on Synch check Function	R4
1.11	14.0	Managed Ethernet Switch	For Bay Level communication	R4
1.12	22.0	Inclusion of Drawing and Data Submission Matrix	To streamline drawing/document submission	R4
1.13	26.1.2	AVR Relay Mounting to be of rack type	For ease of cable termination and troubleshooting	R4
1.14	26.4.3	SCADA Interface compatibility of Analog Inputs of Transformer Monitoring cum AVR Relay	For Communication of SCADA Signals	R4

2.0 SCOPE

- This specification covers design, manufacture, testing at manufacturer's works, packing and delivery of control and relay panel (CRP) for 66kV and 33kV substations.
- The control and relay panel shall be complete with all components and accessories, which are necessary or usual for their efficient performance and trouble free operation under the various operating and atmospheric conditions. Such parts that may have not been specifically included, but otherwise form part of the CRP as per standard trade and/or professional practice and/or are necessary for proper operation of control and relay panel, will be deemed to be included in this specification.
- Scope also includes-Licensed programming software and communication cord for offered numerical relays, One set of special tools and tackles (if any) required for maintenance of CRP and its components, Spares as per Annexure C, All relevant drawings, data and instruction manuals.

3.0 CODES AND STANDARDS

Control and Relay panel should be designed and manufactured in accordance with the following standards.

3.1	IS-1248, Part 1- 1993	Direct acting indicating analogue electrical measuring instruments and their accessories.
3.2	IS-3231, Part 1- 1986 Part 2 &3 -1987	Electrical relays for power system protection
3.3	IS-9000 Part 1 -1988	Basic environmental testing procedures for electronics & electrical items
3.4	IS-13703 1993	Low voltage fuses for Voltages not exceeding 1000V AC or 1500 V DC
3.5	IS-13947 Part 1 - 1993	Low voltage switchgear & control gear
3.6	IEC-60255 - 1989	Specification for electrical relays
3.7	IEC 60688 1997	Electrical measuring transducers

4.0 PANEL CONSTRUCTION

4.1	Panel Type	Simplex panels with Width - 1000mm and Depth – 800 to 1000mm. Equipment shall be mounted on the front of the panel and doors for wiring access shall be at the back of panels.
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TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

4.2	Enclosure type	Completely metal enclosed and dust, moisture and vermin proof. Degree of protection not less than IP4X in accordance with IS 13947
4.3	Enclosure material	Pre-galvanized, cold-rolled sheet steel of thickness not less than 2.0 mm. Stiffeners shall be provided wherever necessary.
4.4	Doors	Double leaf doors shall be provided at the rear. Doors shall have handles with built-in locking facility. Locks of the door shall be lever type.
4.5	Gland Plate	At least two separate gland plates of removable type with gasket shall be provided for each panel. They shall be of sheet steel of thickness not less than 3.0 mm.
4.6	Cable Entry	Shall be from the bottom
4.7	Cable clamping	Cable glands shall not be used to support control cables. Vendor must provide clamping arrangement of control cable.
4.8	Gaskets	All doors, removable covers and panels shall be gasketed all around with neoprene gaskets.
4.9	Ventilating louvers	Ventilating louvers, if required,, shall have screens and filters. The screens shall be made of either brass or GI wires mesh.
4.10	Foundation	The panels shall be fixed on the embedded foundation channels with intervening layers anti vibration strips made of shock absorbing materials.
4.11	Base Frame	Base frames shall be supplied along with panels. 100mm channel painted black.
4.12	Mounting	Equipment on front of panel shall be flush mounted. No equipment shall be mounted on the doors.
4.13	Working level	The center lines of switches, push buttons and indicating lamps shall not be less than 750mm and higher than 1600mm from panel base. Height of relays, meters and recorders shall not be less than 450 mm from the bottom of the panel.
4.14	Appearance	The center lines of switches, push buttons and indicating lamps shall be matched to give a neat and uniform appearance. Likewise the top lines of all meters, relays and recorders etc, shall be matched.
4.15	Make	To be provided by Vendor

5.0 WIRING

5.1	Internal wiring	1100V grade, FRLS type, single core, stranded copper conductor wires with PVC insulation.
5.2	Size	2.5 sqmm for CT circuits, 2.5 sqmm for PT and control circuits.
5.3	Colour Code	
5.3.1	CT & PT	R Ph – Red Y Ph – Yellow B Ph – Blue Neutral – Black
5.3.2	Others	DC– grey, AC-black, Earth – green
5.4	Ferrules	Ferrules marked to correspond with panel wiring diagram shall be fitted at both ends of each wire. Ferrules shall fit tightly on the wire. Wires directly connected to trip circuit shall be distinguished by the addition of red colored unlettered ferrule.
5.5	Termination	Fork type, pin type and ring type (as applicable) tinned copper lugs to be used. Only ring type lugs should be used in CT circuits. Insulated sleeves shall be provided at all the wire terminations.
5.6	Wiring Enclosure	Plastic channels to be used as enclosures. PVC sleeves to be used for interpanel wiring.
5.7	Spare Contacts	Spare contacts of relays and contactors etc. should be wired upto the terminal block.
5.8	Inter-panel wiring	When panels are arranged to be located adjacent to each other inter panel wiring of common bus wires between the panels should be supplied with one end terminated and the other end bunched and coiled. Inter panel wiring shall be clearly indicated in the wiring tables.
5.9	Auxiliary supply	Auxiliary bus wiring for AC and DC supplies, voltage transformer circuits, annunciation circuits and other common services shall be provided on the same set of terminals in all the panels with proper segregation.

6.0 TERMINAL BLOCKS

6.1	Rating and Type	1100 V grade, molded piece, stud type screw driver operated terminals complete with insulated barriers, washers, nuts and lock nuts.
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TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

6.2	Suitability	Unless otherwise specified, terminal blocks shall be suitable for connecting the following conductors of cable on each side- <ul style="list-style-type: none"> a. All circuits including current / voltage transformer circuits: 6mm² flexible copper. b. AC / DC power supply circuits: one no of 10 mm² Al./ 6 mm² flexible Cu.
6.3	Marking and covers	White fibre markings strip with clear plastic, slip-on / clip-on terminal covers to be provided.
6.4	Disconnecting Facility	To be provided in CT and PT terminals
6.5	Shorting & Earthing Facility	To be provided in CT Terminals
6.6	Spare Terminals	20% in each TB row
6.7	Segregation	TBs shall be segregated by application i.e separate terminal blocks shall be provided for each application as follows <ul style="list-style-type: none"> (a) CT (b) PT (c) Circuit Breaker (d) Bus Isolator (e) Line Isolator-1 (f) Line Isolator-2 (g) Earth Switch-1 (h) Earth Switch-2 (i) Interpanel Bus wiring etc.
6.8	Vertical clearance with gland plate	Minimum 250mm
6.9	Clearance between two rows of TBs	Minimum 150mm
6.10	Test Terminal Blocks	Screw driver operated stud type for metering circuits.
6.11	Arrangement	Arrangement of the terminal block assemblies and the wiring channel within the enclosure shall be such that a row of terminal block runs in parallel and close proximity to each side of the wiring duct. The side of the terminal block opposite the wiring duct shall be reserved for the external cable connection.
6.12	Categorization	For ease of external connections, terminal blocks shall be categorized based on their usage i.e all terminals for wiring of particular equipment like circuit breaker should form one terminal block.

7.0 PAINT

7.1	Paint Type	Powder coated. Pure Polyester base grade-A, structure finish.
7.2	Paint Shade	RAL7032 'Siemens Grey'
7.3	Paint Thickness	Minimum 50 microns

8.0 MIMIC DIAGRAM

8.1	System Representation	Colored mimic diagram and symbols showing the exact representation of the system shall be provided in the front of control panels
8.2	Material	Mimic diagram shall be made preferably of painted aluminum or plastic (approved material), which shall be screwed on to the panel and can be easily cleaned. Painted overlaid mimic is also acceptable. The mimic bus shall be 2-3 mm thick. The width of the mimic bus shall be 12mm for bus bars and 10 mm for other connections.
8.3	Mimic Indications	LED indications are to be used for breaker and isolator position and semaphore indicators shall be used for earth switch position.

9.0 NAMEPLATES AND MARKINGS

9.1	Nameplates	To be provided as per the following description
9.1.1	Equipment Nameplates	<p>a. All equipment mounted on front side as well as equipment mounted inside the panels shall be provided with individual name plates with equipment designation engraved.</p> <p>b. All front mounted equipment shall be also provided at the rear with individual name plates engraved with tag numbers corresponding to the one shown in the panel internal wiring to facilitate easy tracing of the wiring.</p>
9.1.2	Feeder Nameplates	<p>(a) Large and bold name plate carrying the feeder identification numbers shall be provided for circuit / feeder designation on the top of each panel on front as well as rear side.</p> <p>(b) Rear bottom of each panel shall have a nameplate clearly indicating the following:</p> <ul style="list-style-type: none"> (i) Customer Name (ii) BSES, PO No. & date (iii) Drawing Reference No (iv) Year of Manufacture

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

		(v) Control Voltage (vi) Customer care No
9.1.3	Material	Non-rusting metal or 3 ply lamicaid. Nameplates shall be black with white engraving lettering. Stickers are not allowed.
9.1.4	Fixing	All nameplates/rating plates shall be riveted to the panels at all four corners. Bolting/screwing is not acceptable.
9.2	Markings	Each switch shall bear clear inscription identifying its function. Similar inscription shall also be provided on each device whose function is not otherwise identified. If any switch or device does not bear this inscription separate nameplate giving its function shall be provided for it. Switch shall also have clear inscription for each position indicating e.g. Trip-Neutral close, ON-OFF etc.

10.0 EARTHING

10.1	Panel Earthing	All panels shall be equipped with an earth bus securely fixed.
10.2	Location of earthing earthing bus	Earthing bus shall be at rear side of CRP(Door Side)
10.3	Material	The material and the sizes of the bus bar shall be 25 x 6 mm copper flat unless specified otherwise.
10.4	Earth Bus joints	All bolted joints in the bus should be effected by connection of two bolts.
10.5	Hinged Doors	Earthed through flexible copper braid.
10.6	Instrument and Relay Earthing	All metallic cases of relays, instruments and other panel mounted equipment including gland plate, shall be connected to the earth bus by copper wires of size not less than 2.5 mm ² . The color code of earthing wires shall be green.
10.7	CT and PT circuit earthing	PT and CT secondary neutral shall be earthed at one place only at the terminal blocks through links.

11.0 INSTRUMENTS

11.1	Mounting	Flush mounted
11.2	Voltmeter	Digital type with programmable ratio
11.2.1	Size	96x96 mm

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

11.2.2	Panels where to be provided	Incomer and Buscoupler
11.2.3	Voltmeter selector switch	Required
11.2.4	Accuracy Class	1.0
11.2.5	Auxiliary Supply	48 – 240VDC and AC i.e universal type.
11.2.6	Make	To be Provided by Vendor
11.2.7	Type/Model	To be Provided by Vendor
11.2.8	VA Burden	To be Provided by Vendor
11.3	Multifunction Meter	Digital type with programmable ratio
11.3.1	Model	Rish Delta Energy,
11.3.2	Make	Rishabh
11.3.3	SCADA Interfacing	RS485 rear port suitable for integration on Modbus Protocol
11.3.4	Size	96x96 mm
11.3.5	Panels where to be provided	All panels
11.3.6	Accuracy Class	1.0
11.3.7	Auxiliary Supply	48 – 240VDC and AC i.e universal type.
11.4	Energy meter provision	Energy meter is not in supplier's scope. Only space and CT/PT wiring is to be provided in all panels except bus coupler and bus PT. Space shall be 350 mm (H)x200 mm (W)

12.0 RELAYS

12.1	General features of Protection Relays	
12.1.1	Technology and Functionality	Numerical, microprocessor based with provision for multifunction protection, control, metering and monitoring
12.1.2	Mounting	Flush Mounting, IP5X
12.1.3	Architecture	Hardware and software architecture shall be modular and dis-connectable to adapt the protection and control unit to the required level of complexity as per the application.
12.1.4	Programming and configuration	Relay shall utilize a user friendly setting and operating multi-lingual software in windows environment with menus and icons for fast access to the data required. Programming software and communication cord for offered relays should be included in scope of supply.

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

12.1.5	SCADA Interface port	RS485 rear port. If relays have any other rear port, hardware/software required to achieve the above said compatibility will be in supplier's scope.
12.1.6	Communication Protocol	RS485 rear port for interfacing with SCADA on IEC103(Data Type 9) and Dual fibre optic port for interfacing with SCADA on IEC 61850 with PRP compatibility. Through these ports relays shall be connected to switches. Communication protocol shall be selectable at site.
12.1.7	Communication Card	Extra inbuilt card required for redundancy purpose with each relay
12.1.8	PC Interface port	Front port (preferably serial) for configuration/data download using PC.
12.1.9	GOOSE messaging	Relays shall communicate all status signals, commands and events on GOOSE messaging. Interlocks if any shall also be on GOOSE Messaging and wiring for that shall be in vendor's scope.
12.1.10	User Interface	An alphanumeric key pad and graphical LCD display with backlight indicating measurement values and operating messages. It should be possible to access and change all settings and parameters without the use of PC.
12.1.11	Relay Characteristics	Relay shall integrate all necessary protections for different applications in accordance with IS and IEC. Relay shall provide wide setting ranges and choice of all IEC, IEEE and other tripping curves through a minimum of two setting groups.
12.1.12	Event and Fault records	(a) Relay shall have the facility of recording of various parameters during event/fault with option to set the duration of record through settable pre fault and post fault time. (b) Relay shall store records for last 100 events (minimum) (c) Relay shall store records for last 10 faults (minimum). (d) It should be possible to download records locally to PC and to remote SCADA.
12.1.13	Measurement	Relays shall be capable of transmitting current, voltage, power, fault type and other measured parameters to SCADA.
12.1.14	Self diagnosis	Relay shall be able to detect internal failures and same shall be transmitted to SCADA as a soft signal. A watchdog relay with changeover contact shall provide information about the failure for annunciation.
12.1.15	Time synchronization	All relays shall be capable of being synchronized with the system clock through SCADA, PC and GPS.
12.1.16	Operation Indicators	(a) LEDs with push button for resetting. (b) Resetting of LEDs shall be possible from SCADA
12.1.17	Test Facility	Inbuilt

12.2	Protection Relay Requirement for Line CRP (66kV/33kV)	
12.2.1	Relay 1	Combined Line differential and distance protection
		Software based CT ratio correction
		Dedicated port for communication with remote end relay through optical fibre. This port should be in addition to PC interface and SCADA interface ports.
12.2.2	Relay 2	Bay Control unit with 3-phase Directional Overcurrent and Earthfault protection with IDMT, Definite time and instantaneous characteristics.
		Sync check function (Refer clause 13 for details)
		Power swing blocking
		Reverse Blocking Function
		PT supervision
12.2.3	User Configurable DIs and DOs	(a) Relay-1 should have DIs and DOs as per scheme requirement. Same shall be finalized during detailed engineering. 2 DIs and 2 DO shall be spare for future use.
		(b) Relay-2 should have minimum of 32 DIs and 16 DOs Exclusively for SCADA interfacing. DIs and DOs for tripping and interlocking shall be additional as per scheme requirement. If DIs and DOs for tripping and interlocking are integrated with DIs and DOs meant for SCADA (may be done to optimize DI/DO configuration), atleast 4 DIs and 4 DOs should be available as spare in each panel for future use.
12.2.4	Note	Combining functions of Relay-1 and Relay-2 in single relay is not acceptable.
12.2.5	SLD	Refer annexure D1 and D5 for SLD of 66kV and 33kV line bays respectively
12.3	Protection Relay Requirement for Transformer CRP (66kV/33kV)	
12.3.1	Relay-1	Biased Differential Protection
		High Impedance REF protection
		Software based ratio and vector correction feature (without ICT)
		H2 and H5 harmonic restraint
12.3.2	Relay-2	Bay Control unit with 3-phase Overcurrent and earthfault protection with IDMT, Definite time and instantaneous characteristics.

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

		Reverse Blocking Function
		Circuit breaker failure protection (CBFP)
12.3.3	User Configurable DIs and DOs	(a) Relay-1 should have DIs and DOs as per scheme requirement. Same shall be finalized during detailed engineering. 2 DIs and 2 DO shall be spare for future use. (b) Relay-2 should have minimum of 32 DIs and 16 DOs Exclusively for SCADA interfacing. DIs and DOs for tripping and interlocking shall be additional as per scheme requirement. If DIs and DOs for tripping and interlocking are integrated with DIs and DOs meant for SCADA (may be done to optimize DI/DO configuration), atleast 4 DIs and 4 DOs should be available as spare in each panel for future use.
12.3.4	Note	Combining the functions of Relay-1 and Relay-2 in a single relay is not acceptable.
12.3.5	SLD	Refer annexure D2 and D6 for SLD of 66kV and 33kV transformer bays respectively
12.4	Protection Relay Requirement for Bus Coupler CRP (66kV/33kV)	
12.4.1	Relay-1	3-phase Overcurrent and earthfault protection with IDMT, Definite time and instantaneous characteristics.
		Sync check function (Refer clause 13 for details)
		Circuit breaker failure protection (CBFP)
		PT supervision (fuse failure monitoring) for Bus PT-1
12.4.2	Relay-2	Bay Control Unit with PT supervision (fuse failure monitoring) for Bus PT-2 if not provided as part of relay-1
		Reverse Blocking Function
12.4.3	User Configurable DIs and DOs	(a) Relay-1 should have DIs and DOs as per scheme requirement. Same shall be finalized during detailed engineering. 2 DIs and 2 DO shall be spare for future use. (b) Relay-2 should have minimum of 32 DIs and 16 DOs Exclusively for SCADA interfacing. DIs and DOs for tripping and interlocking shall be additional as per scheme requirement. If DIs and DOs for tripping and interlocking are integrated with DIs and DOs meant for SCADA (may be done to optimize DI/DO configuration), atleast 4 DIs and 4 DOs should be available as spare in each panel for future use.
12.4.4	SLD	Refer annexure D3 and D7 for SLD of 66kV and 33kV bus coupler bays respectively
12.5	Protection Relay Requirement for Capacitor CRP (66kV/33kV)	
12.5.1	Relay-1	3-phase Overcurrent and earthfault protection with IDMT, DMT and instantaneous characteristic.

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		Overvoltage and Undervoltage protection
		Circuit breaker failure protection (CBFP)
		Timer for ON time delay (600 seconds minimum)
12.5.2	Relay-2	Bay control unit with Neutral unbalance relay (current based)
		Reverse Blocking Function
12.5.3	User Configurable DIs and DOs	(a) Relay-1 should have DIs and DOs as per scheme requirement. Same shall be finalized during detailed engineering. 2 DIs and 2 DO shall be spare for future use. (b) Relay-2 should have minimum of 32 DIs and 16 DOs Exclusively for SCADA interfacing. DIs and DOs for tripping and interlocking shall be additional as per scheme requirement. If DIs and DOs for tripping and interlocking are integrated with DIs and DOs meant for SCADA (may be done to optimize DI/DO configuration), atleast 4 DIs and 4 DOs should be available as spare in each panel for future use.
12.5.4	Note	Combining the functions of Relay-1 and Relay-2 in a single relay is not acceptable
12.5.5	SLD	Refer annexure D4 and D8 for SLD of 66kV and 33kV capacitor bays respectively
12.6	SCADA Interfacing of Protection Relays	
12.6.1	Configuration and wiring of DIs of protection relays for routing status signals to SCADA	DI-1 – CB Open DI-2 – CB Close DI-3 – Earth switch 1 close DI-4 – Earth switch 2 close DI-5 – Line Isolator Open (For Bus Coupler Panel - Earth switch 3 close) DI-6 – Line Isolator Close (For Bus coupler panel - Earth switch 4 close) DI-7 – Bus 1 Isolator Open DI-8 – Bus 1 Isolator Close DI-9 – Bus 2 Isolator Open DI-10 – Bus 2 Isolator Close DI-11 – TC Healthy DI-12 – CB Spring Charged DI-13 – SF6 Low/ SF6 Lockout DI-14 – Local/Remote switch in Remote DI-15 – CB Autotrip DI-16 – Protection/Trip relay faulty DI-17 – DC fail/DC MCB trip from adjacent panel (DC -1/2 fail for bus coupler panel) DI-18 – PT MCB trip (wherever relevant) Sequence of DIs should be strictly as mentioned above.

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

		Change in sequence of DIs will not be acceptable.
12.6.2	Configuration and wiring of DOs of protection relays for executing SCADA commands through SCADA interface port (refer clause 12.1.5).	DO-1 – CB Open DO-2 – CB Close DO-3 – Line Isolator Open DO-4 – Line Isolator Close DO-5 – Bus 1 Isolator Open DO-6 – Bus 1 Isolator Close DO-7 – Bus 2 Isolator Open DO-8 – Bus 2 Isolator Close Sequence of DOs should be strictly as mentioned above. Change in sequence of DOs will not be acceptable.
12.6.3	Looping	All relays should be looped to form a common bus for interfacing with SCADA.
12.7	Transformer Monitoring Cum AVR Relay	
12.7.1	Functions	As per annexure –A
12.7.2	Requirement	To be provided in Transformer CRP (Take off price to be mentioned in price bid)
12.8	General Features of Auxiliary Relays	
12.8.1	Type	Static or electromechanical.
12.8.2	Reset Characteristic	Self reset contacts except for lockout relays.
12.8.3	Operation Indicators	(a) Hand reset operation indicators or LEDs with pushbutton for resetting. (b) Resetting of LEDs shall be possible from SCADA
12.8.4	Lockout relay	Manual and Electrical reset type
12.8.5	Operational Data	Bidder shall provide the reference list of the type of relays offered
12.8.6	Spare Contacts	Minimum 1NO and 1NC. To be wired upto the terminal block.
12.9	Auxiliary relays – Panel wise requirement	
12.9.1	Lockout relay	To be provided in all panels
12.9.2	DC fail relay	
12.9.3	AC fail relay	
12.9.4	Trip circuit supervision relay	To be provided in all panels for supervision of two trip coils.
12.9.5	Bistable Relays	To be provided in all panels for multiplication of auxiliary contact of breakers, isolators and earth switches. Multiplied contacts to be used for interlocks, indications and numerical relay input. 2NO + 2NC contacts shall be spare after multiplication in each case.

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

12.9.6	PT selection relays	To be provided in all panels as per scheme requirement.
12.9.7	Contact Multiplication relay	<ul style="list-style-type: none"> a. To be provided in all panels b. SCADA Close and Open Command shall be wired up through CMR to Closing and Tripping circuit
12.9.8	Transformer Trouble Relays	<p>Auxiliary relays with indicating flags (contactors will not be accepted) should be provided in transformer panel for the following trip and alarm commands –</p> <ul style="list-style-type: none"> (a) Buchholz trip (b) OSR trip (c) PRV trip (d) SPR trip (e) WTI Trip (f) OTI Trip (g) OLTC PRV Trip (h) Buchholz Alarm (i) Low oil level alarm (j) OTI Alarm (k) WTI Alarm.
12.9.9	Transformer Trouble Relay Contact Multiplication	<ul style="list-style-type: none"> (a) Contact multiplication of Transformer trouble relays shall be provided with 2 NO and 2 NC contact as spare. (b) 1 NO contact of Buchholz, Differential, OSR, PRV, SPR, REF contact multiplication relay for NIFPS (Nitrogen Injection fire protection system) shall be provided.
12.9.10	SF6 low and SF6 lockout relay	To be provided in all 66kV control and relay panels
12.9.11	DC selection scheme	Fed by two DC incoming sources in Bus coupler panel with auto changeover facility
12.10	General Requirements for all relays/contactors	
12.10.1	Auxiliary supply	<ul style="list-style-type: none"> (a) 48-250 VDC. All relays/contactors shall be suitable for continuous operation at 15% overvoltage and 15% under voltage. (b) No external resistor shall be provided in relays /contactor to achieve desired voltage.
12.10.2	Spare contacts	Shall be wired upto the terminal block
12.10.3	Signal Integration	All signal integration shall only be through NO Contact

13.0 SYNCH CHECK PHILOSPHY

13.1	Dead Bus – Live Line	<p>(a) Application - Required for Charging of Bus from Line Supply</p> <p>(b) Logic - Sync check relay installed on line panel will check the line and bus voltage and derive that the line is live and bus is in dead condition i.e bus has to be charged by the line breaker. Hence Sync check relay will allow the line breaker to close in this condition.</p>
13.2	Dead Line – Live Bus	<p>(a) Application - Required for Charging of Line from Bus Supply</p> <p>(b) Logic - Sync check relay installed on line panel will check line and bus voltage and derive that the line is dead and bus is in live condition i.e line has to be charged from bus. Hence Sync check relay will allow the line breaker to close in this condition.</p>
13.3	Live Bus – Live Line	<p>(a) Application - Required for paralleling of bus and line supply</p> <p>(b) Logic - Sync check relay installed on line panel will compare magnitude and phase sequence of line and bus voltages. If the variations are within the range set in the relay, sync check relay will allow the closing of line breaker.</p>
13.4	Live Bus – Dead Bus	<p>(a) Application – Required for charging of dead bus through another live bus.</p> <p>(b) Logic – Sync check relay installed on bus coupler/bus section panel will check voltage of both buses and derive that one bus is dead and other bus is live i.e dead bus is being charged from live bus. Hence Sync check relay will allow the bus coupler/bus section breaker to close in this condition.</p>
13.5	Live Bus – Live Bus	<p>(a) Application – Required for paralleling of two buses/bus sections.</p> <p>(b) Logic – Sync check relay installed on bus coupler/bus section panel will compare the magnitude and phase sequence of voltage of both buses (or bus sections). If the variations are within the range set in the relay, sync check relay will allow the bus coupler/bus section breaker to close.</p>

14.0 MANAGED ETHERNET SWITCH

14.1	Communication Protocol	IEC 61850
14.2	Type	Ethernet switch shall be industrial grade.
14.3	Mounting	Ethernet switch shall be 19" rack mounted
14.4	Location	It shall be installed in CRP Panel only
14.5	Control Voltage	220 VDC / 50 VDC as per site condition
14.6	Configuration	All port shall be user configurable with minimum configuration of 100Mbps
14.7	Communication type	Fiber Optics and Ethernet copper CAT6/ above cable.
14.8	LED indicators	LED indicators on all ports shall be blinking with data transfer. Diagnostic/ error/ warning LED shall also be provided.
14.9	Support	(a) It should support remote user setting configuration (b) It should own separate maintenance/ console port
14.10	Latency	Shall not be more than 10ms
14.11	Certification	KEMA, CE and FCC Certified
14.12	Extensibility	Switch should be extendable for future expansion

15.0 ANNUNCIATION

15.1	Type	Static type alongwith alarm. Annunciations shall be repetitive type and shall be capable of registering the fleeting signal. Fascia test facility should also be provided.
15.2	Mounting	Flush mounted
15.3	Fascia	16 window
15.4	Signals to provided on Fascia	Window 1 – Main Protection Operated (Distance /Differential) Window 2 – Backup O/C & E/F Protection Operated Window 3 – CBFP operated Window 4 – CB Autotrip Window 5 – SF6 Low/SF6 Lockout (For 66kV CRP only) Window 6 – Trip Circuit Unhealthy Window 7 – DC Fail Window 8 – AC Fail Window 9 – VT Fuse Fail Window 10 – Protection Relay/Trip relay Faulty Window 11 – Trafo Trouble trip (For trafo panel only) Window 12 – Trafo Trouble alarm (For trafo panel only)

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

15.5	Push Buttons	For test, accept and reset
15.6	Potential Free Contacts	To be provided for event logger
15.7	Alarm	For all signals wired to the annunciator
15.8	Overall Dimension of Group	To be Provided by Vendor

Sequence of operation of the annunciator shall be as follows-

S No.	Alarm Condition	Fault Contact	Visual Annunciation	Audible Annunciation
a.	Normal	Open	Off	Off
b.	Abnormal	Close	Flashing	On
c.	Accept	Close	Steady on	Off
d.	Return to normal	Open	Steady On	Off
e.	Reset	Open	Off	Off
f.	Reset before return to normal	Close	Flashing	On

16.0 INDICATIONS

16.1	Indicating Lamps	Flush mounted Clustered LED type with rear terminal connections. Lamp Cover to be screwed type and moulded from heat resistant material
16.1.1	Breaker On	Red
16.1.2	Breaker Off	Green
16.1.3	Isolator Close	Red
16.1.4	Isolator Open	Green
16.1.5	Spring Charged	Blue
16.1.6	DC control supply healthy	Amber
16.1.7	Heater circuit healthy	Yellow
16.1.8	Trip circuit healthy	White
16.1.9	PT supply	R, Y, B
16.1.10	Voltage	220VDC/50 VDC
16.1.11	Rating	To be Provided by Vendor
16.1.12	Wattage	To be Provided by Vendor
16.1.13	Series Resistance	To be Provided by Vendor

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

16.1.14	10% extra Lamp Furnished?	To be Provided by Vendor
16.1.15	Size of lens	To be Provided by Vendor
16.1.16	Make	To be Provided by Vendor
16.1.17	Type	To be Provided by Vendor
16.2	Semaphores	To be provided for all earth switches.
16.2.1	Make	To be Provided by Vendor
16.2.2	Type	To be Provided by Vendor
16.2.3	Diameter of the Disc	To be Provided by Vendor
16.2.4	Operating voltage	220VDC/50 VDC
16.2.5	Burden (Watt DC)	To be Provided by Vendor
16.2.6	Whether latch in type or supply Failure type	To be Provided by Vendor

17.0 SELECTOR SWITCHES AND PUSH BUTTONS

17.1	Switches	Flush Mounted with shrouded terminals
17.1.1	TNC Switch	Pistol Grip type with spring return to normal position
17.1.2	Local/SCADA selector switch	2 pole
17.1.3	Rotary On/Off Switches	For heater/illumination circuit
17.1.4	Rating of switches	16 A
17.2	Push buttons	Flush Mounted with shrouded terminals
17.2.1	Accept Push Button	Black Color- Trip alarm/DC fail alarm
17.2.2	Reset Push Button	Yellow Color- Trip alarm/DC fail alarm
17.2.3	Test Push Button	Blue Color
17.2.4	Rating	10A

18.0 ACCESSORIES

18.1	Space heaters	Thermostat controlled with switch for isolation
18.1.1	Voltage	240 V AC

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

18.1.2	Wattage	To be provided by Vendor
18.1.3	Thermostat Range	To be provided by Vendor
18.1.4	Provided with Individual fuse unit	To be provided by Vendor
18.2	Socket and switch	240V, 5/15A universal type socket to be provided in each panel with on-off switch
18.3	MCBs and Fuses	Provision for receiving, distribution, isolation and fusing of DC and AC supplies to various control circuits should be made using MCBs and Fuses of appropriate ratings
18.4	Panel illumination	240V AC illumination lamp controlled by panel door switch to be provided in each panel

19.0 APPROVED MAKES OF COMPONENTS

19.1	Numerical Relays	(a) R Series of ABB (b) Siprotec series of Siemens (c) Micom series(PX40) of Schneider (d) Micom Series of GE (e) All numerical relays in a panel should be of same make. Use of two different makes of relays in a panel is not acceptable.
19.2	Trafo Monitoring Cum AVR relay	A-Eberle/Easun MR
19.3	Auxiliary Relays & Contact Multiplication Relays	Alstom/Schneider/ABB/Siemens/ER
19.4	Miniature Relays	ABB/ OMRAN
19.5	Contactors	ABB/Siemens/Schneider
19.6	MCBs	Siemens/Schneider/Legrand/ABB
19.7	Control switches	Switron/Kaycee
19.8	Annunciator	Minilec/Alan
19.9	Test terminal block	IMP/DAV
19.10	Terminal blocks	Elmex/Connectwell
19.11	Indicating lamps	Siemens/ Teknik/ Binay
19.12	Meters	Rishabh/Conzerv
19.13	Multi Function Meter	Rishabh (Rish Delta Energy)

19.14	Managed Ethernet Switch	Ruggedcom/ Hirschman/ GarrettCom
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20.0 QUALITY ASSURANCE, INSPECTION & TESTING

20.1	Vendor quality plan	To be submitted for purchaser approval
20.2	Type tests	Product must be type tested as per Indian Standards or IEC
20.3	Type test report validity	Last five years from the date of bid submission
20.4	Acceptance and Routine tests	As per specifications and relevant standards. Charges of these tests shall be deemed to be included in the equipment price. Purchaser reserves the right to witness all the tests.
20.5	Notice to Purchaser for conducting tests	Atleast three weeks in advance
20.6	Test reports of acceptance and routine test before dispatch	Six copies to be submitted.

21.0 DEVIATIONS

Deviation from this specification shall be stated in writing with the tender by reference to the specification clause/ GTP/ Drawing and description of alternative offer. In absence of such a statement, it shall be assumed by the buyer that the seller complies fully with this specification.

22.0 DRAWINGS AND DATA SUBMISSION MATRIX

- Document checklist for each stage is given in table below. (Refer equipment specification for details)
- Document check sheet compliance shall be the first sheet for each submission stage i.e. Technical bid, Drawing Approval, Pre Dispatch, Pre closure.
- No submission is acceptable without check list compliance.
- Deficient/ improper document/ drawing submission shall be liable for rejection.
- Order of documents shall be strictly as per the check list with in Soft copy with separate folder in proper nomenclature.
- Any drawing not included in the below table but necessary for detailed engineering shall be deemed to be included in bidder's scope.

S. No	Head	Bid	Drawing Approval	Pre Dispatch	Pre Closure
22.1	Contact Person Name, Email ID and Mobile Number	Required			
22.2	Consolidated Deviation Sheet	Required	Required		
22.3	GTP	Required	Required		
22.4	Relevant Type Test as per IS/IEC	Required			
22.5	Manufacturer's quality assurance plan and certification for quality standards		Required		
22.6	Sizing Calculation of Associated Equipment		Required		
22.7	Recommended Spares Apart from spares stated in Spec(for five years of operation)		Required		
22.8	Schematic		Required		
22.9	CRP				
22.9.1	General Arrangement	Required	Required		
22.9.2	Sectional Layout		Required		
22.9.3	Door Layout		Required		
22.9.4	Panel wise BOQ		Required		
22.9.5	Index Sheet		Required		
22.9.6	Symbols		Required		
22.9.7	SLD	Required	Required		
22.9.8	Trip Logic		Required		
22.9.9	AC Distribution Circuit		Required		
22.9.10	DC Distribution Circuit		Required		
22.9.11	CT Distribution Circuit		Required		
22.9.12	VT Distribution Circuit		Required		
22.9.13	Voltage Selection Circuit		Required		
22.9.14	Metering Circuit		Required		
22.9.15	Indication Circuit		Required		

S. No	Head	Bid	Drawing Approval	Pre Dispatch	Pre Closure
22.9.16	Isolator Control Circuit		Required		
22.9.17	Protection Circuit		Required		
22.9.18	Relay Circuit with DI and DOs		Required		
22.9.19	DI and DO Sheet of each relay		Required		
22.9.20	Schematic Circuit diagram and Scheme of Each type of Panel		Required		
22.9.21	Logic Operation Diagram		Required		
22.9.22	Communication Architecture		Required		
22.9.23	Trafo Monitoring Relay Circuit in case of Transformer Panel		Required		
22.9.24	CB Closing interlock circuit		Required		
22.9.25	Tripping Circuit		Required		
22.9.26	CB status & CB trouble cont. mult. circuit		Required		
22.9.27	Isolator , E/S and trafo trouble contact multiplication circuit		Required		
22.9.28	Annunciation circuit		Required		
22.9.29	TB Reference page		Required		
22.9.30	Synch Logic Diagram		Required		
22.9.31	QAP		Required		
22.10	Inspection Reports			Required	
22.11	As manufacturing Drawings			Required	
22.12	Operation and Maintenance Manual			Required	Required
22.13	Trouble shooting manual			Required	Required
22.14	As built Drawings				Required
22.15	Test Report				Required
22.16	Soft Copy				

S. No	Head	Bid	Drawing Approval	Pre Dispatch	Pre Closure
22.16.1	In Pen drive	Required			
22.16.2	Through Mail		Required	Required	Required

23.0 PACKING

23.1	Packing Protection	Against corrosion, dampness, heavy rains, breakage and vibration. During transportation/ transit and storage, panels may be subjected to outdoor conditions. Hence, packing of each panel shall be weatherproof.
23.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection & identification Label
23.3	Packing Identification Label to be provided on each packing case with the following details	
23.3.1	Individual serial number	
23.3.2	Purchaser's name	
23.3.3	PO number (along with SAP item code, if any) & date	
23.3.4	Equipment Tag no. (if any)	
23.3.5	Destination	
23.3.6	Project Details	
23.3.7	Manufacturer / Supplier's name	
23.3.8	Address of Manufacturer / Supplier / it's agent	
23.3.9	Description and Quantity	
23.3.10	Country of origin	
23.3.11	Month & year of Manufacturing	
23.3.12	Case measurements	
23.3.13	Gross and net weights in kilograms	
23.3.14	All necessary slinging and stacking instructions	

24.0 SHIPPING

24.1	Shipping	The bidder shall ascertain at an early date and definitely before the commencement of manufacture, any transport limitations such as weights, dimensions, road culverts, Overhead lines, free access etc. from the Manufacturing plant to the project site. Bidder shall furnish the confirmation that the proposed Packages can be safely transported, as normal or oversize packages, up to the site. Any modifications required in the infrastructure and cost thereof in this connection shall be brought to the notice of the Purchaser.
		The seller shall be responsible for all transit damage due to improper packing.

25.0 HANDLING AND STORAGE

25.1	Handling and Storage	Manufacturer instruction shall be followed. Detail handling & storage instruction sheet / manual needs to be furnished before commencement of supply.
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26.0 ANNEXURE – A – TRANSFORMER MONITORING CUM AVR RELAY

26.1	General features	
26.1.1	Technology and Functionality	Microprocessor based with provision for multifunction control and monitoring.
26.1.2	Mounting	Rack Mounting
26.1.3	Architecture	Hardware and software architecture shall be modular and disconnectable to adapt the control unit to the required level of complexity as per the application.
26.1.4	Programming and configuration	AVR shall utilize a user friendly setting and operating multi-lingual software in windows environment with menus and icons for fast access to the data required.

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26.1.5	User Machine Interface	UMI with an alphanumeric key pad and graphical LCD display with backlight indicating measurement values and operating messages. Capability to access and change all settings and parameters.
26.1.6	PC Interface port	Front port (preferably serial) for configuration using PC. Cost of licensed software and communication cord, required for programming of offered protection relays using PC, shall be mentioned separately in the bid.
26.1.7	SCADA Interface port	RS485 rear port. If relays have any other rear port, hardware/software required to achieve the above said compatibility will be in supplier's scope.
26.1.8	Communication protocol	Relays shall be compatible for interfacing with SCADA on both IEC61850 and IEC103 (Data Type-9) protocol. Communication protocol shall be selectable at site. Relay shall be capable of transmitting all parameters including measured values, DI, DO, AI, Events and fault records to SCADA.
26.1.9	Self diagnosis	Relay shall be able to detect internal failures and same shall be transmitted to SCADA as a soft signal. A watchdog relay with changeover contact shall provide information about the failure.
26.1.10	Time Synchronization	Relay shall be capable of being synchronized with the system clock through SCADA , PC and GPS.
26.1.11	Auxiliary supply	220VDC or 48VDC
26.2	Inputs and Outputs	
26.2.1	CT Input	1/5A selectable through programming
26.2.2	PT Input	110VAC
26.2.3	Binary Inputs	Sixteen programmable binary inputs should be provided
26.2.4	Analog Inputs (4-20mA)	One input to be provided
26.2.5	PT-100 direct input	One input to be provided
26.2.6	Direct Resistance Input	For tap position indication (18 steps)
26.2.7	Binary Outputs	Ten programmable binary outputs should be provided
26.3	Control	
26.3.1	Control Tasks	Ability to implement control functions through programmable logics
26.3.2	Voltage setting	Programmable Voltage set point
26.3.3	Voltage Regulation	Raise/Lower tap position to maintain the preset value of voltage.

TECHNICAL SPECIFICATION FOR 66/33KV CONTROL AND RELAY PANEL

26.3.4	Voltage Regulation modes	Automatic and Manual
26.3.5	Operation Modes	Local and Remote
26.3.6	Fan and Pump control	To be provided
26.3.7	Transformer Paralleling	Capability to parallel transformers whose AVR's are interconnected via a communication network.
26.4	SCADA Interfacing	
26.4.1	Configuration of DIs for routing alarm/trip signals to SCADA.	DI-1 – Buchholz trip DI-2 – OSR Trip DI-3 – PRV trip DI-4 – SPR trip DI-5 – OTI trip DI-6 – WTI trip DI-7 – Buchholz alarm DI-8 – Oil Level low larm (MOG alarm) DI-9 – WTI alarm DI-10 – OTI alarm DI-11 – Tap changer trouble/stuck/out of step DI-12 – Tap changer motor supply fail DI-13 – Tap changer in local control All signals from DI-1 to DI-10 are to be wired up from transformer trouble auxiliary relays.
26.4.2	Configuration of DOs for executing commands from SCADA through interface port/CRP	DO-1 – Tap raise DO-2 – Tap lower DO-3 – Fan group 1 control DO-4 – Fan group 2 control
26.4.3	Analog Inputs	All analog inputs shall be SCADA Compatible
26.5	Measurement, Event Recording and Monitoring	
26.5.1	Measured Quantities (optional)	Voltage, Current, Active Power, Reactive Power, Apparent Power, Power factor, frequency
26.5.2	Event Recording	Facility for recording parameters during various events such as tap change, change in binary input status etc.
26.5.3	Monitoring	Capability to monitor important transformer parameters such as Oil temperature, Winding Temperature etc and give indication/alarm when the value of a particular parameter exceeds the preset value.

27.0 ANNEXURE- B – GUARANTEED TECHNICAL PARTICULARS

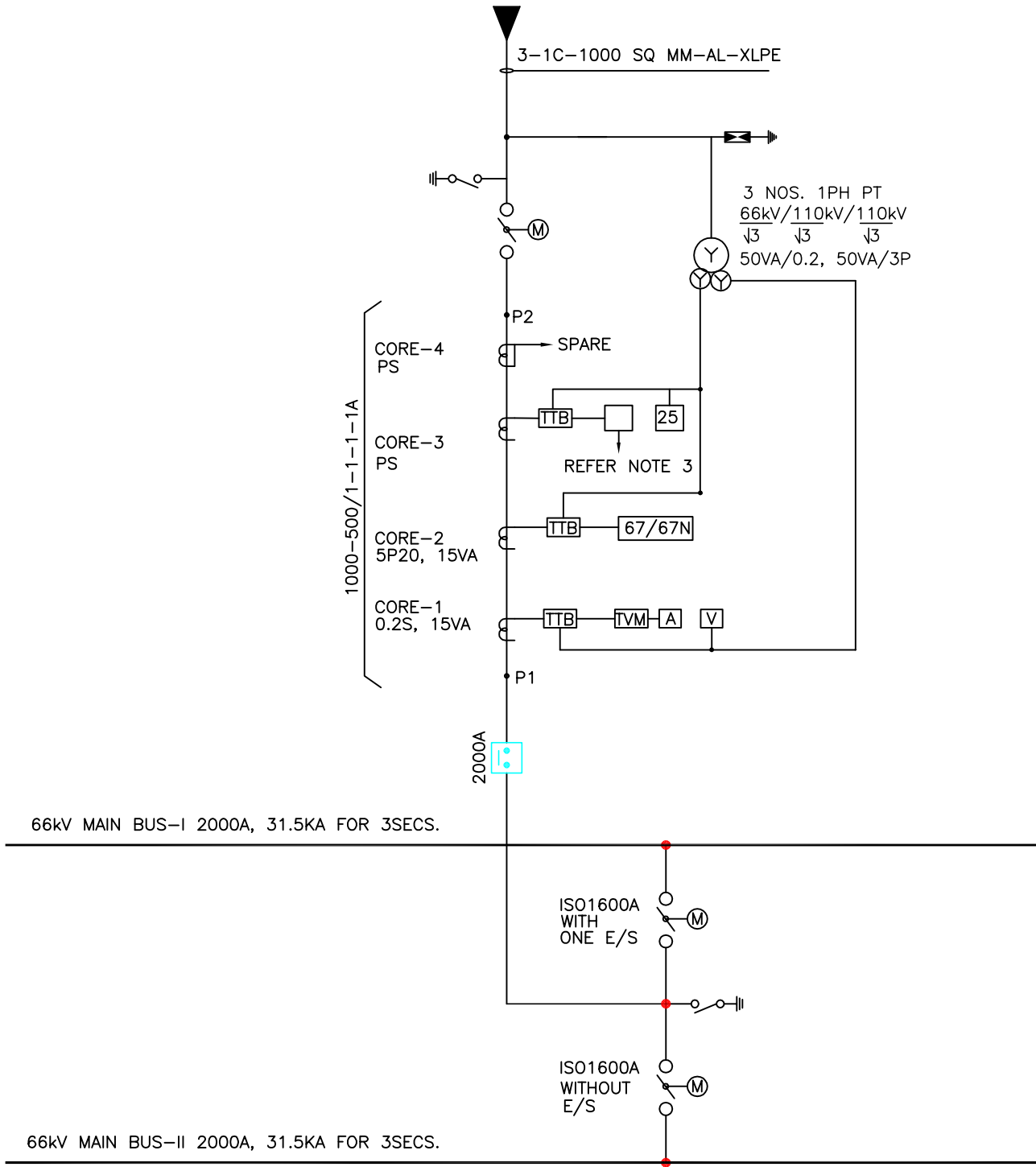
Vendor must submit clause wise compliance against specification at the time of drawing approval clearly highlighting the deviations from specification against each clause.

28.0 ANNEXURE- C – SPARES REQUIREMENT

S No.	Description	Unit Rate
28.1	Numerical relay of each type	1 nos.
28.2	Auxiliary relay of each type	1 nos.
28.3	Contact multiplication relays (Bistable type for CB, isolator and earth switch auxiliary contact multiplication)	6 nos.
28.4	Contactors of each rating	2 nos.
28.5	Voltmeter	1 nos.
28.6	Local/Remote Selector switch	1 nos.
28.7	TNC switch for CB	2 nos.
28.8	TNC switch for Isolators	3 nos.
28.9	Semaphore indicators	4 nos.
28.10	MCB of each rating	1 nos.

29.0 ANNEXURE-D-SLDs

ANNEXURE-D1



LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

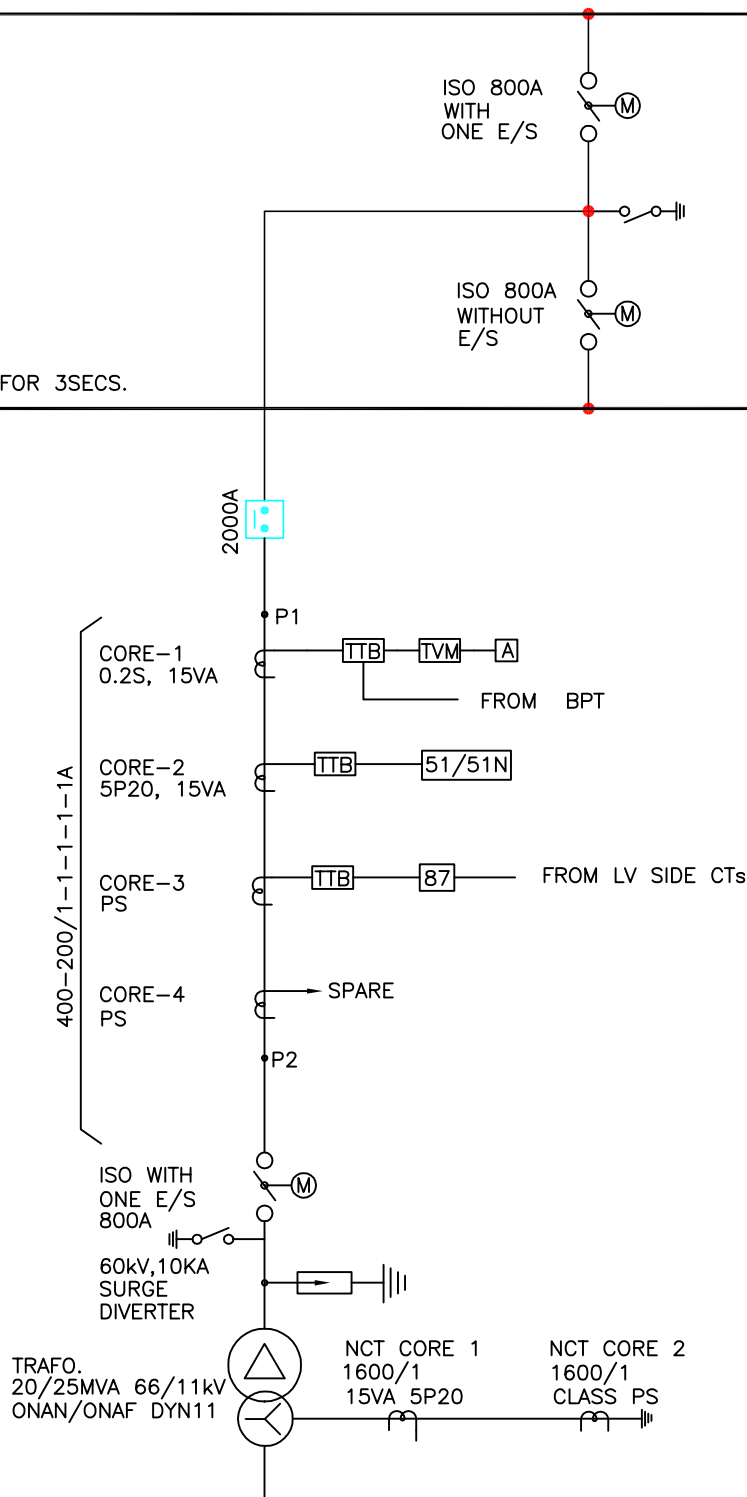
NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
 2. TVM IS NOT IN SUPPLIER'S SCOPE.
 3. LINE DIFFERENTIAL OR DISTANCE RELAY AS PER CLAUSE 11.2.1 OF SPECIFICATION

DRAWN	RAJESH	TITLE:-	BSES
CHECKED	GS	TYPICAL 66KV LINE SLD	
APPD.	DS		
DATE	05.07.19		
SCALE	NTS		SPECIFICATION NO. SP-CRP-01-R4
			DWG No.:- SLD-CRP-66KV-01

ANNEXURE-D2

66kV MAIN BUS-I 2000A, 31.5KA FOR 3SECS.

66kV MAIN BUS-II 2000A, 31.5KA FOR 3SECS.



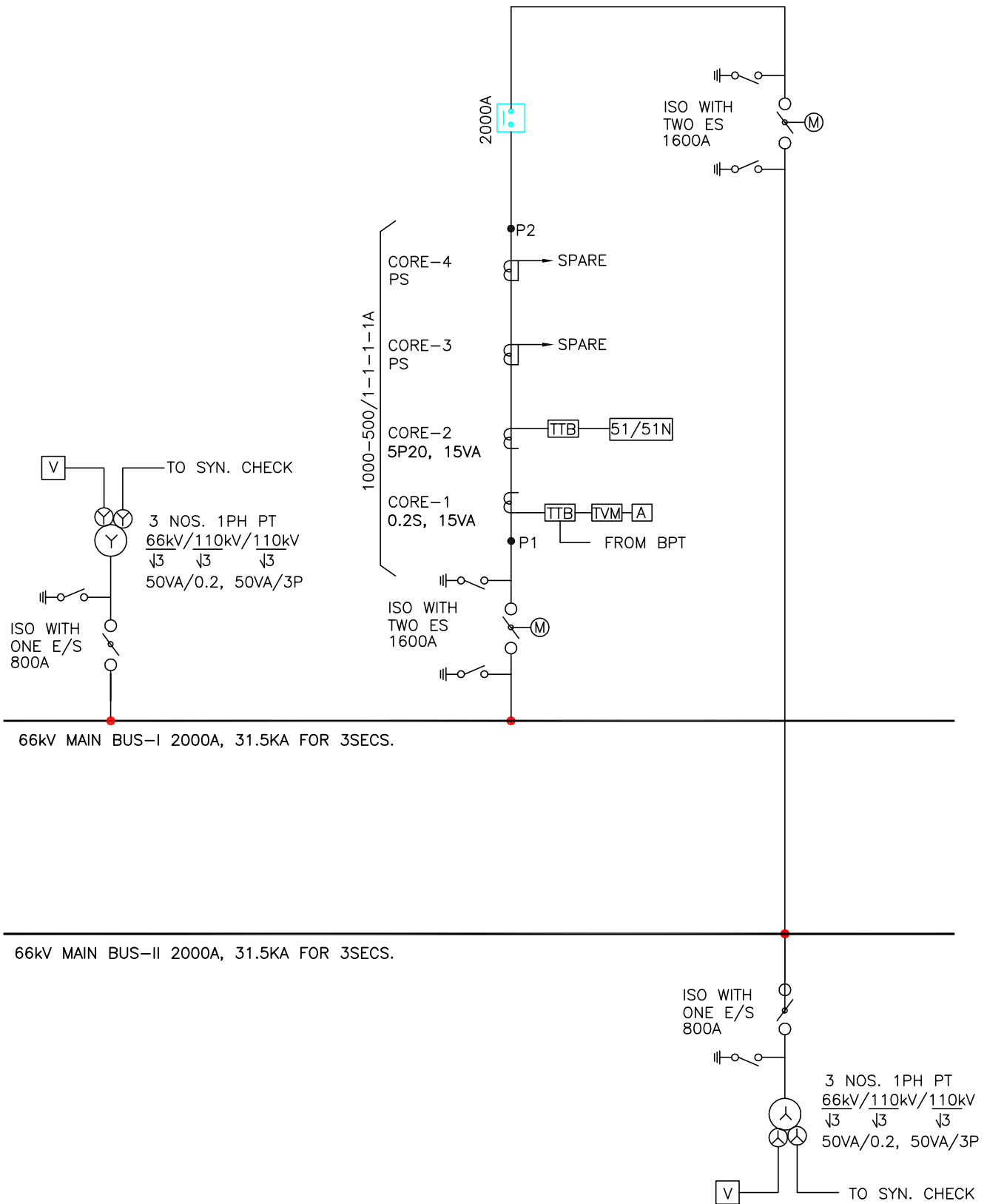
LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH	TITLE:-	
CHECKED	GS	TYPICAL 66/11KV	
APPD.	DS	TRANSFORMER FEEDER SLD	
DATE	05.07.19	SPECIFICATION NO. SP-CRP-01-R4	
SCALE	NTS	DWG No.: - SLD-CRP-66KV-02	

ANNEXURE-D3



LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH
CHECKED	GS
APPD.	DS
DATE	05.07.19
SCALE	NTS

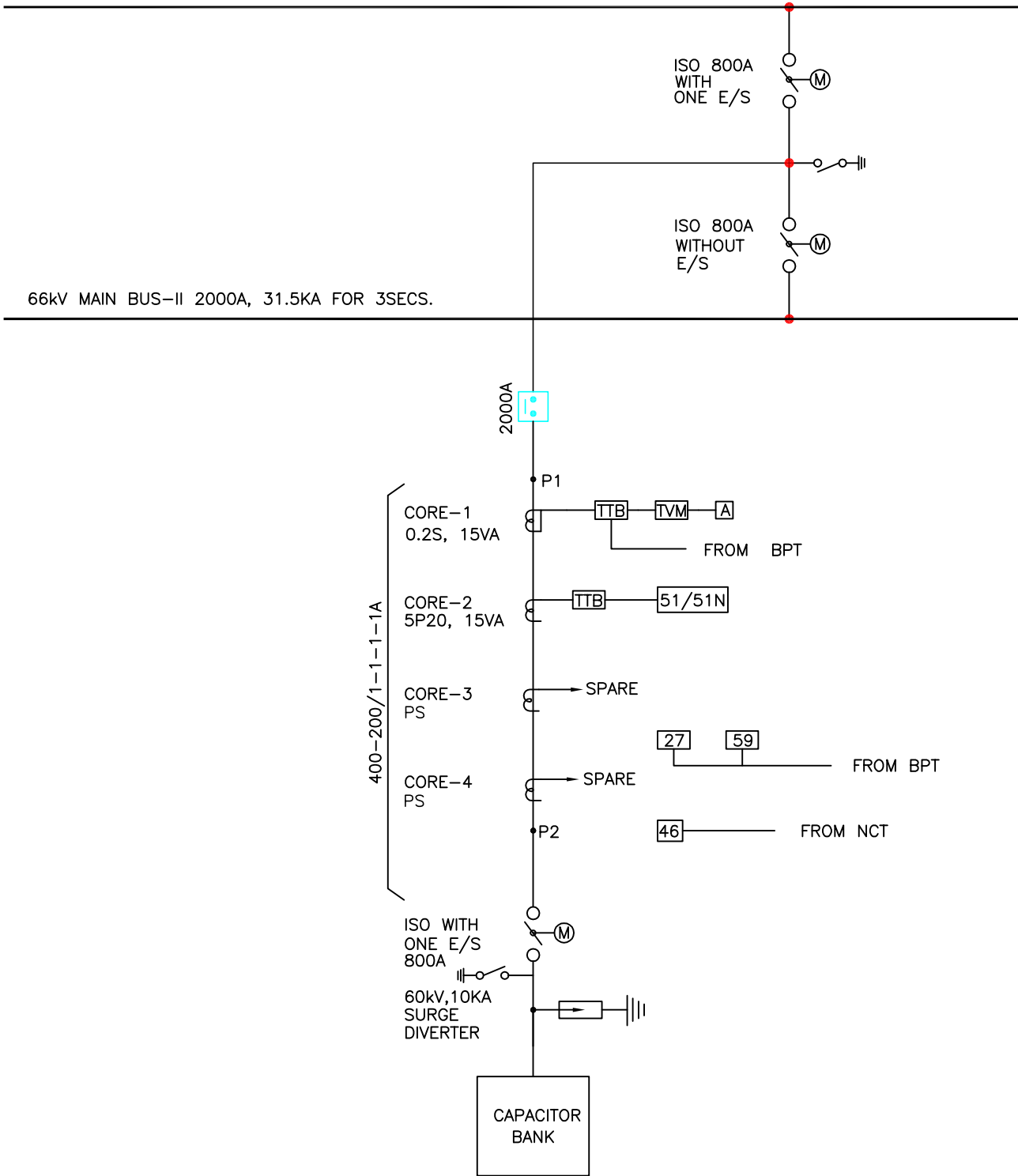
TITLE:-
TYPICAL 66KV
BUSCOUPLER SLD

BSES

SPECIFICATION NO. SP-CRP-01-R4
DWG No.: - SLD-CRP-66KV-03

ANNEXURE - D4

66kV MAIN BUS-I 2000A, 31.5KA FOR 3SECS.



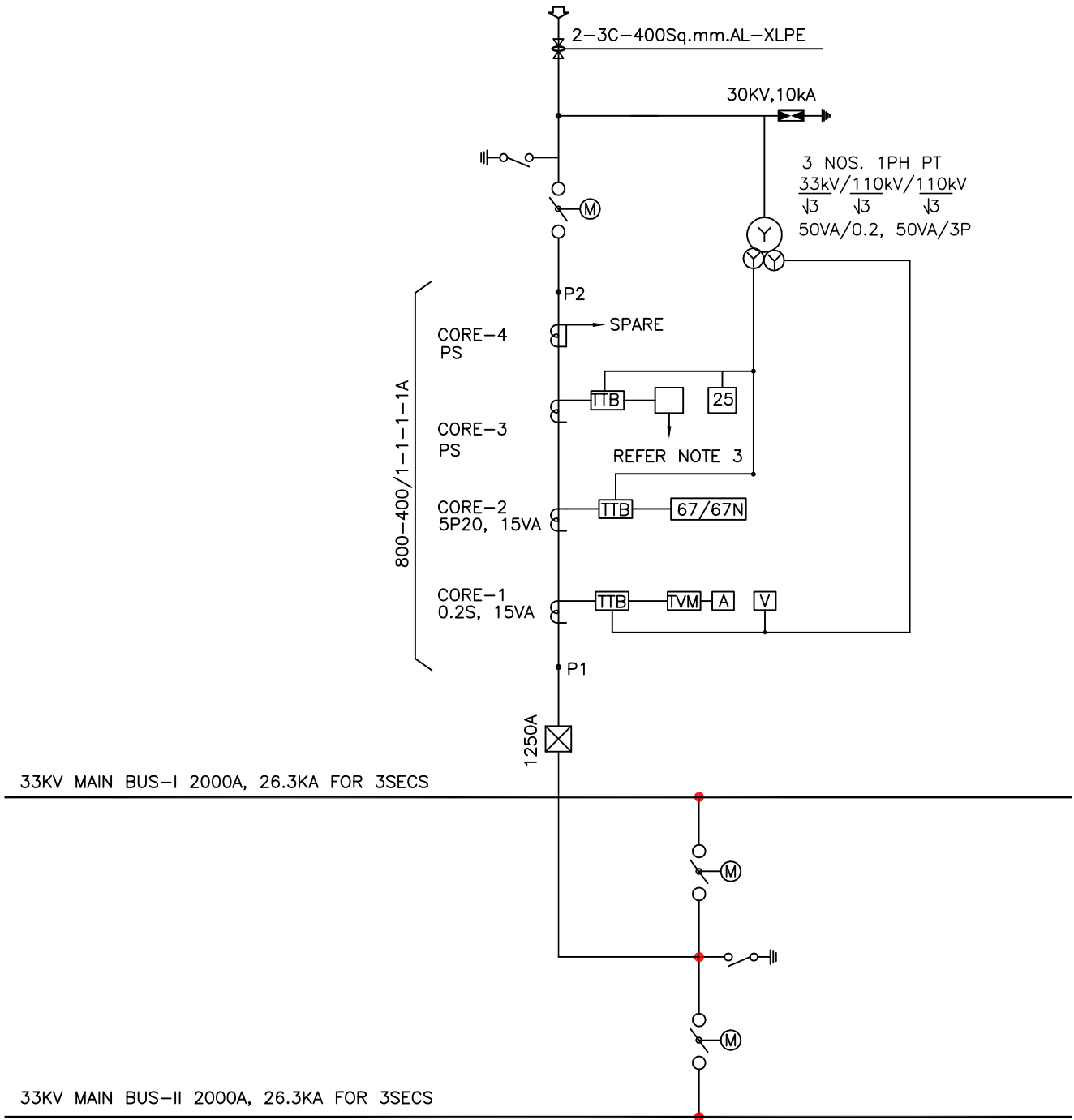
LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH	TITLE:-	BSES
CHECKED	GS	TYPICAL 66KV	
APPD.	DS	CAPACITOR BANK FEEDER	
DATE	05.07.19	SLD	
SCALE	NTS		SPECIFICATION NO. SP-CRP-01-R4
			DWG No.: -SLD-CRP-66KV-04

ANNEXURE-D5



33KV MAIN BUS-I 2000A, 26.3KA FOR 3SECS

33KV MAIN BUS-II 2000A, 26.3KA FOR 3SECS

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

- NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
 2. TVM IS NOT IN SUPPLIER'S SCOPE.
 3. LINE DIFFERENTIAL OR DISTANCE RELAY AS PER CLAUSE 11.2.1 OF SPECIFICATION.

DRAWN	RAJESH	TITLE:-
CHECKED	DS	TYPICAL SLD FOR
APPD.	DS	33KV INCOMER/OUTGOING
DATE	05.07.19	
SCALE	NTS	

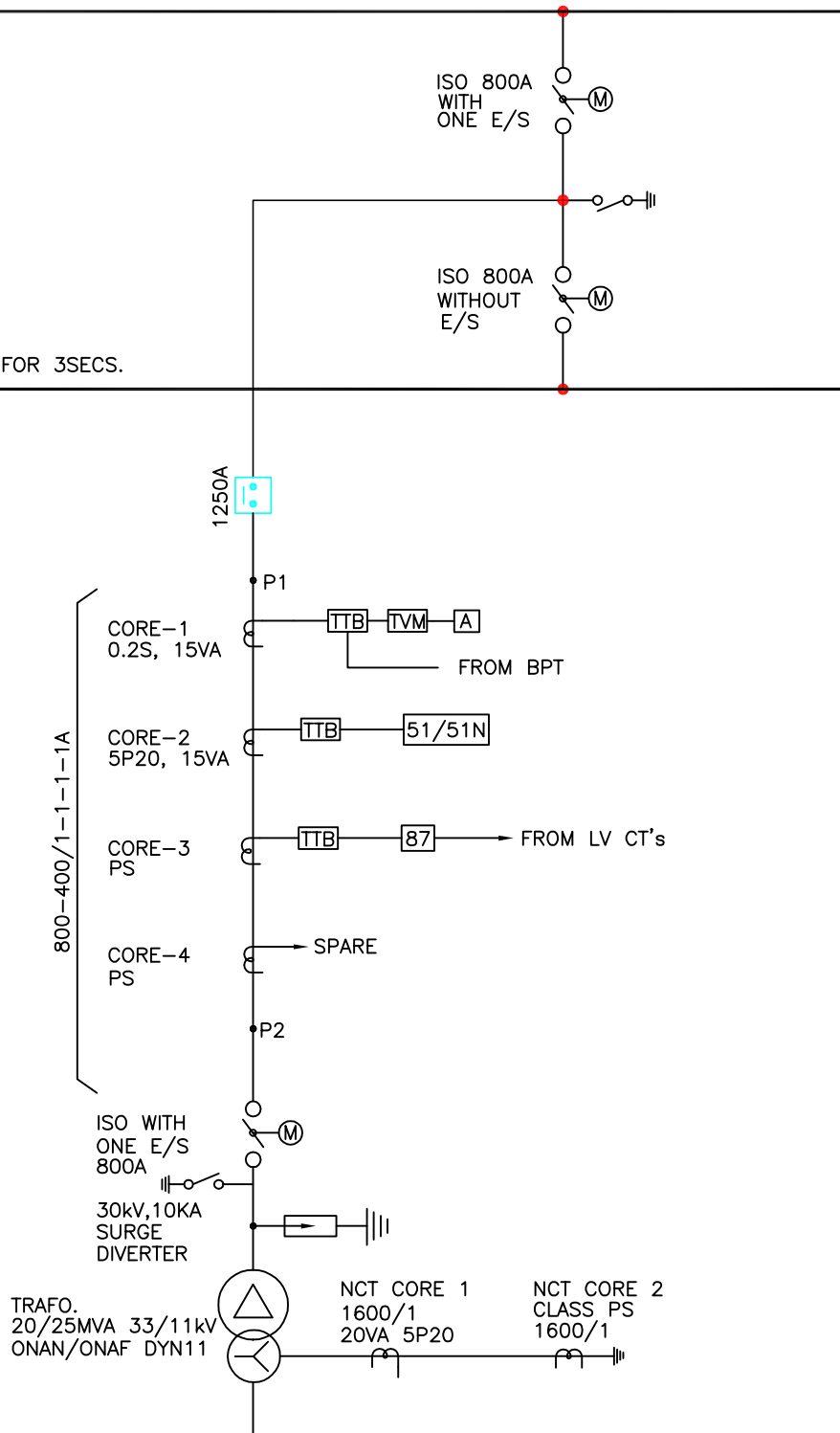
BSES

SPECIFICATION NO. SP-CRP-01-R4
 DWG No.: -SLD-CRP-33KV-01

ANNEXURE-D6

33kV MAIN BUS-I 2000A, 26.3KA FOR 3SECS.

33kV MAIN BUS-II 2000A, 26.3KA FOR 3SECS.



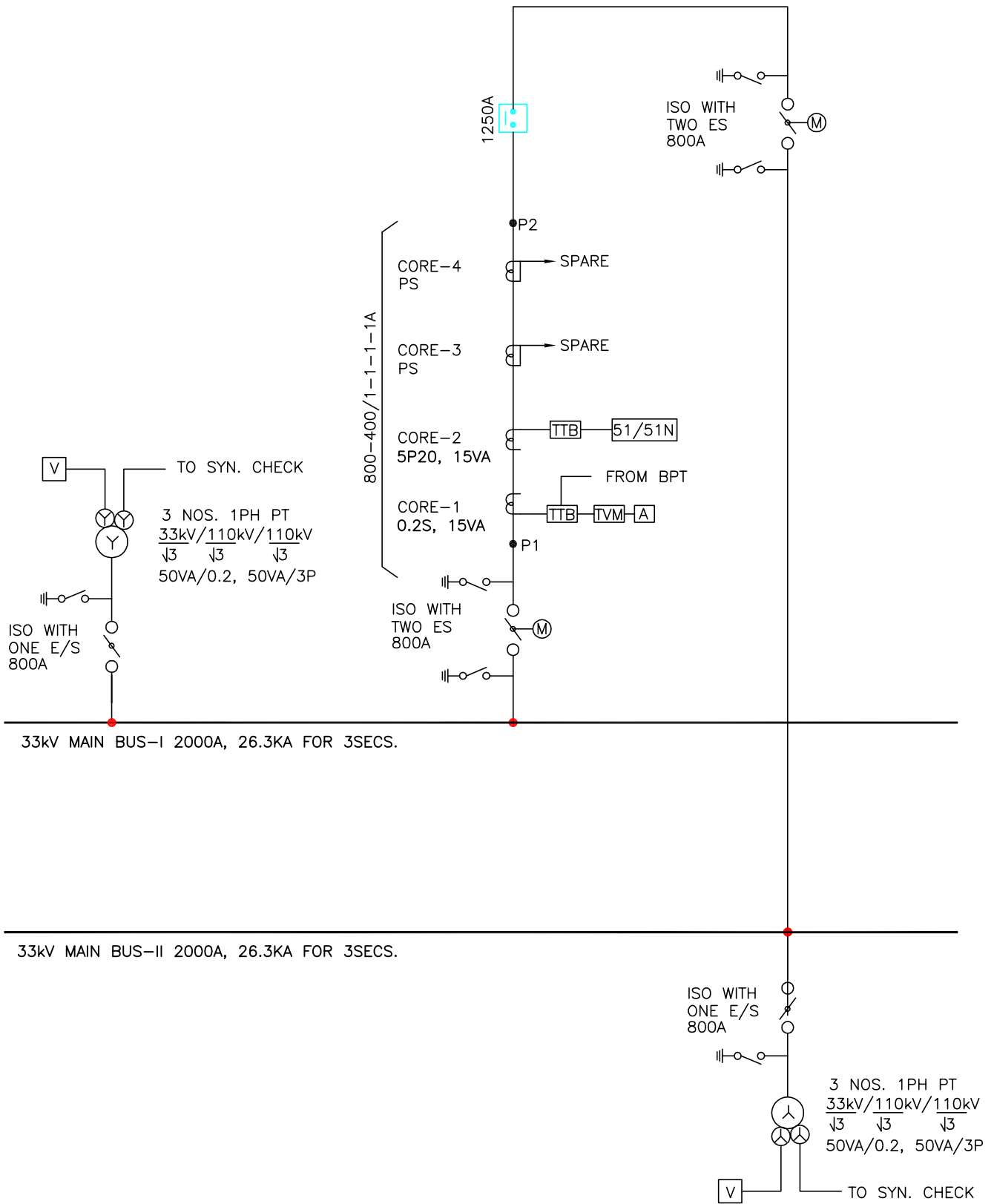
LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH	TITLE:-	BSES
CHECKED	GS	TYPICAL 33/11KV TRANSFORMER FEEDER SLD	
APPD.	DS		
DATE	05.07.19		
SCALE	NTS		SPECIFICATION NO. SP-CRP-01-R4
			DWG No.: -SLD-CRP-33KV-02

ANNEXURE-D7



LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

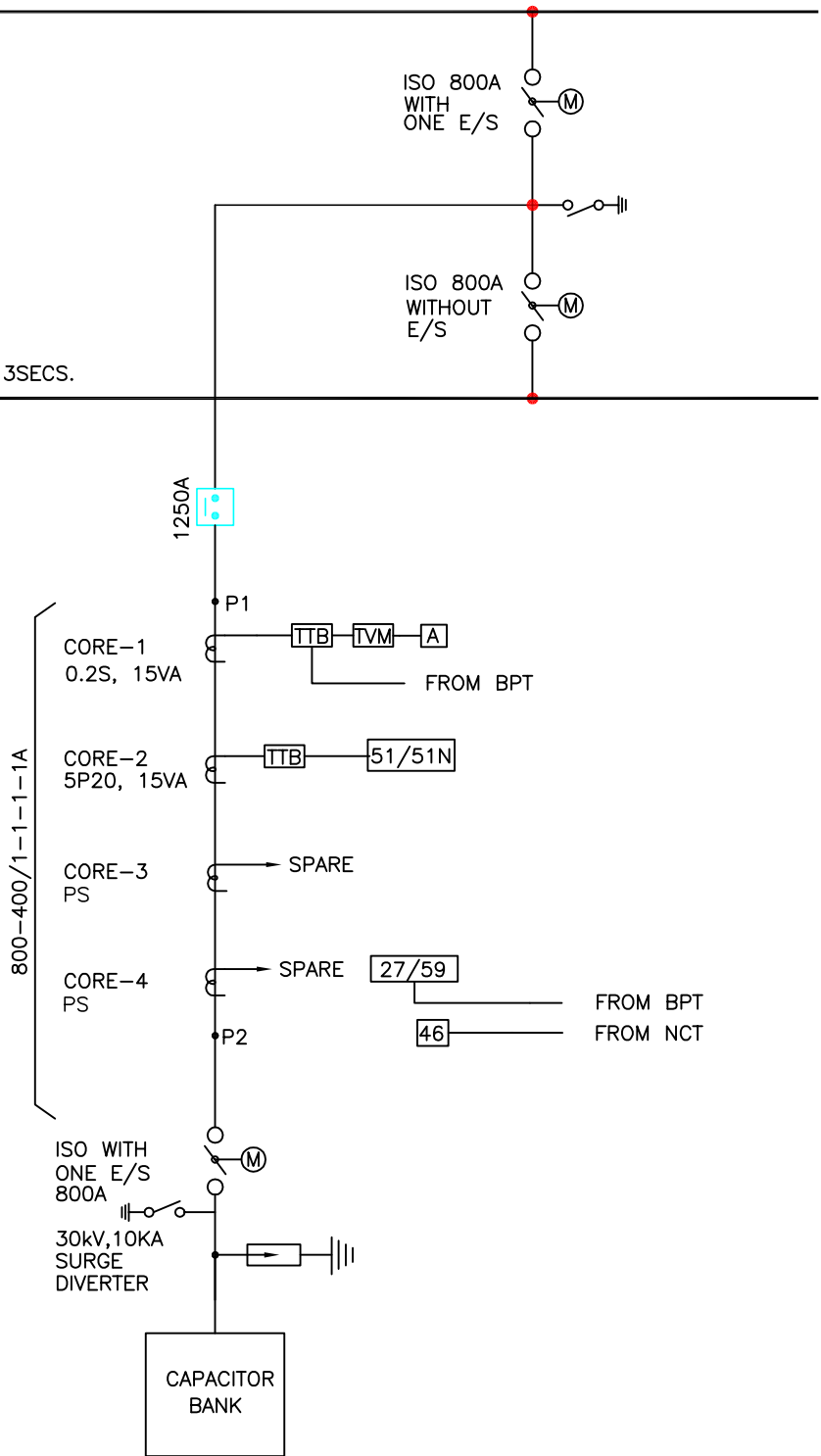
NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH	TITLE:-	BSES
CHECKED	GS	TYPICAL 33KV BUSCOUPLER SLD	
APPD.	DS		
DATE	05.07.19		
SCALE	NTS		
			SPECIFICATION NO. SP-CRP-01-R4
			DWG No.: - SLD-CRP-33KV-03

ANNEXURE – D8

33kV MAIN BUS-I 2000A, 26.3KA FOR 3SECS.

33kV MAIN BUS-II 2000A, 26.3KA FOR 3SECS.



LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MOTORISED ISOLATOR WITH ONE E/S		TEST TERMINAL BLOCK
	MOTORISED ISOLATOR WITH DOUBLE E/S		O/C & E/F RELAY
	SURGE DIVERTER		DISTANCE RELAY
	CURRENT TRANSFORMER		U/V & O/V RELAY
	POTENTIAL TRANSFORMER		DIRECTIONAL O/C & E/F RELAY
	CIRCUIT BREAKER		DIFFERENTIAL RELAY
	VOLTMETER		NEUTRAL UNBALANCE RELAY
	AMMETER		SYNC CHECK
	TRIVECTOR METER		

NOTE; 1. REFER SPECIFICATION CLAUSE 11.0 FOR FUNCTIONAL DETAILS OF PROTECTION RELAYS.
2. TVM IS NOT IN SUPPLIER'S SCOPE.

DRAWN	RAJESH	TITLE:-
CHECKED	GS	TYPICAL 33/11KV CAPACITOR BANK FEEDER SLD
APPD.	DS	
DATE	05.07.19	
SCALE	NTS	

BSES

SPECIFICATION NO. SP-CRP-01-R4
DWG No.: - SLD-CRP-33KV-04



TECHNICAL SPECIFICATION

SCADA NETWORK & INTEGRATION

KHICHRIPUR & DMS GRID STATION

PREPARED BY	APPROVED BY	REV	00
		DATE	19 th JUNE 2019
GS	AV	PAGE	1 OF 14

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1.0 SCOPE

- A. This specification is intended to cover the supply, erection, testing and commissioning of SCADA Network and Integration associated hardware/software (like protocol converters), cables, accessories and other material required for interfacing of all electrical equipments with existing ABB RTU 560A for efficient and trouble free operation.
- A.1. ABB RTU panel is multi processor CMU05/CMR02 based having required nos. of co processor and main processor and having redundant power supply. Main processor is having Ethernet ports and serial ports. Ethernet port of main processor is connected to LAN Switch (to be provided by BSES) for communication with Master Control Centre on IEC 104.
- A.2. The co processors are having Ethernet ports which are responsible to communicate to all numerical relays and Digital RTCC on IEC 61850 protocol.
- A.3. The co processors are having serial ports which are responsible to communicate to all multifunction meters (MFMs) and battery charger on Modbus protocol through RS485 network.
- A.4. The main processors and co processors are having the licenses of IEC61850, MODBUS RTU MASTER & PLC, Archive, HMI, IEC 103 and IEC 104
- B. The devices i.e. Numerical relays, digital RTCC, MFMs, battery charger etc. on serial and LAN should have redundant media and redundant co-processor connectivity.
- C. This specification shall be used in conjunction with all specifications, data sheets, single line diagrams, and other drawings attached to the specification / purchase requisition.

2.0 SCADA NETWORK

2.1	INFRASTRUCTURE	<ul style="list-style-type: none"> i. All numerical relays & transformer monitoring units shall be connected to RTU in parallel redundancy protocol (PRP). ii. The communication shall be made in 1+1 mode, including the links between numerical relays & TMUs to switch and up to RTU, such that failure of one set of communication shall not affect the normal operation of system. However it shall be alarmed in RTU. iii. Data exchange is to be realized on dual star Bus topology using IEC 61850 protocol with a redundant managed switched Ethernet communication infrastructure. iv. MFMs shall be connected to RTU through RS485 network so loop shall be prepared in daisy chain fashion v. Devices connected to single loop shall not be
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TECHNICAL SPECIFICATION FOR SCADA NETWORK & INTEGRATION

		more than 10.
2.2	SCOPE OF WORK	<ul style="list-style-type: none"> i. Laying and termination of armoured optical cables from CRP to Switch (Redundant Colour Yellow and Orange) shall be done in PVC Pipe. ii. Laying and termination of RS 485 cables (Redundant Colour Blue or Black) shall be in PVC Pipe of minimum 2 inch.
2.3	SCOPE OF SUPPLY	<ul style="list-style-type: none"> i. All the hardware required to extend the relay signals to the RTU shall be supplied along with the switchboards. ii. Aux supply of these hardware devices shall be same as grid control voltage having wide range (-20% to +20%). iii. All communication hardware or protocol converters required for compatibility with SCADA shall be in bidder's scope.
2.3.1	Ethernet switches	<ul style="list-style-type: none"> i. Ethernet switch shall be industrial grade. ii. Shall have KEMA,CE & FCC certification for IEC 61850 compliance iii. The switches shall operate at 36 to 72 VDC power supply and operating temp -40 Deg cel to 72 deg cel. iv. Shall be suitably mounted in switchgear panel. v. Ethernet Switch shall have required nos. of ports (having RJ45 Ports / FO Ports).20% spare ports shall be provided. vi. All ports shall be at least 10 Mbps/100 Mbps vii. LED indicators on each RJ45 ports shall be blinking with data transfer. viii. It should support remote user setting configuration. ix. Warranty for the switch must be 5 years x. It should own separate maintenance/console port. xi. Latency shall be not more than 10ms. xii. BSES Approved Makes Ruggedcom,Hirschman,Garretcom
2.3.2	Interface between Numerical Relay and switch	<ul style="list-style-type: none"> i. LC/ ST multimode duplex fibre optic patch cords connecting the numerical relay to switch shall be supplied by the bidder. ii. Required nos. of LIUs and armoured FO cables shall be provided by bidder



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2.3.3	Interface between RTU and Ethernet switch	Bidder shall provide LAN Cable of CAT 6 STP Blue or Black color.
2.3.4	Interface between MFM and RTU	RS485 Belden class cable shall be provided by bidder
2.3.5	Communication hardware	All hardware like LAN Switch, FO glass/plastic, cables, protocol converters required for interfacing IEDs like protection relays, multifunction meters, transformer monitoring relays, battery charger controllers etc. to RTU should be included in scope of supply.

3.0 SCADA INTEGRATION

3.1	INFRASTRUCTURE	Numerical relays should be only IEC 61850 compatible having dual fibre optic ports. Through these ports relays shall be connected to switches.
3.2	SCOPE OF WORK	<ol style="list-style-type: none">i. Configuration of Protection relays, Digital RTCC and multifunction meters for SCADA signals as per Annexure: Signals Related with Digital RTCC, Annexure: Signals Related with CRP and Annexure: Signals Related with MFM and communication for the same in existing RTU 560A Co Processor CMU05/CMR02.ii. For communication configuration and troubleshooting of Relays, Digital RTCC and MFM, required software, ICD file (IED configuration description file), SCD file (substation configuration description file) communication cables and documents to be handed over to team SCADA BYPL.iii. Providing SCADA signal mapping table for signals listed in Annexure: Signals Related with Digital RTCC, Annexure: Signals Related with CRP and Annexure: Signals Related with MFM and communication configuration details for RTU configuration.iv. Simulation of all configured SCADA signals (Listed in Annexure: Signals Related with Digital RTCC, Annexure: Signals Related with CRP and Annexure: Signals Related with MFM) over LAN on IEC 61850 and over RS 485 on modbus on separate terminal with same configuration settings.

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		<ul style="list-style-type: none">v. Testing & commissioning of Numerical relays, Multifunction meters and testing of Digital RTCC and commissioning of all related signals in RTU.vi. Testing of Indications, Command, Interlocks as per scheme, Relay soft interlock testing from Relay HMI as well as simulation of SCADA command through configured output of Relay.vii. Downloading of Disturbance records facility and uploading/downloading of configuration file facility shall be provided from remote also through these switches at pre decided IPs.viii. Demonstration of operational compatibility with SCADA.
3.3	SCOPE OF SUPPLY	
3.3.1	Configuration Software and Tools	All software and configuration tools required for configuration of SCADA Network should be included in scope of supply.

4.0 SPARES

4.1		<ul style="list-style-type: none">i. Bidder shall submit list of recommended spares for BSES BYPL SCADA approval.ii. Recommended minimum 20% spares of supplied SCADA accessories for SCADA interface to be supplied by bidder. Price for spares shall be included in CRP package. All spares shall be tested in our premises
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5.0 DOCUMENTATION

5.1	Documents for approval	<ul style="list-style-type: none">i. The bidder shall ensure that all necessary drawings, write-up, information, etc required to fully describe the equipment are to be submitted for approval.ii. The manual shall clearly indicate in English the installation and connection method. Check up, maintenance and calibration method shall also be provided in the manuals.
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6.0 TRAINING

5.1	Training at site	Training to purchaser's engineers at site (two day training included on basic price).
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7.0 DEVIATIONS

6.1	Deviation	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. No deviation will be acceptable post order.
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Annexure 1: Signal List**Signals Related with Digital RTCC**

Sr. No.	Signal Detail	Type of Signal on IEC61850
	Digital Input Signals-	
1	Bucholz Alarm	Single Point Information
2	Bucholz Trip	Single Point Information
3	MOG Alarm	Single Point Information
4	OSR Trip	Single Point Information
5	OTI Alarm	Single Point Information
6	OTI Trip	Single Point Information
7	WTI Alarm	Single Point Information
8	WTI Trip	Single Point Information
9	PRV Trip	Single Point Information
10	SPRV Trip	Single Point Information
11	Digital RTCC Auto/Manual	Single Point Information
12	Digital RTCC Communication Fail	Single Point Information
13	Digital RTCC L/R Switch	Single Point Information
14	Digital RTCC Watchdog Operated	Single Point Information
15	Oil surge Trip	Single Point Information
16	FAN failed	Single Point Information
17	Winding Temp. High alarm	Single Point Information
18	OLTC PRV Trip	Single Point Information
19	OLTC Low Oil Level	Single Point Information
20	Tap Changer Stuck Up	Single Point Information
21	OLTC motor Supply Fail	Single Point Information
22	OLTC supply fail	Single Point Information
23	Tap Max Reach	Single Point Information
24	Tap Min Reach	Single Point Information
25	Under Voltage	Single Point Information
26	Over Voltage	Single Point Information
	Digital Output Signals-	
1	Digital RTCC Relay Auto/Manual	Single Command Output
2	Tap Changer Raise	Single Command Output
3	Tap Changer Lower	Single Command Output
	Measurement Signals-	
1	Oil Temperature	Measured Float
2	Tap Position	Measured Float
3	Tap Count	Measured Float
4	Winding Temperature	Measured Float
5	Voltage BR (of 11kV)	Measured Float

TECHNICAL SPECIFICATION FOR SCADA NETWORK & INTEGRATION

6	Voltage RY (of 11kV)	Measured Float
7	Voltage YB(of 11kV)	Measured Float

(This is the indicative IO list, however the signal list may vary during the engineering time)

Annexure: Signals Related with CRP

Sr. No.	Signal Detail	Type of Signal on IEC61850
1	Signals of Differential Relay	
	Digital Input Signals	
1	Differential Trip Bph	Single Point Information
2	Differential Trip Rph	Single Point Information
3	Differential Trip Yph	Single Point Information
4	Differential Highset Trip	Single Point Information
5	Differential Trip	Single Point Information
6	Inrush detected	Single Point Information
7	REF Trip	Single Point Information
8	Trafo. Differential lockout operated	Single Point Information
9	Trafo. Differential watchdog operated	Single Point Information
10	Trafo. Differential communication fail	Single Point Information
11	Trafo Trouble Trip	Single Point Information
	Measurement Signals	
1	Current Bph	Measured Float
2	Current Rph	Measured Float
3	Current Yph	Measured Float
4	Fault Current Bph	Measured Float
5	Fault Current Rph	Measured Float
6	Fault Current Yph	Measured Float
7	Fault Current Nph	Measured Float
8	Fault locator in some relays	Measured Float
9	Sigma kA square	Measured Float
2	Signals of Distance Relay	
	Digital Input Signals	
1	Distance Relay Lockout Operated	Single Point Information
2	Distance Trip	Single Point Information
3	Distance Zone-1 operated	Single Point Information
4	Distance Zone-2 operated	Single Point Information
5	Distance Zone-3 operated	Single Point Information
6	Line Distance Relay Communication Fail	Single Point Information

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7	Line Distance Relay watchdog operated	Single Point Information
3	Signals of Line Differential Relay	
	Digital Input Signals	
1	Conductor Broken	Single Point Information
2	Differential Trip	Single Point Information
3	Rph Differential Trip	Single Point Information
4	Yph Differential Trip	Single Point Information
5	Bph Differential Trip	Single Point Information
6	Distance Trip	Single Point Information
7	Distance Zone-1 operated	Single Point Information
8	Distance Zone-2 operated	Single Point Information
9	Distance Zone-3 operated	Single Point Information
10	Earth Fault high set trip	Single Point Information
11	Earth Fault IDMT trip	Single Point Information
12	General Trip	Single Point Information
13	Inter-trip	Single Point Information
14	Line differential block	Single Point Information
15	Line differential Channel-1 fail	Single Point Information
16	Line differential Channel-2 fail	Single Point Information
17	Line differential operated	Single Point Information
18	Line differential relay watchdog operated	Single Point Information
19	Phase fault high set trip	Single Point Information
20	Phase fault IDMT trip	Single Point Information
21	PT Fuse Fail	Single Point Information
22	Sync fail	Single Point Information
	Measurement Signals	
1	Active Power	Measured Float
2	Current Bph	Measured Float
3	Current Rph	Measured Float
4	Current Yph	Measured Float
5	Fault Current Bph	Measured Float
6	Fault Current Rph	Measured Float
7	Fault Current Yph	Measured Float
8	Fault Current Nph	Measured Float
9	Fault Locator in some relays	Measured Float
10	Frequency	Measured Float
11	Power Factor	Measured Float
12	Reactive Power	Measured Float
13	Sigma kA square	Measured Float
14	Voltage BR	Measured Float
15	Voltage RY	Measured Float
16	Voltage YB	Measured Float

4	Signals of Overcurrent Earthfault Relay	
	Digital Input Signals	
1	50BF/LBB Operated	Single Point Information
2	86 Supervision	Single Point Information
3	Relay Communication fail	Single Point Information
4	Relay watchdog operated	Single Point Information
5	Isolator A status	Double Point Information
6	Isolator B status	Double Point Information
7	Cable door open	Single Point Information
8	CB in Remote	Single Point Information
9	CB Status	Double Point Information
10	Earth Fault General Trip	Single Point Information
11	Earth Fault High set Trip	Single Point Information
12	Earth Fault IDMT Trip	Single Point Information
13	Earth Switch AE status	Double Point Information
14	Earth Switch BE status	Double Point Information
15	Earth Switch LE status	Double Point Information
16	Line Isolator status	Double Point Information
17	Breaker L/R switch	Single Point Information
18	Negative Phase Sequence	Single Point Information
19	Phase Fault General Trip	Single Point Information
20	Phase Fault Highset Trip	Single Point Information
21	Phase Fault IDMT Trip	Single Point Information
22	Phase Fault Overload Trip	Single Point Information
23	PT Fuse Failure	Single Point Information
24	Relay Reset	Single Point Information
25	SF6 Gas Pressure Low	Single Point Information
26	SF6 Lockout Operated	Single Point Information
27	Spring Charged	Single Point Information
28	TCS Alarm-1	Single Point Information
29	TCS Alarm-2	Single Point Information
	Digital Output Signals	
1	CB Command	Double Command Output
2	Relay Reset	Single Command Output
	Spare Output	
	Measurement Signals	
1	Active Power	Measured Float
2	Current Bph	Measured Float
3	Current Rph	Measured Float
4	Current Yph	Measured Float
5	Fault Current Bph	Measured Float
6	Fault Current Rph	Measured Float
7	Fault Current Yph	Measured Float
8	Fault Current Nph	Measured Float



TECHNICAL SPECIFICATION FOR SCADA NETWORK & INTEGRATION

9	Fault Locator in some relays	Measured Float
10	Frequency	Measured Float
11	Power Factor	Measured Float
12	Reactive Power	Measured Float
13	Sigma kA square	Measured Float
14	Voltage BR	Measured Float
15	Voltage RY	Measured Float
16	Voltage YB	Measured Float

(This is the indicative IO list; however the signal list may vary during the engineering time)

Annexure: Signals Related with MFM

Sr. No.	Signal Detail	Type of Signal on Modbus
	Measurement Signals	
1	Active Power	Measured Float
2	Current Bph	Measured Float
3	Current Rph	Measured Float
4	Current Yph	Measured Float
5	Frequency	Measured Float
6	Power Factor	Measured Float
7	Reactive Power	Measured Float
8	Voltage BR	Measured Float
9	Voltage RY	Measured Float
10	Voltage YB	Measured Float
11	Neutral Current	Measured Float

(This is the indicative IO list, however the signal list may vary during the engineering time)

Annexure 2: SCADA Network Architecture

