
 Government eProcurement System		Government eProcurement System							
		Tender Details							
		Date : 25-Jun-2024 11:22 AM							
		 Print							
Basic Details									
Organisation Chain	SECURITY PRINTING AND MINTING CORPORATION OF INDIA-SPMCIL CURRENCY NOTE PRESS NASHIK(MH) Purchase Deptt -SPMCIL								
Tender Reference Number	6000018704								
Tender ID	2024_SPMCI_198477_1	Withdrawal Allowed	Yes						
Tender Type	Open Tender	Form of contract	Turn-key						
Tender Category	Goods	No. of Covers	2						
General Technical Evaluation Allowed	No	ItemWise Technical Evaluation Allowed	No						
Payment Mode	Offline	Is Multi Currency Allowed For BOQ	No						
Is Multi Currency Allowed For Fee	No	Allow Two Stage Bidding	No						
Payment Instruments			Cover Details, No. Of Covers - 2						
Offline	S.No	Instrument Type	Cover No	Cover	Document Type	Description			
	1	Demand Draft	1	Fee/PreQual/Technical	.pdf	TECHNICAL BID (6000018704)			
	2	FDR	2	Finance	.xls	PRICE BID (6000018704)			
	3	Bank Guarantee							
	4	NEFT							
Tender Fee Details, [Total Fee in ₹ * - 0.00]			EMD Fee Details						
Tender Fee in ₹	0.00	Fee Payable To	Nil	Fee Payable At	Nil	EMD Amount in ₹	5,00,000	EMD Exemption Allowed	Yes
Tender Fee Exemption Allowed	No					EMD Fee Type	fixed	EMD Percentage	NA
						EMD Payable To	CNP, A UNIT OF SPMCIL	EMD Payable At	NASHIK
Work /Item(s)									
Title	UPGRADATION OF INDOOR 11 KV HT OCB SWITCHGEAR PANELS BY VCB SWITCHGEAR PANELS IN MRS AND SUB STN V.								
Work Description	UPGRADATION OF EXISTING INDOOR 11KV HT OIL CIRCUIT BREAKER SWITCHGEAR PANELS BY VACUUM CIRCUIT BREAKERS SWITCHGEAR PANELS IN MAIN RECEIVING STATION AND 11 KV V/415 V INDOOR SUBSTATION NO.V								
Pre Qualification Details	Please refer Tender documents.								
Independent External Monitor/Remarks	NA								
Tender Value in ₹	NA	Product Category	Electrical Goods/Equipment	Sub category	NA				
Contract Type	Tender	Bid Validity(Days)	120	Period Of Work (Days)	365				
Location	CNP NASHIK	Pincode	422101						

				Pre Bid Meeting Place	CNP NASHIK
Pre Bid Meeting Address	CURRENCY NOTE PRESS, JAIL ROAD, NASHIK ROAD- 422101	Pre Bid Meeting Date	02-Jul-2024 10:30 AM	Bid Opening Place	CNP NASHIK
Should Allow NDA Tender	No	Allow Preferential Bidder	No		

Critical Dates

Publish Date	19-Jun-2024 03:00 PM	Bid Opening Date	20-Jul-2024 10:00 AM
Document Download / Sale Start Date	19-Jun-2024 03:00 PM	Document Download / Sale End Date	18-Jul-2024 10:00 AM
Clarification Start Date	NA	Clarification End Date	NA
Bid Submission Start Date	19-Jun-2024 03:10 PM	Bid Submission End Date	18-Jul-2024 10:00 AM

Tender Documents

NIT Document	S.No	Document Name	Description	Document Size (in KB)
	1	Tendernotice_1.pdf	UPGRADATION OF EXISTING INDOOR 11KV HT OIL CIRCUIT BREAKER SWITCHGEAR PANELS BY VACUUM CIRCUIT BREAKERS SWITCHGEAR PANELS IN MAIN RECEIVING STATION AND 11 KV V/415 V INDOOR SUBSTATION NO.V	1388.46

Work Item Documents	S.No	Document Type	Document Name	Description	Document Size (in KB)
	1	Tender Documents	CPPPTENDER.pdf	Technical Bid	1373.01
	2	BOQ	BOQ_217109.xls	PRICE BID (6000018704)	276.00

Tender Inviting Authority

Name	MANAGER (M)
Address	PURCHASE DEPT, CURRENCY NOTE PRESS, JAIL ROAD, NASHIK ROAD-422101

**CURRENCY NOTE PRESS**

(A UNIT OF Security Printing and Minting Corporation of India Limited) Wholly owned by Government of India

Nashik Road # 422101 (Maharashtra)

(ISO : 9001 & ISO 14001 Certified Unit)

Tel. No 00- 91-253-2463730-39, 2461471 Fax No:00-91-2532464100 CIN:

U22213DL2006GOI144763 GSTIN : 27AAJCS6111J3Z6

Web: www.cnpnashik.spmcil.com E-mail: gmcnp@spmCIL.com

PR Number	PR Date	Indenter	Department
12005338	08.02.2024	K.M.Kharde	W/S ELECTR

Not Transferable

Security Classification:

TENDER DOCUMENT FOR PURCHASE OF: UPGRADATION OF EXISTING INDOOR 11 KV HT OIL CIRCUIT BREAKER SWITCHGEAR PANELS BY VACUUM CIRCUIT BREAKERS SWITCHGEAR PANELS IN MAIN RECEIVING STATION AND 11 KV V/415 V INDOOR SUBSTATION NO. V.

Tender Number: 6000018704

This Tender Document Contains _____ Pages.

Details of Contact person in SPMCIL regarding this tender:

Name: RAJKUMAR R

Designation: Manager (M)

Address: CNPN (Currency Note Press, Nashik)
India

Section1: Notice Inviting Tender (NIT)

6000018704 /

(SPMCIL's Tender SI No.)

(Date)

1. Sealed tenders are invited from eligible and qualified tenderers for supply of following goods & services:

Sch d. No.	Brief Description of Goods/services	Quantity (with unit)	Earnest Money (In Rupee)	Remarks
1	Upgradation of OCB to VCB panel in MRS	1.000 AU	500000.00 INR RUPPEE FIVE LAKHS ONLY	
2	Upgradation of OCB to VCB panel in S/S V	1.000 AU		
Type of Tender (Two Bid/ PQB/ EOI/ RC/ Development/ Indigenization/ Disposal of Scrap/ Security Item etc.)			TWO-BID National Competetive Bid	
Dates of sale of tender documents:			AS PER CPPP PORTAL	
Place of sale of tender documents			AS PER CPPP PORTAL	
Closing date and time for receipt of tenders			AS PER CPPP PORTAL	
Place of receipt of tenders			AS PER CPPP PORTAL	
Time and date of opening of tenders			AS PER CPPP PORTAL	
Place of opening of tenders			AS PER CPPP PORTAL	
Nominated Person/ Designation to Receive Bulky Tenders (Clause 21.21.1 of GIT)			RAJKUMAR R Manager (MM)	

2. Eligibility to participate as per Government of India's Public Procurement (Preference to Make in India) Order 2017 (as amended/ revised) and Ministry of Finance, Department of Expenditure, Public Procurement Division's Orders (Public Procurement 1, 2 and 3) F.No.6/18/2019-PPD dated 23rd/ 24th July 2020 (or any further amendments thereof) regarding eligibility of bidders from neighboring countries shall apply to this tender, if vendor registered under MSE for tendered services.

3. Please note that SPMCIL reserves its right to grant Purchase preferences in accordance with Government of India's Public Procurement (Preference to Make in India) Order 2017 (as amended/ revised) and Public Procurement Policy for Micro and Small Enterprises (MSEs) Amendment Order, 2018 (as amended/ revised).

4. Interested tenderers may obtain further information about this requirement from the above office selling the documents. They may also visit our website mentioned above for further details.

5. Tenderer may also download the tender documents from the web site mentioned above and submit its tender by utilizing the downloaded document (Through e-tendering portal i.e. CPP Portal), the bidder must not make any changes to the contents of the documents, except for filling the required information. A certificate to this effect must be submitted by the bidder in the Tender Form (Section X).

6. Bidders may upload their bids through e-tendering portal i.e. CPP Portal), bidders must upload their bids along with scanned copies as required enclosures (including proof of cost of EMD as applicable) as per instructions given in this regard. Original copy of such scanned uploaded EMD, must reach in physical form within the date and place as provided in such instructions, otherwise their uploaded bid, would be declared as unresponsive.

7. In the event of any of the above-mentioned dates being declared as a holiday/ closed day for the purchase organisation, the tenders will be sold/ received/ opened on the next working day at the appointed time.

8. The tender documents are not transferable.



Tender Number:6000018704

9. The bidder, their affiliates, or subsidiaries – including subcontractors or suppliers for any part of the contract – should not stand declared ineligible/ blacklisted/banned/ debarred by any Government Agency anywhere in the world, for participating in its tenders, under that country's laws or official regulations. A declaration to this effect shall be submitted by the bidder in the Tender Form (Section X).
10. (i) SUBMISSION OF TENDER: As per CPP Portal. Bidders must upload their bids along with scanned copies as required enclosures (including proofs of cost of Tender Documents and EMD as applicable - unless an online payment gateway is provided in the instruction) as per instructions given in this regard.
- (ii) Earnest Money Deposit: EMD shall be submitted in form as given below: (a) Account Payee Demand Draft, (b) Fixed Deposit Receipt, (c) Banker's Cheque, (d) Electronic Fund Transfer (NEFT/RTGS). The demand draft, fixed deposit receipt or banker's cheque shall be drawn on any scheduled commercial bank in India. In favour of SPMCIL, Unit CNP, Payable at Nashik. Electronic fund transfer may be done to CNP account no. 201003551111 IFSC code: INDB0001451. The earnest money shall be valid for a period of forty five days beyond the validity period of the tender i.e. 165 days from due date. The EMD of un-successful bidders will be returned. Only One DD/FDR/Bankers Cheque should be given of adding all the item wise EMD amount as per tender quoted by the bidder.
11. In case of order material in your favour for Rs. 2,50,000/- or above, the supplier shall furnish the performance security amount/ Security Deposit(S.D) (05% of the ordered value) after issue of Purchase order by CNP, Nashik Road in favour of SPMCIL, Unit CNP, payable at Nashik. The performance security will be return back without any interest to successful bidder after the completion of all contractual obligations.
12. EMD of a bidder will be forfeited, if the bidder withdraws or amends its tender or impairs or derogates from the tender in any respect with in the period of validity of its tender. Future, if the successful bidder fails to furnish the required performance security within the specified period, its EMD will be forfeited
13. The bidders participating with MSME registration certificate has to submit Bid Security Declaration as per Annexure-1. Non submission of same will be treated as non responsive.
14. No exemption will be given for deposition of performance guarantee to any DIC/SSI/MSE/NSIC registered firm.
15. Any dispute in the matter will be under Nashik (Maharashtra) Jurisdiction only.
16. Right of acceptance: - The Chief General Manager, Currency Note Press reserves the right to reject any or all tenders without assigning any reason thereof.
17. Clarification of Tender Documents: A Bidder requiring any clarification or elucidation on any issue of the tender documents may take up the same with SPMCIL in writing or by fax / e-mail/ telex not later than twenty one days (unless otherwise specified in the SIT) prior to the prescribed date of submission of tender.
18. Any queries regarding the tender you may please contact at 0253-2454493 or 2461318. E-mail-purchase.cnpnashik@spmcil.com.

.....

.....
(Name Designation, Adress telephone number etc
of the officer signing the document)

For and on behalf of

.....



Tender Number:6000018704

Section II: General Instructions to Tenderers (GIT)

Part 1: General Instructions Applicable to all type of Tenderers

Please CLICK the link for further details

<https://www.spmcil.com/spmcil/UploadDocument/GIT.pdf>

Bidders are requested to download 61 pages by clicking the above given link and submit the same duly stamped and signed along with tender document. Unsigned/stamped printouts of these pages are not acceptable.

Section III: Specific Instructions to Tenderers (SIT)

The following Special Instructions to Tenderers will apply for this purchase. These special instructions will modify/ substitute/ supplement the corresponding General Instructions to Tenderers (GIT) incorporated in Section II. The corresponding GIT clause numbers have also been indicated in the text below:

In case of any conflict between the provision in the GIT and that in the SIT, the provision contained in the SIT shall prevail.

(Clauses of GIT listed below include a possibility for variation in their provisions through SIT. There could be other clauses in SIT as deemed fit.)

Sr No	GIT Clause No.	Topic	SIT Provision
01	3.	ELIGIBLE TENDERERS	Applicable
02	3.4	ELIGIBLE GOODS AND SERVICES (ORIGIN OF GOODS)	Not Applicable
03	6.1	THE TENDER DOCUMENTS INCLUDES:	Applicable
04	8	PREBID CONFERENCE	Applicable. The date & time of pre-bid conference is 10:30 am on 02.07.2024. The queries of the bidders should be reach at least two days in advance. Site visit can be done prior to pre-bid conference only.
05	9	TIME LIMIT FOR RECEIVING REQUEST FOR CLARIFICATION OF TENDER DOCUMENTS	No further queries are entertained and site visit after pre-bid conference.
06	10.1	THE TECHNICAL BID TO BE SUBMITTED BY TENDERER SHALL CONTAIN THE FOLLOW	No Change
07	11.2	TENDER CURRENCY	Supplier is requested to quote price within 2 Decimal place.Quotation with price quote beyond 2 decimal place is ignored.
08	12.1	TENDER PRICES	Applicable
09	12.2, 33, 36.1	SCHEDULE WISE EVALUATION	Not Applicable
10	12.6	GST DETAILS	No Change
11	14	PVC CLAUSE & FORMULA	Not Applicable
12	14.4 TO 14.7	EXCHANGE RATE VARIATION (ERV)	Not Applicable
13	16.2 A) TO C)	DOCUMENTS ESTABLISHING TENDERER'S ELIGIBILITY AND QUALIFICATIONS	Applicable
14	18.4, 18.5	EARNEST MONEY DEPOSIT (EMD)	The required EMD for the tender is Rs. 500000/- shall be submitted scan copy along with E-tender bid. EMD must be furnished along with the tender in the form of Demand Draft/Fixed Deposit Receipt/Bank Guarantee in INR drawn on any Scheduled Commercial bank OR NEFT.
15	19	TENDER VALIDITY	120 Days from the date of opening of tender
16	20.4	NUMBER OF COPIES OF TENDERS TO BE SUBMITTED	One Copy through E-Tendering Portal i.e. CPPP
17	20.8	TWO BID SYSTEM	Applicable

Sr No	GIT Clause No.	Topic	SIT Provision
18	20.9	E-PROCUREMENT	Applicable. Submission of Documents as per NIT Clause No. 06
19	34. AND 35.1	COMPARISON ON CIF DESTINATION BASIS	FOR CNP Nashik Road Basis
20	35.2 TO 35.6	ADDITIONAL FACTORS FOR EVALUATION OF OFFERS AND PREFERENTIAL SCHEMES	NOT APPLICABLE
21	43	PARALLEL CONTRACTS	NOT APPLICABLE
22	44.1	SERIOUS MISDEMEANOURS	No Change
23	44.3	INTEGRITY PACT	Not Applicable
24	45.1	NOTIFICATION OF AWARD	No Change
25	50.	APPLICABILITY OF ADDITIONAL GIT FOR RATE CONTRACTS	Not Applicable
26	51.	APPLICABILITY OF ADDITIONAL GIT FOR PQB TENDERS	Not Applicable
27	52.	APPLICABILITY OF ADDITIONAL GIT FOR TENDERS INVOLVING SAMPLES	Not Applicable
28	53.	APPLICABILITY OF ADDITIONAL GIT FOR EOI TENDERS	Not Applicable
29	54.	APPLICABILITY OF ADDITIONAL GIT FOR TENDERS FOR DISPOSAL OF SCRAP	Not Applicable
30	55.	APPLICABILITY OF ADDITIONAL GIT FOR DEVELOPMENT/ INDIGENIZATION TENDER	Not Applicable



Tender Number:6000018704

Section IV: General Conditions of Contract (GCC)

Please CLICK the link for further details

<https://www.spmcil.com/spmcil/UploadDocument/GCC.pdf>

Bidders are requested to download 36 pages by clicking the above given link and submit the same duly stamped and signed along with tender document. Unsigned/stamped printouts of these pages are not acceptable.

Section V: Special Conditions of Contract (SCC)

The following Special Conditions of Contract (SCC) will apply for this purchase. The corresponding clauses of General Conditions of Contract (GCC) relating to the SCC stipulations have also been incorporated below. These Special Conditions will modify/ substitute/ supplement the corresponding (GCC) clauses.

Whenever there is any conflict between the provision in the GCC and that in the SCC, the provision contained in the SCC shall prevail.

(Clauses of GCC listed below include a possibility for variation in their provisions through SCC. There could be other clauses in SCC as deemed fit)

SI.No.	GCC Clause No.	Topic	SCC Provision
01	1.2	ABBREVIATIONS:	No Change
02	6.1, 6.3 & 6.5	PERFORMANCE BOND/ SECURITY	5 % of the total contract price valid for 60 days beyond completion of contractual obligations including warranty period: if any.
03	8.2	PACKING AND MARKING	Not Applicable
04	9	INSPECTION AND QUALITY CONTROL	Not Applicable
05	11.2	TRANSPORTATION OF DOMESTIC GOODS	No Change
06	12.	INSURANCE	No Change
07	14.1	INCIDENTAL SERVICES	Not Applicable
08	15	DISTRIBUTION OF DESPATCH DOCUMENTS FOR CLEARANCE/ RECEIPT OF GOODS	Not Applicable
09	16.2, 16.4	WARRANTEE CLAUSE	Applicable as per tender section vi. (Pt. No.09)
10	19.3	OPTION CLAUSE	Not Applicable
11	20.1	PRICE ADJUSTMENT CLAUSE	Not Applicable
12	21.	TAXES AND DUTIES	1) If the tenderer fails to include taxes and duties in the tender, no claim thereof will be considered by purchaser afterwards. 2) TDS will be deducted as per prevailing rates.
13	22.	TERMS AND MODE OF PAYMENTS	As per mentioned in section VI i.e. List of Requirement of tender documents. the payment will be made through NEFT/RTGS only.
14	24.1	QUANTUM OF LD	the 10% of the delayed goods or services contract price(s). If LD is levied the GST applicable on the LD shall also be collected from the firm.
15	24.1	QUANTUM OF LD	deduct from the contract price, as liquidated damages, a sum equivalent to the 0.5% of the delivered price of the delayed goods and/or services for each week of delay or part thereof until actual delivery or performance, subject to a maximum deduction of
16	24.1	QUANTUM OF LD	the 10% of the delayed goods' or services' contract price(s). If LD is levied the GST applicable on the LD shall also be collected from the firm.
17	25.1	BANK GUARANTEE AND INSURANCE FOR MATERIAL LOANED TO	Not Applicable

Sl.No.	GCC Clause No.	Topic	SCC Provision
		CONTRACTOR	
18	33.1	RESOLUTION OF DISPUTES	No Change
19	36.3.2,36.3.9	DISPOSAL/ SALE OF SCRAP BY TENDER	Not Applicable
20	20.1	SHORT CLOSURE CLAUSE	Currency Note Press, Nashik reserves the right to short close the contract upon nay change in requirement of CNPN on design/specificaiton, National consideration, user requirement and indent etc. In addition to the GCC clause No.29

Section VI: List of Requirements

Schedule No.	Breif Description of goods and services (Related Specifications etc. are in Section-VII)	Accounting Unit	Quantity	Amount of Earnest Money	Remark
1	Upgradation of OCB to VCB panel in MRS	AU	1.000	500000.00 INR RUPPES FIVE LAKHS ONLY	
2	Upgradation of OCB to VCB panel in S/S V	AU	1.000		

1. Contract Period: The successful bidder has to successful Installation, Testing and Commissioning for the all project will be completed within one year from the date of issue of Purchase Order/Notification of Award of Contract.

The details of Required Delivery Schedule:

a. Upgradation of OCB to VCB Panel in MRS: The successful bidder has to successful Installation, Testing and Commissioning for the 1st schedule will be completed within first 06 month from the date of issue of Purchase Order/Notification of Award of Contract.

a. Upgradation of OCB to VCB Panel in S/S V: The successful bidder has to successful Installation, Testing and Commissioning for the 2nd schedule will be completed within 06 month from after 06 month of date of issue of Purchase Order/Notification of Award of Contract.

2. Required Terms of Delivery: - FOR Currency Note Press, Nashik Road.

3. Destination: - CURRENCY NOTE PRESS, JAIL ROAD, NASHIK ROAD 422 101.

4. Preferred Mode of Transportation: - BY ROAD.

5. Bid Validity: 120 days from due date of tender.

6. Bidder have to open the link provided in Section II, IV & XII onwards and take print out of all the documents available and then sign and stamp each and every paper and submit along with the technical tender.

7. All the copies of tenders shall be complete in all respects with all their attachments/enclosures duly numbered.

8. RISK PURCHASE:

(a) If the supplier after submission of tender and due acceptance of the same, i.e. after placement of contract fails to abide by the terms & conditions of these tender documents, or fails to supply the deliverables as per delivery schedule given or at any time repudiates the contract, the purchaser shall have the right to Invoke the Security-cum-Performance Guarantee if deposited by the supplier and procure stores/take services from other agencies at the risk & consequence of the supplier. The cost difference between the alternative arrangement and supplier tendered value will be recovered from the supplier along with other incidental charges.

(b) In case of supply/job work through alternative sources at lower price, if any, then no benefit on this account will be passed on to the supplier.

(c) For all the purpose the award of contract will be considered acceptance of tender and formal contract pending signing of agreement. Supplier has to abide by all the terms and conditions of tender.

9. Warranty: The successful bidder has to provide warranty, to the entire job work inclusive of material supplied and service ,workman ship delivered for a period of 3 year from the date of acceptance and completion of FAT of both schedule by CNP. If any component of the supplied item is failed due to defect or malfunctioning, during the warranty period the firm should replace the material at their own cost and risk and depute their representative for replacement / to carryout rectification of malfunction if any within one month. Undertaking furnished along with bid.

10. Payment Terms:

a. After successful installation, commissioning, testing and acceptance of up gradation of 11 KV indoor Type OCB to VCB at MRS and Completion of FAT, then 100% payment will be released of 1st Schedule.

b. After successful installation, commissioning, testing and acceptance of up gradation of 11 KV Indoor Type OCB to VCB at Sub Station No.V and Completion of FAT, then 100% payment will be released of 2nd Schedule.

11. Bank Details: Copy of Cancelled Cheque or the Bank details on the letter head signed by Authorized signatory to be submitted.



TENDER NO: 6000018704

SECTION VII: TECHNICAL SPECIFICATIONS

ITEM NO.01

11KV, 26.3 kA INDOOR VACUUM CIRCUIT BREAKER SWITCHGEAR PANEL INTEGRATED WITH ASSOCIATED CONTROL AND RELAYS:-

1.0 INTENT OF SPECIFICATION:-

The specification is intended to cover the Design, engineering, supply, installation, testing and commissioning of indoor type 11 KV, 26.3 kA with highest system voltage of 12 kV Vacuum Circuit Breakers having SCADA Compatible facilities switchboard cubical panels with the replacement of Old OCB Panels at CNP. The Vacuum Circuit Breakers will be integrated with associated indoor controls and protection relays panels. The Vacuum Circuit Breakers will be of Horizontal draw out type with distinct SERVICE/TEST/ISOLATE Positions. The Switchboard Panels should have adequate capacity of electrolytic copper bus bar in horizontal arrangements and consisting the set of vacuum circuit breakers, manufactured and tested as per IS: 13118 for VCB & IEC :62271-100,200 for Switchgear and control panel for MRS at Currency Note Press, Nasik road on Turnkey basis.

Main Receiving Station (MRS) VCB Cubical Panel Technical Details:-

The VCB panel shall have capacity and facilities to install 25 nos of draw out VCB's, which includes 03 as Incomer, 03 as Bus coupler and 19 nos shall be of Outgoing Feeders. It shall be with manual as well as electrically operated ON, OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The complete work i.e. Design, engineering, supply, installation, testing and commissioning of indoor type 11 kV, 26.3 kA with highest system voltage of 12 kV rated Vacuum Circuit Breakers switchboard cubical panel at site is on turnkey basis.

Qty- 01 set [**CONFIGURATION:** - 03 INCOMER + 03 BUSCOUPLER (BR) + 19 OG FEEDER]

VCB MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM / JYOTI/Kirloskar/Stelmec



TENDER NO: 6000018704

2.0 TENTATIVE BILL OF QUANTITY:-

Sr. No.	Description of Material	Quantity
1	Supply and Installation , testing & commissioning of indoor type VCB cubical panel of 11 KV HT VCB in MRS having 03 INCOMER + 03 BUSCOUPLER (BR) + 19 OG FEEDER	1 AU (1SET)
	Supply and Installation of 11 KV HT Cable	
2	3 Core X 95 sq. mm Al. Ar. Cable 11 KV	As per site requirements
3	3 Core X 120 sq. mm Al. Ar. Cable 11 KV	As per site requirements
4	3 Core X 150 sq. mm Al. Ar. Cable 11 KV	As per site requirements
5	3 Core X 185 sq. mm Al. Ar. Cable 11 KV	As per site requirements
6	3 Core X 240 sq. mm Al. Ar. Cable 11 KV	As per site requirements
7	3 Core X 300 sq. mm Al. Ar. Cable 11 KV	As per site requirements
8	Supply and Installation of 11 KV heat shrinkable term. kit HT Cable as required	As per site requirements
9	Supply and Installation of 11 Kv HT Straight through jointing kit as required	As per site requirements
10	Copper Lugs & Brass cable Glands for termination of cables as required	As per site requirements
11	Supply and fixing of cable trays as required	As per site requirements
12	Sup. & Inst. of outdoor HT heat shrinkable termination Kit for 3C X 185 sq.mm cable	As per site requirements
13	Disconnection & Removal of 11 KV HT cables	As per site requirements
14	Supply and Installation of 1.1 KV LT cable of size 2.5 sq.mm (multicore)	As per site requirements
15	Supply and Installation of 1.1 KV LT cable of size 1.5 sq.mm (multicore)	As per site requirements
16	Oil Painting of MS structure	As per site requirements
17	HT/LT Electrical inspector charges statutory	As per site requirements
18	HT/LT revised SLD (single line diagram)	As per site requirements



TENDER NO: 6000018704

19	Metallic Caution Boards as per IS standard	As per site requirements
20	Supply and Installation of Rubber mats of 11 KV Voltage Grade	As per site requirements
21	Supply and Installation of shock treatment chart	As per site requirements
22	First aid kit	1 set
23	portable Co2 fire extinguisher (22.5 kgs)	03 nos
24	sand buckets (9 litres) with suitable stand	05 nos
25	Third party testing for entire work	1 AU
26	Panel testing and commissioning	1 AU
27	Civil works & construction of Masonry underground cable trench	As per site requirements
28	Supply and fixing of MS chequered plate	As per site requirements

Note:- Firm shall supply HT Cables mentioned in BOQ only after inspection and confirmation of the site required for execution.

3.0 MRS VCB CUBICAL PANEL TECHNICAL DETAILS:-

The VCB panel shall have capacity and facilities to install 25 nos. of draw out type VCB's, which includes 03 as Incomer, 03 as Bus coupler and 19 no's shall be of Outgoing Feeders. It shall be with manual as well as electrically operated ON, OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The complete work i.e. Design, engineering, supply, installation, testing and commissioning of indoor type 11 kV, 26.3 kA with highest system voltage of 12 kV rated Vacuum Circuit Breakers switchboard cubical panel at site is on turnkey basis.

Qty- 01 set [CONFIGURATION: - 03 INCOMER + 03 BUS COUPLER (BR) + 19 OG FEEDER]

MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM /JYOTI/Kirloskar/Stelmec.



TENDER NO: 6000018704

1.0 SCOPE:

1.1. This Specification covers the basic requirements in respect of 11 kV, 26.3 kA with highest system voltage of 12 kV indoor Vacuum Circuit Breaker having SCADA Compatible facilities switchgear panel integrated with associated indoor control and relay panels for installation at MRS IN CNP. The Specification covers the requirements of indoor switchgear with relays & controls. The control and relay panel should form integral part of the switchgear (i.e. should be physically integrated into one unit). The specification is intended to cover the Design, Engineering, supply, installation, testing and commissioning of indoor type vacuum circuit breakers cubical panel with adequate capacity of electrolytic copper bus bar in horizontal arrangements and consisting the set of vacuum circuit breakers, manufactured and tested as per IS: 13118 for VCB & IEC :62271-100,200 for Switchgear and control panel. The necessary Electro-Mechanical interlocking arrangement between three incomer and bus couplers shall be provided in such a way that the Bus coupler / Bus couplers can only be switched on if any One Incomer / Two incomer/ Three Incomers is /are put OFF as per the site conditions requirements. The equipment will be used as incomer and outgoing panel for the supply, isolation and protection device for the 11 KV /0.433 KV transformers. Each compartment shall be separated from adjacent one by sheet steel barrier.

1.2. The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the specifications / order or not and specification attached hereto form an integral part of this specification for all purposes. Design shall allow further extension at either end in future.

1.3. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements. In actual practice, notwithstanding any anomalies, discrepancies, omissions, incompleteness, etc. in these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that



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respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.

**MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM
/JYOTI/Kirloskar/Stelmec**

2.0 TOLERANCES:

Tolerances on all the dimensions shall be in accordance with provisions made in the relevant Indian/IEC standards and in these specifications. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

3.0 SERVICE CONDITIONS:

3.1. System particulars:-

a. Nominal system voltage	11 kV
b. Corresponding highest system voltage	12 kV
c. Frequency	50 Hz \pm 3%
d. Number of phases	3
e. Neutral earthing grounded	Solidly
f. Short time Current Rating	26.3 kA

3.2. Equipment supplied against the specification shall be suitable for satisfactory operation

under the following tropical conditions:-

a. Max. ambient temperature	40 Deg. C
b. Max. relative humidity	up to 90 %
c. Max. annual rainfall	650- 700mm
d. Max. altitude above mean sea level :	584 mtrs.
e. Reference Ambient Temperature for temp. rise	50 Deg. C

The equipment shall be of suitable design to work satisfactorily under these conditions.

3.3. Auxiliary D.C. supply required for the operation of VCB and VCB Control panel:-

Auxiliary D.C. supply required for the operation of VCB and VCB panel (Closing, tripping, indications, protection etc.) should be taken from the existing Battery Bank. The existing Battery bank and charger available at MRS will be utilised for required function of VCB and VCB panel. The firm shall confirm the compatibility of Battery charger prior to BID.

4.0 CODES AND STANDARDS:-

4.1. The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety



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codes. NOTHING IN THIS SPECIFICATION SHALL BE CONSTRUED TO RELIEVE THE TENDERER OF THIS RESPONSIBILITY.

4.2. Unless otherwise specified, the equipment offered shall confirm to the latest applicable

Indian, IEC Standards which are as follows:-

a. IS: 13118 for VCB & IEC: 62271-100,200 for Switchgear and control panel.

b. All other accessories used in switchgear panel shall confirm to the latest applicable Indian, IEC standards.

5.0 GENERAL TECHNICAL REQUIREMENTS:-

5.1. 11KV INDOOR SWITCHGEAR:

5.1.1. Switchgear for Indoor installation shall be Indoor metal clad, draw-out type and fully compartmentalized having 26.3 kA short time current rating. All panels shall be of unitized construction providing facility for extensions on both sides. Switchgear panels are required, viz. the incomer panel, the bus section panel, bus riser (if required) panel and the outgoing feeder panel.

Circuit breaker Type and rating:-

Sr. No.	Particulars	Requirements
1	Service type	Indoor
2	Type of breakers	Vacuum
3	No. of poles	03
4	Nominal system voltage	11 KV
5	Highest system voltage	12 KV
6	Rated normal current at ambient temp.	
i)	Bus bar	1250 Amps
ii)	For Incomer/bus coupler/outgoing	1250 Amps
7	Rated breaking capacity (Rated symmetrical short circuit current)	26.3 KA
8	Rated short circuit making capacity	63kA or better
9	Rated short time withstand current for 03 seconds	26.3 KA
10	One minute power frequency	28 KV

	withstand voltage to earth	
11	Impulse withstand voltage	75 KV Peak
12	System neutral	Solidly Earthed
13	Operating duty	Rapid auto reclosing
14	Rated auxiliary supply for spring charge motor and heater circuit	240 V A.C., single phase, 50 HZ
15	Rated supply for closing and trip coil	110 V D.C.
16	Operation of VCB's	Electrical and mechanical (Manual) Both provisions.
17	Degree of protection	IP4X

5.1.2. Circuit Breakers used shall be VCBs of specified rating for the various types. The design of the breaker truck shall be such that there will be flexibility of interchanging between incomer to incomer, bus-section to bus section and feeder to feeder trucks, where similar rated breakers are offered.

5.1.3. **Materials:** Materials for the incomer, bus section and feeder panels (each breaker panel) shall be as follows:

5.1.3.1. **Incomer panel**

- i. Draw out type Vacuum circuit breaker having 1250 Amps. Continuous Current Rating and 26.3 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. 3 nos. of current Transformers of ratio of suitable ratings.
- iii. 3 nos. of single phase PTs of ratio 11KV/RT3 BY 110/RT3 BY110/RT3 or as per site condition suitable to our requirement. PT should be connected to the incomer with proper protection arrangement.
- iv. One mechanical ON/OFF indicator.
- v. One mechanical 'spring charged' indicator.
- vi. One T-N-C control switch for circuit breaker.
- vii. Remote-Local switch for circuit Breaker.
- viii. All Relay and instruments etc.
- ix. Set of MCBs, stud type terminals and control wiring.
- x. Fuse/MCB and link for Motor Starter, indication lamps, push buttons, meters.



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- xi. Space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside LT control wiring.

5.1.3.2. Bus Coupler

- i. Draw-out type vacuum circuit breaker having 1250 Amps continuous current rating and 26.3 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. 3 nos. of CTs of suitable ratio.
- iii. One T-N-C control switch for circuit breaker.
- iv. Remote-local switch for circuit Breaker.
- v. One mechanical ON/OFF indicator.
- vi. One mechanical 'spring charged' indicator
- vii. Three nos. of space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- viii. Set of MCBs, stud type terminals, and control wiring.
- ix. Fuse and link for Motor Starter.
- x. All Relay and instruments etc.

5.1.3.3. Feeder (outgoing) panel

- i. Draw-out type vacuum circuit breaker having 1250 Amps continuous current rating and 26.3 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. 3 nos. of CTs of suitable ratio.
- iii. One T-N-C control switch for circuit breaker.
- iv. Remote-local switch for circuit Breaker.
- v. One mechanical ON/OFF indicator.
- vi. One mechanical 'spring charged' indicator.
- vii. Space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- viii. Set of MCBs, stud type terminals, and control wiring.
- ix. Fuse/MCB and link for Motor Starter.
- x. All Relay and instruments etc.

5.2. BUSBAR:

5.2.1. 11 kV bus bars shall be of electrolytic copper and shall be rated for 1250 Amps Continuous current. The electrolytic copper bus bar of adequate Cross sectional area shall be considered and it should be uniform through the length for the bus bars. The bus bar edges/ends shall be rounded off/ chamfered so that there will not be any sharp



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edges/projections. All bus connections, joints and taps shall be tinned or silver plated, Connections shall be as short & straight as possible

5.2.2. 11kV bus support insulators and other equipment insulators shall have a minimum creepage distance of 127 mm or better as per IS standards. These insulators shall be of solid core porcelain or epoxy resin cast, with suitable design. Insulators shall have cantilever strength.

5.2.3. All fasteners (Nuts Bolts) used for bus bar connections shall be of non-magnetic stainless steel. Only Belleville type washers shall be provided for each nut bolt. If the fasteners used are not of stainless steel, the tenderer shall state in their offer the material which is used and confirm that the same is non-magnetic and is superior to stainless steel.

5.2.4. The bus bars along with their supporting insulators etc. shall have a short time current rating of 26.3 KA for 3 sec. This shall be confirmed by the tenderers in their technical offer.

5.2.5. Clearances between phases and between phase and earth shall be kept so as to obtain high reliability. However minimum clearances as shown below shall be kept.

1. Phase to Phase 127 mm or better.
2. Phase to earth 77 mm or better.

5.2.6. If any special insulating material is proposed to achieve the effect of above clearances, details of the same shall be furnished in the technical offer.

5.3. CIRCUIT BREAKERS:

5.3.1. The circuit breakers offered shall be Vacuum Circuit Breakers and of Horizontal draw

out Horizontal Isolation type with distinct SERVICE/TEST/ISOLATE Positions and provided with set of safety shutter of polycarbonate material .Breakers shall be of 3 pole design for use in 11 kV indoor switchgear. It shall be removable trolley type with manual as well as electrically operated ON,OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The removable trolley (Two nos. for MRS) shall be supplied with each set to facilitate the breaker movement.



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5.3.2. The circuit breaker shall have 26.3 kA for 3 sec. short time current rating. The circuit breaker for incomer and bus section shall have 1250 Amps. continuous current rating and for feeders shall have 1250 Amps continuous rating. Circuit breaker shall be suitable for rapid reclosing cycle i.e. O-0.3 sec.-CO-3 min.-CO.

5.3.3. The circuit breaker shall be provided with Manual and motor operated spring charged closing. Spring charging motor shall be suitable for 240V, 50 Hz, single phase AC. Suitable rating starter shall be provided for Motor protection. Spring release coil for closing shall be suitable for 110 V DC. Provision shall be available for charging the springs manually as well, and to close CB mechanically.

5.3.4. Tripping of the circuit breakers shall be through "Shunt trip" coils rated for 110 V DC auxiliary supply. It shall be possible to trip the breaker manually in case of necessity.

5.3.5. All circuit breakers shall have mechanical ON/OFF indicator and spring charge indicator. These shall be visible from the front without opening the panel door. Also there shall be provision for mechanical (manual) tripping and also for manual charging of the springs.

5.3.6. Each operating mechanism of the circuit breaker shall be provided with adequate number of Cam/Snap type auxiliary switches of normally open and normally closed contacts for the control and operation of the equipment.

5.3.7. Adequate numbers of "NO/NC" contacts of the C.B. shall be wired up to the terminal block. Following contacts shall be wired up to the terminals and clearly marked up in the relevant drawings.

- i. Terminal for remote indication of breaker ON/OFF.
- ii. Terminal for remote indication of spring charge.
- iii. Terminal for remote indication of trip circuit healthy.
- iv. Terminal for remote closing.
- v. Terminal for remote trip.
- vi. Operation counter

5.3.8. Safety shutters (polycarbonate material) which close automatically to prevent accidental contact with the live bus after withdrawal of the C.B. shall be provided.

5.3.9. a) Electrical anti pumping device shall be provided for breaker.



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b) Each breaker should be equipped with RACKING - IN- OUT LEVER

c) Mechanical under voltage release override shall be provided.

5.3.10. Remote Trip Arrangement:-

A) Remote trip arrangement of Incomers in respective substation No. 04, Substation no-3 and Substation No.05 :- A Suitable arrangement should be provided to make it possible for the remote trip through an emergency master switch for each incomers coming from MRS to Substations No. 03 & 04 and 05 at respective 11 KV HT room. Necessary multicore armoured Copper cable of size not less than 2.5 sq.mm, Emergency master switch and other ancillary items along with cable laying, termination shall be arranged and will be the responsibility of the successful bidder.

B) Supply, installation & fixing of GI perforated type cable trays of various sizes-

Supply, installation, fixing of GI perforated type cable trays of various sizes as per the site condition requirement wherever necessary with MS angle support, GI slotted C channel at an interval of 1 meter or MS angle iron fabricated support for cable laying. If any material required, it shall be the part of the work and shall be arranged and will be the responsibility of the successful bidder.

C) Oil painting:-

Oil painting of all MS fabrication work with anti-rust treatment coats and main colour paint shall also be executed by the successful bidder.

5.3.11. CIRCUIT BREAKERS CONTROL SWITCH:

5.3.11.1. Trip-neutral-close, (T-N-C SWITCH) handle must be pushed in to spring return type to either trip or close position from Neutral position.

5.3.11.2. Interlocks:

- Breaker truck cannot be withdrawn or inserted when breaker is closed.
- Breaker can be operated only in Service/Test/ Isolated and withdrawn conditions of breaker truck.
- Breaker cannot be moved from service to test position in ON state.
- Closing of the breaker should be possible only when the breaker truck is in service or test position and not in a position in between.



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5.3.12. PROTECTIVE RELAYS: Suitable for automation through the SCADA

Make:- ABB/Schneider/Alsthom/C&S/Siemens/Ashida or equivalent

5.3.12.1. The protective relays shall be suitable for the station auxiliary supply (110 V DC for MRS) and have facility of a test push button to test the relay functioning or else as per the design.

5.3.12.2. It should be preferably draw out type O/C, E/F and High speed Trip Relay or as per the design.

5.3.12.3. For each incomer, bus section and outgoing feeder, over current relay, earth fault relay, trip circuit supervision relay and Master trip relay shall be provided for protection.

5.3.12.4. For each incomer, Bus coupler and outgoing feeder, high speed tripping relay/Master tripping relay shall be provided. All action of tripping shall be through high speed tripping relay/Master tripping relay in event of fault. Master tripping relay shall be of hand reset type.

5.3.12.5. MRS VCB switchgears panel: - Only Outgoing feeders for substation No-4 (MRS to Substation no-4) shall be provided with auxiliary relay type VAA for BUCHHOLZ, OT, WT Alarm and Trip . Interlocking/command provision for such faults /Alarms shall be made at MRS VCB switchgear panel by laying armoured copper cable/cables of required size from substation no-4 for each transformer to MRS panel if required.(If existing cables are available then same can also be utilised for interlocking).

5.3.12.6. All the relays shall be suitable for flush mounting, with only the flanges projecting on the front and connections at the back. Relays shall have dust-proof covers removable from the front. Protective relays shall have built-in test terminals as per the standard design of the relay manufacturer/supplier. All the above relays shall be suitable for 110 V DC as per the requirement of set.

5.3.12.7. Trip circuit supervision scheme shall be such that testing of Trip Circuit Healthy is possible irrespective of whether the C. B. is in the closed or open position. The Trip Circuit Healthy LED should glow continuously in CB 'ON' Position and on demand in C.B. 'OFF' position. The rating of dropping resistance in series with Trip Circuit Healthy LED shall be such that the Trip Coil should not get damaged because of continuous current flowing through it.

5.4. CURRENT TRANSFORMERS:

5.4.1. As the C.Ts. are being prone to failure due to various reasons, the quality and reliability of the CTs are of vital importance. C.T. shall be



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rated for 26.3 kA for 1 sec. short time current. Insulation used shall be of very high quality, details of which shall be furnished in the technical offer.

5.4.2. The instrument security factor for metering core shall be low.

5.4.3. Primaries shall be wound or bar type, rigid, high conductivity grade copper conductor.

Unavoidable joints on the primary conductor shall be welded type, preferably lap type.

5.4.4. Suitable insulated copper wire of electrolytic grade shall be used for CT secondary winding. Multi ratio in CT shall be achieved by reconnection of secondary winding tapping.

5.4.5. Secondary terminal should have the short circuiting facility and to be brought on terminal with marking.

5.4.6. The CTs shall be resin/epoxy cast. Contact tips on primary terminals shall be silver plated. Correct polarity shall be invariably marked on each primary and secondary terminal.

5.4.7. Details of CTs:-

- i. IS: 2705 or IEC 185 or as per latest applicable standard.
- ii. Class of Insulation: E

iii. CT Details for Incomer /Bus coupler /Feeders

(As per the current rating of feeder)

A) Incomer:-

1. CT ratio: - 350-800/5A
2. Class of accuracy
 - a. Core I- 0.5 /1
 - b. Core II- 5P10 or better
3. Purpose of each core
 - a. Core I - Metering
 - b. Core II - Protection
4. BURDEN
 - a. Core I -10VA or better
 - b. Core II - 10VA or better

B) Bus coupler:-



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1. CT ratio- 350-800/5A
2. Class of accuracy
 - a. Core I - 0.5 /1
 - b. Core II- 5P10 or better
3. Purpose of each core
 - a. Core I - Metering
 - b. Core II - Protection
4. BURDEN
 - a. Core I -10VA or better
 - b. Core II - 10VA or better

C) Outgoing Feeders:-

1. CT ratio- 60-100/5A
2. Class of accuracy
 - a. Core I - 0.5 /1
 - b. Core II- 5P10 or better
3. Purpose of each core
 - a. Core I - Metering
 - b. Core II - Protection
4. BURDEN
 - a. Core I - 10VA or better
 - b. Core II - 10VA or better

Make-Vidyut/Jyoti/ECS/AE/Pragati/Shah or Equivalent

5.5. POTENTIAL TRANSFORMER:

5.5.1. Potential transformers shall be single phase units connected to the line side in the respective incomer. H.V. side shall be connected in star formation and L.V. side in star formation. Three numbers of HRC fuses of suitable rating shall be provided for HV side/LV side.

5.5.2. P.T. shall be draw out type and provided in a separate compartment. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of



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primary stud point with earth bus in service position shall be confirmed. The PT design should be such that the HT fuse is encapsulated in EPOXY material to avoid direct exposure of high voltage terminals. The PT compartment shall be suitable for easy accessibility and as per the design of the VCB.

5.5.3. P.T. shall be epoxy/resin cast. Contact tips of primary/secondary contacts shall be as per the latest standard. Correct polarity shall be distinctly marked on primary and secondary terminal with adequate space.

5.5.4. Details of PTs

- i. IS: 3156 or IEC 186 or as per latest applicable standard.
- ii. Class of Insulation: Class E
- iii. a) Rated primary voltage- 11KV /RT3
b) Rated secondary voltage- 110 V / RT3
- iv. Ratio: - 11KV /RT3 / 110 V /RT 3
- v. Burden: - 50 VA or better
- vi. Class of accuracy:
Core I - Class 0.5 or better & 3P (dual purpose)

Make-Vidyut/Jyoti/ECS/AE/Pragati/Shah or Equivalent

4.0 CUBICLE DETAILS FOR MRS VCB PANELS:-

4.1. The switchgear cubicle (panel) shall be made of sheet steel of thickness not less than 2 mm CRCA or better and shall be free standing floor mounting indoor type, Door and load bearing members shall be of 3 mm thick sheet. There shall be sufficient reinforcement to have level surfaces resistance to vibration and rigidity during transportation & installation. Cubicle shall be dust, moisture & vermin proof, and shall provide degree of protection not less than IP4X in accordance with IS 13947. The cubicle shall be designed such that in both the test and isolated position of the C.B truck, the front cover of the cubicle shall remain closed.

Make: - JSPL/ Rittal or any equivalent

4.2. Design & construction of the switchgear panel shall be of the highest order. All sheet steel work shall be treated as per the seven tank metal pre-treatment process before applying primary coating. For the final coat (stowed) epoxy paint color shade of Siemens Grey should be used. The panels after final painting shall present an aesthetically pleasing appearance, free of any dent or uneven surface.



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4.3. Two separate earthing terminals shall be provided in each panel and shall be connected to the earth bus within the panel. The earth bus shall be of copper and shall have adequate cross sectional area not less than 40 mm width and adequate thickness should be of 06 mm (06 X 40 mm).

4.4. Each of the Switchgear panel shall be of unitised construction with all necessary accessories like end covers etc. However the design shall allow for the extension on both sides without limit. Bus bar design shall be such that panel to panel interconnection can be carried out without difficulty as and when required.

4.5. Explosion vents of suitable design shall be provided on the roof sheet of the bus bar/cable/CT's chambers so as to enable discharge of explosive gases from inside during a flashover. However the provision of explosion vent shall not affect the degree of protection/vermin proofing of the panel.

4.6. Cable compartment shall be provided at the rear of the switchgear panels and shall be suitable for cable entry from the bottom cable trenches & Rear access with bolted covers only. Rear bottom plates of the cable compartment shall be fitted with removable gland plates of adequate size for fixing the cable glands as per the site conditions.

4.7. Cable compartments for the incomer and feeder shall be suitable for terminating 300 sq.mm XLPE cables. Copper terminator strip of suitable size shall be provided for termination of cables and shall have adequate height inside to accommodate the heat shrinkable type indoor cable termination. Cable compartment shall be robust enough & self-supporting. The design shall be such that the weight of the power cable within the compartment shall not cause direct pressure on the C.T.studs. Suitable clamping arrangement shall be provided at the bottom of the cable compartment. Each power cable shall be terminated independently.

4.8. a) The existing cables shall be used for Incomer and for outgoing feeders. If, length of existing cables are not sufficient to connect in New VCB panel at respective Incomer/ outgoing feeder, the appropriate length of cable piece of same size and rating, HT cable jointing kit, cable end termination kit, cable glands, lugs and all other materials required to extend the length of cable for termination in VCB panel shall be arranged and will be the responsibility of the successful bidder.

b) Providing chequered plates for trench covering.

c) Dismantling of existing 11KV old OCB switchgear panel in phase manner.

d) Dismantling of existing old cables connections and all allied things.



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e) **Disconnection, removal & Re-termination** of all the Existing cables of (all sizes) with Heavy duty lugs, cable glands (double compression type glands) with clips for termination on cable glands earthing.

4.9. The accessories required:-

Supply, installation, Termination, Testing and Commissioning of following accessories:-

HT Cables, Termination kit, Cable joint, Cable Glands, Straight joint:-

A) HT Cables

- a) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 300 sq.mm. Qty- As per site requirement.
- b) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 240 sq.mm Qty- As per site requirement.
- c) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 185 sq.mm Qty- As per site requirement.
- d) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 150 sq.mm Qty- As per site requirement.
- e) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 120 sq.mm Qty- As per site requirement.
- f) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 95 sq.mm Qty- As per site requirement.

Note:- Firm shall supply HT Cables mentioned above only after inspection and confirmation of the site required for execution.

B) Termination KIT:- Heat shrinkable type (Indoor) as per the site requirement

C) Straight Joint termination kit:- Heat shrinkable Type (Indoor) as per the site requirement

D) HT cable glands of various sizes and Lugs as per the site requirement

**E) Termination KIT (Outdoor):- Heat shrinkable type as per the site requirement
Heat shrinkable termination kit with lugs etc. for 185 sq. mm Ht cables as per the site requirement**

F) LT cables :- Supply, installation, laying, termination, testing and commissioning of following LT cables



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- i) □ 1.5 sq.mm , multi core , copper conductor ,multi stranded , armoured cable, 1.1KV grade XLPE insulated confirming to latest applicable standard as per the site requirement
- ii) 2.5 sq.mm , multi core , copper conductor ,multi stranded , armoured cable, 1.1KV grade XLPE insulated confirming to latest applicable standard as per the site requirement

Note:- Firm should use and supply the reputed brands like – Polycab/Finolex/CCI/Havells/ RR/Gloster or any equivalent for XLPE cables.

Firm should use and supply the reputed brands like Raychem/ Cabseal/Vikchem/Superseal/Mahindra/3M brands or any equivalent for cable jointing kit and cable end termination kit.

4.10. CONTROL WIRING:

A) All control wiring shall be carried out with 1100 volts grade single core, multistrand flexible copper wires with PVC insulation. The conductor size shall be 1.5 sq.mm (minimum) for circuits. Wiring channel may be used for routing the cables. Wire numberings and colour code for wiring shall be as per IS standard. Yellow/Green wires of Size 2.5 sq.mm shall be used for earthing. The wiring diagram for various schematics shall be made on thick and durable white paper in permanent black ink and same should be encased in plastic cover, thermally sealed. It should be kept visibly in a pocket of suitable size of MS sheet of 1 mm thickness, on the interior surface of the door of C & R Panel.

B) All front mounted as well as internally mounted items including MCBs shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation.

C) Further it shall be ensured that any control wiring if at all routed through the H.T chamber is properly insulated and provided with metallic barriers to prevent damages due to heat.

5.0 WIRING AND CONTROL WIRING TERMINALS:-

5.1. Terminal blocks shall be of clip-on design made out of non-trackable insulating material of 1100 V grade. All terminals shall be stud type, with all current carrying and live parts made of tinned plated brass.



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5.2. The terminal connector/blocks shall be disconnecting type terminal connectors with shorting of C.T. secondary terminals shall be provided in CT secondary circuit. 2.5 sq mm wires shall be used for CT secondary. All other terminal connectors shall be Non- disconnecting type. Terminal should be shock protected in single moulded piece. Terminal block should have screw locking design to prevent loosening of conductor.

5.3. Spare terminals shall be provided in panel. All terminals shall be provided with ferrules indelibly marked or numbered and identification shall correspond to the designations on the relevant wiring diagrams. The terminals shall be rated for adequate capacity which shall not be less than 10 Amps for control circuit. For power circuit it shall not be less than 15 Amps.

5.4. All front mounted as well as internally mounted items shall be provided with individual identification labels. Circuit identifications name plate at the front and back side for identifications should be present. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation. Labelling shall be on aluminium anodised plates of 1 mm thickness, letters are to be properly engraved.

5.5. All fuses used shall be of HRC type and all MCBs as per latest IS standard (amended up to date) of adequate rating shall be used.

5.6. **Danger Board Plate-** The danger board shall be riveted /pasted on the front and back side of each VCB panel as per the standard in force. Each panel shall be riveted on front and back side of each VCB panel with nomenclature of respective Incomer/ feeder for easy identifications.

5.7. **Name plate marking:** - The switchgear panels shall have the name plate carrying the following data indelibly marked:-

- Name of manufacturer
- Purchase Order Number with date
- Designation & serial number,
- year of manufacturer,
- Rated voltage,
- Rated normal current,
- Rated frequency,
- Rated Short Circuit Making capacity,
- Rated Short Circuit Braking capacity,
- Short time Current for 1 sec.(kA) 3 sec



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- Rated Insulation Level
- Rated Operating sequence Aux. Voltage (DC/AC)

6.0 CONTROL AND RELAY PORTION OF 11 kV INDOOR SWITCHGEARS:

6.1. The relays, meter and equipment as described below should be provided on the switchgear for each **incomer, bus-section, and feeder as follows:-**

Description:-

1. **Vacuum Circuit Breaker for Each Incomer:** - 12 kV, 1250 Amps,
2. **Vacuum Circuit Breaker for Each Bus coupler:** - 12 kV, 1250 Amps,
3. **Vacuum Circuit Breaker for Each outgoing feeder:** - 12 kV, 1250 Amps,
4. Motor for spring charge.
5. Starter with fuse and link for Motor.
6. Ammeter, with selector switch, **DIGITAL TYPE.**
7. Power factor meter. (Only for Incomers)
8. Voltmeter, with selector switch (Only for Incomers), **DIGITAL TYPE**
9. Trivector energy meter (Only for Incomers)
10. Frequency Meter (Only for Incomers), **DIGITAL TYPE**
11. Control switch for circuit breaker.
12. Local/Remote selector switch.
13. Auto/Manual selector Switch.
14. Indicating LED (Amber colour) for 'Trip Circuit Healthy' (for all breakers)
15. Push button for 'Trip circuit Healthy Test'
16. Indicating LED (White colour) for 'spring charged'
17. Indicating LED (Red colour) for C.B. 'ON'
18. Indicating LED (Green colour) for C.B. 'OFF'
19. Indicating LED for Auto Trip
20. Surge Arrestor for all incomers in MRS
21. All Incomers, Bus couplers, and outgoing feeders should have Numerical over current and earth fault relay with communication protocol for SCADA compatibility . The relay shall be 50/50N, 51/51N, 95 (Trip circuit supervision relay).
22. High Speed Master Trip Relay
23. Alarm scheme consisting of alarm relay(s), indicating LED and Accept/Reset push button(s)
24. Space heater along with MCB



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25. Thermostat
26. Toggle switch for Heater
27. Cubicle illumination lamp along with door operated control switch.
28. TNC switch

6.2. Alarm equipments:-

All the VCB panel (Incomer, Bus coupler, Outgoing feeders) shall be provided with:-

- Eight point (8) annunciators
- One alarm hooter and alarm indicating auxiliary relays.
- It shall indicate the tripping of the circuit breaker under fault condition.
- It shall be complete with the indicating lamp with acknowledge and reset push button.
- **Make:- Alan/Seco or equivalent**

6.3. Trip circuit supervision scheme shall be provided for each circuit breaker with trip circuit supervision relay facility.

7.0 TESTS:

7.1. **TYPE TESTS:** The equipment offered in the tender should have been successfully type tested at ERDA/CPRI/PEHLA laboratories by the successful bidder/or the principle Manufacturer/ or OEM/ or Panel Integrator for following tests in line with the relevant standard and technical Specification, and to submit complete set of the type test reports along with the **offer** and also submit these reports before commencement of supply.

- a) Short time withstand current test
- b) Temperature rise test
- c) Lightning impulse voltage test
- d) Power frequency voltage test

7.2. Routine Test:-

All routine test as per IS or IEC standard shall be carried out and submit the reports with Materials.

- a) Functional test
- b) Power frequency voltage withstand test
- c) Primary current injection test
- d) Insulation resistance test
- e) Interchangeability of similar rating circuit breaker
- f) Dimension check
- g) Mechanical operation of circuit breakers.



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8.0. EARTHING:- for MRS 11KV Indoor Cubical Panel

8.1. The maintenance free earthing of adequate quantity should be done.

8.2. Supply of earthing system: Detailed Technical Specification:

This specification covers adequate quantity of earth electrodes, ground enhancing materials used for a maintenance free earthing system in line with the guidelines given in the latest applicable Indian standards to ensure that the resistance of the earth pits will be as per applicable standard limit i.e. around 2 Ohms or lower.

8.3. **Earth Electrode:** High tensile low carbon steel rod of 3 Mts length & 32 mm dia. with bonded copper on the outer surface. The Carbon Steel Rod shall be tested & certified for short current time rating as per latest IS standard.

8.4. **Activated Carbon Based/ or equivalent Back-fill Grounding Compound:** The Back-fill compound will be strictly Activated Carbon based/or equivalent conductive type, having a very low resistivity as per standard. The Back-fill shall be tested as per applicable IEC. The composition of Back-fill compound will be such that it will not require the continuous presence of water / moisture / salt to maintain its conductivity. The Back-fill compound will contain corrosion inhibitor to prevent oxidation of Earth electrode. The Back-fill compound will not contain hazardous chemicals to human & soil.

Earthing Compound Make - Indelec / Jef Techno System /Erico/equivalent

8.5. Installation of Earthing System:-

The firm shall carry out the digging work required for the earth pit of size 3 Mtr depth at specified location and it will be filled with carbon based or equivalent material earthing powder in proper proportion in mixture as per standard guideline. The firm shall connect the earthing electrode with suitable size of copper connector to the earthing strip. The firm shall install the test link box at the earth pit chamber with the all required accessories to complete the earthing system. After completion of the earthing system work, the firm shall carry out the earthing resistivity test and value of the resistance will be maintained less than 2 ohm as per applicable Indian standard. The earth pit will be properly covered with heavy duty PVC/metallic removable cover.



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8.6. Supply of GI Earthing Conductor:-

Earthing Material of conductor: Soft Mild steel with Galvanized Size of conductor: 50mm x 5 mm Supplied GI Conductor should have Zinc coating of 100-150 Microns to avoid corrosion or deterioration due to environmental factors.

8.7. Installation & Commissioning of GI Earthing Conductor:-

The firm shall route and lay the GI earthing Conductor (size: 50mm x 5 mm) from New earth pits to the New HT switchgear panel as per standard guideline.

9.0 OTHER IMPORTANT WORKS:-

9.1. Statutory permission for energising the switchgear panel:-

The bidder firm should be responsible for Statutory permission for energising the switchgear panel from Central Electricity authority / state electricity authority as per CEA regulation, and shall be arranged by the bidder firm. The permission will include the submission of application, site inspection visit, test reports and all related documents required for getting the installation approved certificate from authority.

9.2. Third party (government approved Electrical contractor) testing:-

The entire New HT electrical installations should be tested through third party agency/firm. Third party testing shall be arranged by the successful bidder.

Testing for Followings:-

- i) Electrical HT panels
- ii) Earthing
- iii) HT Cables

9.3. GENERAL REQUIREMENTS FOR PROTECTIVE, MEASURING & CONTROL EQUIPMENTS:-

Principal requirements of protective relays, metering equipment, auxiliary relays breaker control switches etc. are as follows:

I) Numerical protection Relay O/C and E/F:-

Setting for O/C

50% to 200% of Base Current



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Setting for E/F	10% to 40% of Base Current
CT Secondary current	5 Amp.
Contacts	2 set of Self Reset N/O Contacts or as per design.
Mounting	Flush.
Type	numerical protection relay over current and earth Fault.
Auxiliary voltage	110 V DC (for MRS)
Operational indicator	Flags
IS reference	latest version

II) HIGH SPEED MASTER TRIP RELAY

Type	High speed of operation.
General Design	Electromechanical
Coil Rating	110 V DC (MRS) or as per the site condition
Time setting	Instantaneous
Aux contacts	As per the design
Operational indicator	Mechanical Flag in window, Hand Reset Type
Mounting	Flush
Application	High speed tripping duties to serve as master
Trip relay in C. B. Control panel.	
IS reference	latest version

III) Auxiliary relay for Buchholz, Oil & winding- Alarm and Trip

General Design	Electromechanical
Coil Rating	24 V---30 V DC / 110 V DC or as per the site condition/requirement
Time setting	Instantaneous
Aux contacts	as per the site condition/ requirement with spare provision.
Operational indicator	Mechanical Flag in window : Hand Reset Type
Mounting	Flush
Application	For Alarm and Trip (through a master trip relay)

Make:- ABB/Schneider/Alsthom/C&S/Siemens/Ashida or equivalent

IV. Measuring Instruments:-

a) AMMETER:

IN each circuit , one ammeter and associated selector switch shall be provided.

Mounting	Flush
Response Time	1 second



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Operating Temperature	Up to 55°C
Frequency	50 Hz
Operating Current	5 A from CT Secondary.
Type	Digital Display

b) VOLT METER:

Mounting	Flush
Response	Time 1 second
Operating Temperature	Up to 55°C
Auxiliary Supply condition/requirement	As per the site
Frequency	50 Hz
Operating Voltage	110 V from PT Secondary.
Type	Digital Display

c) DIGITAL FREQUENCY METER:

Mounting	Flush in 96 sq.mm. case
Size	96 sq.mm Range 45 Hz to
55 Hz	
Dielectric Strength	2 kV RMS for 1 minute
Type	Digital frequency meter.

Make:-Rishab/secure/schnieder/ABB or equivalent

V) SPACE HEATER with thermostat provision

Capacity	80 Watts
Voltage	240 V AC
Type	Strip type
Make	Any standard Brand

VI) THERMOSTAT:

Voltage	240 V AC
Range	30-90 Deg.C

VII) CONTACTOR FOR ANTIPUMPING DUTY:

Contacts 2 N/O + N/C or as per site condition/requirement
Coil voltage 30 V/110 V DC. or as per site condition/requirement
Make-ABB/Schneider/Siemens or equivalent

VIII) L/R. SWITCH:

- 2 positions stay put handle
- Contacts 2 contacts to close in each position as per the site condition/requirement.

Make:- Rishab/secure/kayce/switron /teknik or equivalent



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IX) AUTO MANUAL SELECTOR SWITCH:

Stay put type, firm grip handle, 2 contacts to close in each position
Auxiliary voltage 30 V/ 110 V DC. as per the site condition/requirement

Make:- Rishab/secure/kayce/switron /teknic or equivalent

X) LED Indication Lamps, Push button:-

Operating voltage 24- 30 V dc and 110 V dc

TNC switch:- Spring Return Type

Make:- Rishab/secure/kayce/switron /teknic or equivalent

9.4. Electrical High Voltage Insulating Mats:-

Firm should provide the electrical High Voltage insulating mats as an insulating media for floor covering in front of VCB panel as a safeguard against any leakage or short-circuit current. Electrical high voltage insulating rubber mats as per latest standard and suitable for working up to 33 KV voltage applications.

Thickness- 3 mm

Size- As standard

Total length - The electrical high voltage insulating mats shall be provided in such a length to cover the total length of VCB panel /panels for the sets as mentioned above.

9.5. The successful bidder should submit the updated single line Diagram of the installation.

9.6.The successful bidder should supply & install the followings:-

- a) Shock treatment chart
- b) First aid kit with wall mounting stand
- c) Portable fire extinguisher
- d) sand bucket with stand

9.7. The successful bidder should disconnect and remove the existing Ht/Lt cables of various sizes from the cable trench, cable tray, duct etc. wherever required including civil works if any.

Civil works:- For the successful installation of HT 11 KV VCBs switchgear panel all ancillary civil works are the part and parcel of scope of work which includes the followings:-

- i) Construction of base foundation,
- ii) New trench.
- iii) Reconstruction of existing cable trench/ new cable trench.



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- iv) Providing M.S. chequered plates.
- v) All other ancillary civil works as per the foundation details, general floor plan & GA drawing which are not mentioned /specified here but necessary for installation, commissioning of the VCB panel shall be executed in the same cost and price without any additional cost to purchaser. The floor level shall be Plain (zero level) without any slope for smooth insertion of CB trolley, for smooth closing and opening of doors, aesthetic look of panel positioning. The successful bidder should check and confirm the floor level before placing of VCB panels. The work which is not specifically indicated but necessary for equipments/panels successful installation and commissioning shall be the part of the order without any additional cost to Purchaser.

9.8. Tools and Tackles:-

- A. Special Tools and tackles which are necessary for installation, erection, commissioning, maintenance and overhauling of the equipment shall be arranged and supplied with Each panel for MRS separately.
- B. Firm should supply the Metal tool box containing all standard tools as per the best engineering practice for MRS separately.
- C. Firm should supply the standard Ratchet tool box as per the best engineering practice for MRS separately.

10.0. INSPECTION:

10.1. The inspection shall be carried out by the purchaser at any stage of manufacture. Also before the dispatch, pre dispatch inspection shall be carried out at seller's site. The successful Tenderer shall grant free access to the purchaser's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

10.2. The supplier shall keep the purchaser informed in advance, about the manufacturing program so that arrangement can be made for stage inspection.

10.3. The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the purchaser informed, in advance, about such testing program.



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11.0 PERFORMANCE GUARANTEE:

Goods offered shall be guaranteed for a period of 36 months from the date of commissioning. The stores /materials found defective within the above guarantee period shall be replaced/ repaired by the supplier free of cost; within one month of receipt of intimation. The undertaking to this effect should be furnished along with the offer.

12.0 DOCUMENTATION:

12.1. After placement of Purchase order, the successful bidder shall submit 1 set of complete Drawings for approval. If any modifications are required on these, the same will be conveyed to the supplier who shall modify the drawings accordingly and furnish final drawings for approval.

12.2. List of drawings to be submitted:-

All the Drawings shall be submitted in 03 (Three) sets.

- GA of indoor panels Switchgear.
- Typical single line diagrams for panel Switchgear.
- Sectional view of incomer, bus coupler & feeder panels.
- Electrical circuit diagram showing all details with nomenclature/parts designation.
- GA of Circuit Breaker truck.
- GA of Current Transformer
- GA of Potential Transformer.
- Technical particulars of Switchgears./maintenance procedure.
- Foundation details for Panel Switchgear.
- Schematic Diagram for incomer bus coupler & feeder section of Switchgear.
- Protection Circuit for incomer bus coupler & feeder section of Switchgear.
- DC control circuit for incomer, bus coupler & feeder section.
- Metering circuit for incomers, bus coupler & feeder section.

13. General Terms and conditions:-

1. The entire works being on turnkey basis, the firm may inspect the site with prior intimation to CNP to see the actual quantum of works which may include breaking of floor, construction of new cable trench, supply of chequered plates, any type of civil works in addition to the main scope of work. However, it is strongly recommended to inspect the site before submission of bid by the participating firm.

2. Any additional item/items i.e. Civil, Electrical, Mechanical or any category which are not mentioned in this tender but necessary for



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equipment's/panels successful installation and commissioning shall be the part of the order without any additional cost to Purchaser. Hence, bidder firm must keep in mind these unforeseen works may be the part and necessity of project for successful installation and commissioning of the item/Items and quote accordingly.

3. Statutory permission for energising the switchgear panel from Central Electricity Authority as per CEA regulation shall be arranged by the supplier. Purchaser will only pay the statutory licence fee as per the Government Norms.

4. The participant bidder should have 05 years practical experience of HT Installations.

5. The firm should attach the valid electrical contractor's licence along with the quotation otherwise quotation will not be considered.

6. Before execution of works, the temporary supply arrangement shall be made by the firm to feed the power supply to the existing feeders connected on these Bus to avoid the production loss.

7. The entire work is on turnkey basis; hence all tools, tackles and all other related ancillary should be arranged by the firm.

8. For the successful installation, commissioning of HT VCB panels all civil works related to this job including foundation, trench making, GA arrangement for foundation, floor levelling, chequered plate provision etc. shall be carried out by the firm being a turnkey project.

9. Firm shall arrange and execute all necessary requirements for partial Temporary arrangement to facilitate the VCB switchgear panels installation at both locations to keep the power supply available to run the plant without hampering production.

10. The works which is not specifically indicated/mentioned in the works but necessary for equipments/VCB switchgears panels successful installation, testing and commissioning shall be the part of works & shall be executed by the firm without any additional cost.

11. If shutdown is essential for erection of works, one by one shutdown will be arranged by CNP on pre intimation basis.

12. The firm should take necessary precautionary measures and follow safety norms as per the safety codes.



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13. Firm should give 03 Years guarantee of the entire panels, which includes vacuum bottles also.

14. During Execution of work, in case of any major or minor accident at site, it will be the sole responsibility of the firm and no compensation or penalty to any employee of the firm and their contractors will be borne by CNP.

15. Firm shall remove all the existing old OCB panels of respective MRS to facilitate for new VCB panels installation as per the site condition.

16. It's firm responsibility to remove scrap / old unused materials like old OCB panels, old OCBs, pieces of cables etc. of this work & to be shifted to CNP scrap yard as per the directives of CNP official.

14. Relay Testing:-

Before energising of 11 KV HT VCB Panel at MRS, the relay testing should be done by the firm & submit certificate.

15. FAT:-

After successful installation & commissioning of 11 KV HT VCB Panel at MRS, its performance will be observed for one month as FAT. If any fault/ failure observed during this period, firm has to repair/replace the same and performance will be observed for further one (1) month after resolution of fault. On successful completion of 1 month, suitability will be given.



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ITEM NO. 02

11KV, 26.3 kA INDOOR VACUUM CIRCUIT BREAKER SWITCHGEAR PANEL INTEGRATED WITH ASSOCIATED CONTROL AND RELAYS:-

1.0 INTENT OF SPECIFICATION:-

The specification is intended to cover the Design, engineering, supply, installation, testing and commissioning of indoor type 11 KV, 26.3 kA with highest system voltage of 12 kV Vacuum Circuit Breakers having SCADA Compatible facilities switchboard cubical panels with the replacement of Old OCB Panels at CNP. The Vacuum Circuit Breakers will be integrated with associated indoor controls and protection relays panels. The Vacuum Circuit Breakers will be of Horizontal draw out type with distinct SERVICE/TEST/ISOLATE Positions. The Switchboard Panels should have adequate capacity of electrolytic copper bus bar in horizontal arrangements and consisting the set of vacuum circuit breakers, manufactured and tested as per IS: 13118 for VCB & IEC :62271-100,200 for Switchgear and control panel for Substation No. V at Currency Note Press, Nashik road on Turnkey basis.

Substation No. V VCB Cubical Panel Technical Details:-

The VCB panel shall have capacity and facilities to install 16 nos of draw out VCB's, which includes 04 as Incomer, 03 as Bus coupler and 09 nos shall be of Outgoing Feeders. It shall be with manual as well as electrically operated ON, OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The complete work i.e. Design, engineering, supply, installation, testing and commissioning of indoor type 11 kV, 26.3 kA with highest system voltage of 12 kV rated Vacuum Circuit Breakers switchboard cubical panel at site is on turnkey basis.

Qty- 01 set [CONFIGURATION: - 04 INCOMER + 03 BUSCOUPLER (BR) + 09 OG FEEDER]

MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM/JYOTI
/Kirloskar/Stelmec



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2.0 TENTATIVE BILL OF QUANTITY:-

Sr. No.	Description of Material	Quantity
1	Supply and Installation , testing & commissioning of indoor type VCB cubical panel of 11 KV HT VCB Substation No : V having 04 INCOMER + 03 BUSCOUPLER (BR) + 9 OG FEEDER	1 AU (1 SET)
	Supply and Installation of 11 KV HT Cable	
2	3 Core X 95 sq. mm Al. Ar. Cable 11 KV	As per site requirements
3	3 Core X 120 sq. mm Al. Ar. Cable 11 KV	As per site requirements
4	3 Core X 150 sq. mm Al. Ar. Cable 11 KV	As per site requirements
5	3 Core X 185 sq. mm Al. Ar. Cable 11 KV	As per site requirements
6	3 Core X 240 sq. mm Al. Ar. Cable 11 KV	As per site requirements
7	3 Core X 300 sq. mm Al. Ar. Cable 11 KV	As per site requirements
8	Supply and Installation of 11 KV heat shrinkable term. kit HT Cable as required	As per site requirements
9	Supply and Installation of 11 KV HT Straight through jointing kit as required	As per site requirements
10	Copper Lugs & Brass cable Glands for termination of cables as required	As per site requirements
11	Supply and fixing of cable trays as required	As per site requirements
12	30 V DC Battery Charger Unit for S/S No. V	1 No.
13	Sup. & Inst. of outdoor HT heat shrinkable termination Kit for 3C X 185 sq.mm cable	As per site requirements
14	Disconnection & Removal of 11 KV HT cables	As per site requirements
15	Supply and Installation of 1.1 KV LT cable of size 2.5 sq.mm (multicore)	As per site requirements
16	Supply and Installation of 1.1 KV LT cable of size 1.5 sq.mm (multicore)	As per site requirements



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17	Oil Painting of MS structure	As per site requirements
18	HT/LT Electrical inspector charges statutory	As per site requirements
19	HT/LT revised SLD (single line diagram)	As per site requirements
20	Metallic Caution Boards as per IS Standard	As per site requirements
21	Supply and Installation of Rubber mats of 11 KV Voltage Grade	As per site requirements
22	Supply and Installation of shock treatment chart	As per site requirements
23	First aid kit	1 set
24	portable Co2 fire extinguisher (22.5 kgs)	03 nos.
25	sand buckets (9 litres) with suitable stand	05 nos.
26	Third party testing for entire work	1 AU
27	Panel testing and commissioning	1 AU
28	Civil works & construction of Masonry underground cable trench	As per site requirements
29	Supply and fixing of MS chequered plate	As per site requirements

Note: Firm shall supply HT Cables mentioned in BOQ only after inspection and confirmation of the site required for execution.

3.0. SUBSTATION NO.V VCB CUBICAL PANEL TECHNICAL DETAILS:-

The VCB panel shall have capacity and facilities to install 16 nos. of draw out VCB's, which includes 04 as Incomer, 03 as Bus coupler and 09 no's shall be Outgoing Feeders. It shall be with manual as well as electrically operated ON, OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The complete work i.e. Design, engineering, supply, installation, testing and commissioning of indoor type 11 kV, 26.3 kA with highest system voltage of 12 kV rated Vacuum Circuit Breakers switchboard cubical panel at site is on turnkey basis.



SECURITY PRINTING AND MINTING
CORPORATION OF INDIA LIMITED

TENDER NO: 6000018704

**Qty- 01 set (CONFIGURATION:- 04 INCOMER + 03 BUSCOUPLER (BR)
+ 09 OG FEEDER)**

**MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM
/JYOTI/Kirloskar/Stelmec.**

1.0 SCOPE:

1.1. This Specification covers the basic requirements in respect of 11 kV, 26.3 kA with highest system voltage of 12 kV indoor Vacuum Circuit Breaker having SCADA Compatible facilities switchgear panel integrated with associated indoor control and relay panels for installation at sub-station V IN CNP. The Specifications covers the requirements of indoor switchgear with relays & controls. The control and relay panel should form integral part of the switchgear (i.e. should be physically integrated into one unit). The specification is intended to cover the Design, Engineering, supply, installation, testing and commissioning of indoor type vacuum circuit breakers cubical panel with adequate capacity of electrolytic copper bus bar in horizontal arrangements and consisting the set of vacuum circuit breakers, manufactured and tested as per IS: 13118 for VCB & IEC :62271-100,200 for Switchgear and control panel. The necessary Electro-Mechanical interlocking arrangement between four Incomers and bus couplers shall be provided in such a way that the Bus coupler / Bus couplers can only be switched on if any One Incomer / Two incomers/ Three Incomers/four Incomers / is /are put OFF as per the site conditions requirements.

The equipment will be used as incomer and outgoing panel for the supply, isolation and protection device for the 11 KV /0.433 KV transformers. Each compartment shall be separated from adjacent one by sheet steel barrier.

1.2. The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the specifications / order or not and specification attached hereto form an integral part of this specification for all purposes. Design shall allow further extension at either end in future.

1.3. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements. In



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actual practice, notwithstanding any anomalies, discrepancies, omissions, in-completeness, etc. in these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.

**MAKE- SIEMENS / Schneider/ABB / GEC / ALSTHOM
/JYOTI/Kirloskar/ Stelmec**

2.0 TOLERANCES:

Tolerances on all the dimensions shall be in accordance with provisions made in the relevant Indian/IEC standards and in these specifications. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

3.0 SERVICE CONDITIONS:

3.1. System particulars:

a. Nominal system voltage	11 kV
b. Corresponding highest system voltage	12 kV
c. Frequency	50 Hz \pm 3%
d. Number of phases	3
e. Neutral earthing	Solidly grounded
f. Short time Current Rating	26.3 kA

3.2. Equipment supplied against the specification shall be suitable for satisfactory operation

under the following tropical conditions:-

- Max. ambient temperature : 40 deg. C
- Max. relative humidity : up to 90 %
- Max. annual rainfall : 650- 700 mm
- Max. altitude above mean sea level : 584 mtrs
- Reference Ambient Temperature for temp. rise: 50 deg. C

The equipment shall be of suitable design to work satisfactorily under these conditions.

3.3. Auxiliary 30V D.C., 100 Ah supply required for the operation of VCB and VCB Control panel:- Auxiliary 30V D.C., 100 Ah supply required for the operation of VCB and VCB panel (Closing, tripping, indications, protection etc.) should be made available (Required for Substation no-5) by the firm with adequate capacity of batteries and associated battery charger and allied fixtures. The VCB panel should



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have independent D.C. supply with battery bank & battery charger. The battery charger shall be free standing steel cabinet having easy access for installation, commissioning and maintenance, cable entry from bottom, protection of IP- 30. The suitable battery rack shall be supplied for battery mounting. The battery bank and battery charger shall be installed at site near to the VCB panel with all ancillaries which are necessary for successful and trouble free operation and commissioning of the system. The work which is not specifically indicated but necessary for equipment successful installation and commissioning shall be the part of the work and shall be executed by the firm without any additional cost.

Technical Specification for 30V, 100 Ah Tubular lead acid rechargeable battery and Battery charger unit:-

i) Charger- Float cum boost charger

ii) Type- Full wave Controlled

iii) Rating- 30V / 20A (suitable for 30V/100 AH Tubular Battery of 15 cell)

iv) A/C Input- 240 V, 50 HZ, +/- 10 % variation.

v) D/C output-

Float voltage- 33.75 V DC, adjustable by +2/-5 %

Boost voltage- 34.5 V DC, adjustable by +2/-5 %

Regulation- Better than +/-1% of the set value

Ripple- Less than 500 mvolts

Current- 20 amps or better

System voltage max- 34.5V DC (at load terminal)

vi) Indications- Following LED indications shall be provided:-

- a. Mains ON
- b. Charger ON
- c. D.C. over voltage
- d. D.C. Under voltage
- e. Battery reverse polarity

vii) METERS DIGITAL/ ANALOGUE TYPE (with selector switch):-

- a. D.C voltmeter
- b. D.C. Ammeter

viii) PROTECTIONS:-

- 1) A/c Input Circuit breaker.
- 2) Fast acting semiconductor protection fuse for rectifier bridge.
- 3) DC over voltage



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- 4) DC over Load
- 5) DC output

ix) CONTROL and SWITCHES:-

- a. Auto/Float/Boost selector switch
- b. Float voltage adjustment potentiometer
- c. Boost voltage adjustment potentiometer

x) Make of battery:-Exide/Standard/Amaron/Amco/Standard Furukawa/Panasonic/Okaya

4.0 CODES AND STANDARDS:-

4.1. The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety codes. NOTHING IN THIS SPECIFICATION SHALL BE CONSTRUED TO RELIEVE THE TENDERER OF THIS RESPONSIBILITY.

4.2. Unless otherwise specified, the equipment offered shall confirm to the latest applicable

Indian, IEC Standards which are as follows:-

- a. IS: 13118 for VCB & IEC: 62271-100,200 for Switchgear and control panel.
- b. All other accessories used in switchgear panel shall confirm to the latest applicable Indian, IEC standards.

5.0 GENERAL TECHNICAL REQUIREMENTS:

5.1. 11KV INDOOR SWITCHGEAR:

5.1.1. Switchgear for Indoor installation shall be Indoor metal clad, draw-out type and fully compartmentalised having 26.3 kA short time current rating. All panels shall be of unitized construction providing facility for extensions on both sides. Switchgear panels are required, viz. the incomer panel, the bus section panel, bus riser (if required) panel and the outgoing feeder panel.

Circuit Breaker Type and rating:-

Sr. No.	Particulars	Requirements
1	Service type	Indoor
2	Type of breakers	Vacuum
3	No.of poles	03
4	Nominal system voltage	11 KV
5	Highest system voltage	12 KV
6	Rated normal current at ambient	



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	temp.	
i)	Bus bar	1250 Amps
ii)	For Incomer/Bus coupler/Outgoing	1250 Amps
7	Rated breaking capacity (Rated symmetrical short circuit current)	26.3 KA
8	Rated short circuit making capacity	63kA or Better
9	Rated short time withstand current for 03 seconds	26.3 KA
10	One minute power frequency withstand voltage to earth	28 KV
11	Impulse withstand voltage	75 KV Peak
12	System neutral	Solidly Earthed
13	Operating duty	Rapid auto reclosing
14	Rated auxiliary supply for spring charge motor and heater circuit	240 volts A.C., single phase, 50 HZ
15	Rated supply for closing and trip coil	24 -- 30 V DC
16	Operation of VCB's	Electrical and mechanical (Manual) Both provisions.
17	Degree of protection	IP4X

5.1.2. Circuit Breakers used shall be VCBs of specified rating for the various types. The design of the breaker truck shall be such that there will be flexibility of interchanging between incomer to incomer, bus-section to bus section and feeder to feeder trucks, where similar rated breakers are offered.

5.1.3. Materials:-

Materials for the incomer, bus section and feeder panels (each breaker panel) shall be as follows:

5.1.3.1. Incomer panel:-

- i. Draw out type Vacuum circuit breaker having 1250 Amps. Continuous current



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Rating and 26.3 kA for 3 sec. short time current rating, complete with operating

- mechanism and accessories.
- ii. 3 nos. of Current Transformers of ratio of suitable ratings.
- iii. 3 nos. of single phase PTs of ratio 11KV/RT3 BY 110/RT3 BY110/RT3 or as per site condition suitable to our requirement connected to the incomer with proper protection arrangement.
- iv. One mechanical ON/OFF indicator.
- v. One mechanical 'spring charged' indicator.
- vi. One T-N-C control switch for circuit breaker.
- vii. Remote-Local switch for circuit Breaker
- viii. All Relay and instruments etc.
- ix. Set of MCBs, stud type terminals and control wiring.
- x. Fuse/Mcb and link for Motor Starter, indication lamps, push buttons, meters.
- xi. Space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside LT control wiring.

5.1.3.2 . Bus Coupler:-

- i. Draw-out type vacuum circuit breaker having 1250 Amps continuous current rating and 26.3 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. 3 nos. of CTs of suitable ratio.
- iii. One T-N-C control switch for circuit breaker.
- iv. Remote-local switch for circuit Breaker.
- v. One mechanical ON/OFF indicator.
- vi. One mechanical 'spring charged' indicator.
- vii. Three nos. of space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- viii. Set of MCBs, stud type terminals, and control wiring.
- ix. Fuse and link for Motor Starter.
- x. All Relay and instruments etc.

5.1.3.3. Feeder (outgoing) panel:-

- i. Draw-out type vacuum circuit breaker having 1250 Amps continuous current rating and 26.3 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. 3 nos. of CTs of suitable ratio.



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- iii. One T-N-C control switch for circuit breaker.
- iv. Remote-local switch for circuit Breaker.
- v. One mechanical ON/OFF indicator.
- vi. One mechanical 'spring charged' indicator.
- vii. Space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- viii. Set of MCBs, stud type terminals, and control wiring.
- ix. Fuse/Mcb and link for Motor Starter.
- x. All Relay and instruments etc.

5.2. BUSBAR:-

5.2.1. 11 kV bus bars shall be of electrolytic copper and shall be rated for 1250 Amps Continuous current. The electrolytic copper bus bar of adequate Cross sectional area shall be considered and it should be uniform through the length for the bus bars. The bus bar edges/ends shall be rounded off/ chamfered so that there will not be any sharp edges/projections. All bus connections, joints and taps shall be tinned or silver plated, Connections shall be as short & straight as possible

5.2.2. 11kV bus support insulators and other equipment insulators shall have a minimum creepage distance of 127 mm or better as per IS standard. These insulators shall be of solid core porcelain or epoxy resin cast, with suitable design. Insulators shall have cantilever strength.

5.2.3. All fasteners (Nuts Bolts) used for bus bar connections shall be of non-magnetic stainless steel. Only Belleville type washers shall be provided for each nut bolt. If the fasteners used are not of stainless steel, the tenderer shall state in their offer the type of material used and confirm that the same is non-magnetic and is superior to stainless steel.

5.2.4. The bus bars along with their supporting insulators etc. shall have a short time current rating of 26.3 KA for 3 sec. This shall be confirmed by the tenderers in their technical offer.

5.2.5. Clearances between phases and between phase and earth shall be kept so as to obtain high reliability. However minimum clearances as shown below shall be kept.

1. Phase to Phase 127 mm or better.
2. Phase to earth 77 mm or better.

5.2.6. If any special insulating material is proposed to achieve the effect of above clearances, details of the same shall be furnished in the technical offer.



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5.3. CIRCUIT BREAKERS:-

5.3.1. The circuit breakers offered shall be Vacuum Circuit Breakers and of Horizontal draw

out Horizontal Isolation type with distinct SERVICE/TEST/ISOLATE Positions and provided with set of safety shutter of polycarbonate material .Breakers shall be of 3 pole design for use in 11 kV indoor switchgear. It shall be removable trolley type with manual as well as electrically operated ON,OFF and TRIP operations through spring charge mechanism having arrangements for charging the spring through manual cranking handle and through electrical motor gear along with suitable electromechanical indications of the VCB's operational status. The removable trolley (one for Substation no-5) shall be supplied with each set to facilitate the breaker movement.

5.3.2. The circuit breaker shall have 26.3 kA for 3 sec. short time current rating. The circuit breaker for incomer and bus section shall have 1250 Amps. continuous current rating and for feeders, it shall have 1250 Amps continuous rating. Circuit breaker shall be suitable for rapid reclosing cycle i.e. O-0.3 sec.-CO-3 min.-CO.

5.3.3. The circuit breaker shall be provided with Manual and motor operated spring charged closing. Spring charging motor shall be suitable for 240V, 50 Hz, single phase AC. Suitable rating starter shall be provided for Motor protection. Spring release coil for closing shall be suitable for 24---30 v dc. Provision shall be available for charging the springs manually as well, and to close CB mechanically.

5.3.4. Tripping of the circuit breakers shall be through "Shunt trip" coils rated for 24 ---30 V dc auxiliary supply. It shall be possible to trip the breaker manually in case of necessity.

5.3.5. All circuit breakers shall have mechanical ON/OFF indicator and spring charge indicator. These shall be visible from the front without opening the panel door. Also there shall be provision for mechanical (manual) tripping and also for manual charging of the springs.

5.3.6. Each operating mechanism of the circuit breaker shall be provided with adequate number of Cam/Snap type auxiliary switches of normally open and normally closed contacts for the control and operation of the equipment.

5.3.7. Adequate numbers of "NO/NC" contacts of the C.B. shall be wired up to the terminal

block. Following contacts shall be wired up to the terminals and clearly marked up in the relevant drawings.

- i. Terminal for remote indication of breaker ON/OFF.
- ii. Terminal for remote indication of spring charge.



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- iii. Terminal for remote indication of trip circuit healthy.
- iv. Terminal for remote closing.
- v. Terminal for remote trip.
- vi. Operation counter

5.3.8. Safety shutters (polycarbonate material) which close automatically to prevent accidental contact with the live bus after withdrawal of the C.B. shall be provided.

- 5.3.9. a) Electrical anti pumping device shall be provided for breaker.
- b) Each breaker should be equipped with RACKING - IN- OUT LEVER.
- c) Mechanical under voltage release override.

5.3.10. Remote Trip arrangement:-

A) Remote trip arrangement for Transformers in substation no. 05:-

A Suitable arrangement should be provided to make it possible for the remote trip, through an emergency master switch to be located near transformer for each transformer [Total nos. of transformer are seven (07)] to avoid any accidental switching with all necessary requirement of materials. Necessary multicore armoured Copper cable of size not less than 1.5 sq.mm, Emergency master switch and other ancillary items along with cable laying, termination shall be arranged & it will be the responsibility of the successful bidder.

B) Supply, installation & fixing of GI perforated type cable trays of various sizes-

Supply, installation, fixing of GI perforated type cable trays of various sizes as per the site condition requirement wherever necessary with MS angle support, GI slotted C channel at an interval of 1 meter or MS angle iron fabricated support for cable laying. If any material required, it shall be the part of the work and shall be arranged and will be the responsibility of the successful bidder.

C) Oil painting:-

Oil painting of all MS fabrication work with anti-rust treatment coats and main colour paint shall also be executed by the successful bidder.

5.3.11. CIRCUIT BREAKERS CONTROL SWITCH:

5.3.11.1. Trip-neutral-close, (T-N-C SWITCH) handle must be pushed in to spring return type to either trip or close position from Neutral position.



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5.3.11.2. Interlocks:-

- Breaker truck cannot be withdrawn or inserted when breaker is closed.
- Breaker can be operated only in Service/Test/ Isolated and withdrawn conditions of breaker truck.
- Breaker cannot be moved from service to test position in ON state.
- Closing of the breaker will be possible only when the breaker truck is in service or test position and not in a position in between.

5.3.12. PROTECTIVE RELAYS: Suitable for automation through the SCADA

Make:- ABB/Schneider/Alstom/C&S/Siemens/Ashida or equivalent

5.3.12.1. The protective relays shall be suitable for the station auxiliary supply (24-30 V DC for Substation No.5) and have facility of a test push button to test the relay functioning or else as per the design.

5.3.12.2. It should be preferably draw out type O/C, E/F and High speed Trip Relay or as per the design.

5.3.12.3. For each incomer, bus section and outgoing feeder, over current, earth fault, Trip circuit supervision relay and Master trip relay shall be provided for protection.

5.3.12.4. For each incomer, Bus coupler and outgoing feeder, high speed tripping relay/Master tripping relay shall be provided. All action of tripping shall be through high speed tripping relay/Master tripping relay in event of fault. Master tripping relay shall be of hand reset type.

5.3.12.5. Substation No-5 VCB switchgears panel: - All outgoing feeders shall be provided with auxiliary relay type VAA for BUCHHOLZ, OT, WT Alarm and Trip. Interlocking/command provision for such faults /Alarms shall be made at Substation V VCB switchgear panel by laying armoured copper cable/cables of required size for each transformer to Substation V panel if required. (If existing cables are available then same can also be utilised for interlocking).

5.3.12.6 All the relays shall be suitable for flush mounting, with only the flanges projecting on the front and connections at the back. Relays shall have dust-proof covers removable from the front. Protective relays shall have built-in test terminals as per the standard design of the relay manufacturer/supplier. All the above relays shall be suitable for 24-30 V DC as per the requirement of set.

5.3.12.7. Trip circuit supervision scheme shall be such that testing of trip circuit healthy is possible irrespective of whether the C. B. is in the closed or open position. The Trip Circuit Healthy LED should glow continuously in CB 'ON' Position and on demand in C.B. 'OFF' position.



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The rating of dropping resistance in series with Trip Circuit Healthy LED shall be such that the Trip Coil should not get damaged because of continuous current flowing through it.

5.4. CURRENT TRANSFORMERS:

5.4.1. As the C.Ts. are being prone to failure due to various reasons, the quality and reliability of the CTs are of vital importance. C.T. shall be rated for 26.3 kA for 1 sec. short time current. Insulation used shall be of very high quality, details of which shall be furnished in the technical offer.

5.4.2. The instrument security factor (ISF) for metering core shall be low

5.4.3. Primaries shall be wound or bar type, rigid, high conductivity grade copper conductor.

Unavoidable joints on the primary conductor shall be welded type, preferably lap type.

5.4.4. Suitable insulated copper wire of electrolytic grade shall be used for CT secondary winding. Multi ratio in CT shall be achieved by reconnection of secondary winding tapping.

5.4.5. Secondary terminal should have the short circuiting facility and to be brought on terminal with marking.

5.4.6. The CTs shall be resin/epoxy cast. Contact tips on primary terminals shall be silver plated. Correct polarity shall be invariably marked on each primary and secondary terminal.

5.4.7. Details of CTs:-

i. IS: 2705 or IEC 185 or as per latest applicable standard.

ii. Class of Insulation: E

iii. CT Details for Incomer /Bus coupler /Feeders

(As per the current rating of feeder)

A) Incomer:-

1. CT ratio- 200-400/5A

2. Class of accuracy

a. Core I - 0.5 / 1

b. Core II- 5P10 or better

3. Purpose of each core

a. Core I - Metering



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- b. Core II -Protection
- 4. BURDEN
- a. Core I - 10VA or better
- b. Core II - 10VA or better

B) Bus coupler:-

- 1. CT ratio- 200-400/5-5A
- 2. Class of accuracy
- a. Core I - 0.5 /1
- b. Core II - 5P10 or better
- 3. Purpose of each core
- a. Core I - Metering
- b. Core II - Protection
- 4. BURDEN
- a. Core I - 10VA or better
- b. Core II - 10VA or better

C) Outgoing Feeders:-

- 1. CT ratio- 60-100/5-5A
- 2. Class of accuracy
- a. Core I - 0.5 /1
- b. Core II- 5P10 or better
- 3. Purpose of each core
- a. Core I - Metering
- b. Core II - Protection
- 4. BURDEN
- a. Core I - 10VA or better
- b. Core II - 10VA or better

Make-Vidyut/Jyoti/ECS/AE/Pragati/Shah or Equivalent

5.5. POTENTIAL TRANSFORMER:

5.5.1. Potential transformers shall be single phase units connected to the line side in the respective incomer. H.V side shall be connected in



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star formation and L.V. side in star formation. Three numbers of HRC fuses of suitable rating shall be provided for HV side/LV side.

5.5.2. PT shall be draw out type and provided in a separate compartment. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed. The PT design should be such that the HT fuse is encapsulated in EPOXY material to avoid direct exposure of high voltage terminals. The PT compartment shall be suitable for easy accessibility and as per the design of the VCB.

5.5.3. P.T. shall be epoxy/resin cast. Contact tips of primary/secondary contacts shall be as per the latest standard. Correct polarity shall be distinctly marked on primary and secondary terminal with adequate space.

5.5.4. Details of PTs:-

- i. IS: 3156 or IEC 186 or as per latest applicable standard.
- ii. Class of Insulation: Class E
- iii. a) Rated primary voltage- 11KV /RT3
b) Rated secondary voltage- 110 V / RT3
- iv. Ratio: 11KV /RT3 / 110 V /RT 3
- v. Burden: - 50 VA or better
- vi. Class of accuracy: Core I - Class 0.5 or better & 3P (dual purpose)

Make-Vidyut/Jyoti/ECS/AE/Pragati/Shah or Equivalent

4.0 CUBICLE DETAILS FOR S/S V VCB PANELS:-

4.1. The switchgear cubicle (panel) shall be made of sheet steel of thickness not less than 2 mm CRCA or better and shall be free standing floor mounting indoor type, Door and load bearing members shall be of 3 mm thick sheet. There shall be sufficient reinforcement to have level surfaces resistance to vibration and rigidity during transportation & installation. Cubicle shall be dust, moisture & vermin proof, and shall provide degree of protection not less than IP4X in accordance with IS 13947. The cubicle shall be designed such that in both the test and isolated position of the C.B truck, the front cover of the cubicle shall remain closed.

Make: - JSPL/ Rittal or any equivalent



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4.2. Design & construction of the switchgear panel shall be of the highest order. All sheet steel work shall be treated as per the seven tank metal pre-treatment process before applying primary coating. For the final coat (stowed) epoxy paint color shade of Siemens Grey should be used. The panels after final painting shall present an aesthetically pleasing appearance, free of any dent or uneven surface.

4.3. Two separate earthing terminals shall be provided in each panel and shall be connected to the earth bus within the panel. The earth bus shall be of copper and shall have adequate cross sectional area not less than 40 mm width and adequate thickness should be of 06 mm (06 X 40 mm).

4.4. Each of the Switchgear panel shall be of unitised construction with all necessary accessories like end covers etc. However the design shall allow for the extension on both sides without limit. Bus bar design shall be such that panel to panel interconnection can be carried out without difficulty as and when required.

4.5. Explosion vents of suitable design shall be provided on the roof sheet of the bus bar/cable/CT's chambers so as to enable discharge of explosive gases from inside during a flashover. However the provision of explosion vent shall not affect the degree of protection/vermin proofing of the panel.

4.6. Cable compartment shall be provided at the rear of the switchgear panels and shall be suitable for cable entry from the bottom cable trenches & Rear access with bolted covers only. Rear bottom plates of the cable compartment shall be fitted with removable gland plates of adequate size for fixing the cable glands as per the site conditions.

4.7. Cable compartments for the incomer and feeder shall be suitable for terminating 300 sq.mm XLPE cables. Copper terminator strip of suitable size shall be provided for termination of cables and shall have adequate height inside to accommodate the heat shrinkable type indoor cable termination. Cable compartment shall be robust enough & self-supporting. The design shall be such that the weight of the power cable within the compartment shall not cause direct pressure on the C.T.studs. Suitable clamping arrangement shall be provided at the bottom of the cable compartment. Each power cable shall be terminated independently.

4.8. a) The existing cables shall be used for Incomer and for outgoing feeders. If, length of existing cables are not sufficient to connect in New VCB panel at respective Incomer/ outgoing feeder, the appropriate length of cable piece of same size and rating, HT cable jointing kit, cable end termination kit, cable glands, lugs and all other materials required to



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extend the length of cable for termination in VCB panel shall be arranged and will be the responsibility of the successful bidder.

- b) Providing chequered plates for trench covering.
- c) Dismantling of existing 11KV old OCB switchgear panel in phase manner.
- d) Dismantling of existing old cables connections and all allied things.
- e) **Disconnection, removal & Re-termination** of all the Existing cables of (all sizes) with Heavy duty lugs, cable glands (double compression type glands) with clips for termination on cable glands earthing.

4.9. The accessories required:-

Supply, installation, Termination, Testing and Commissioning of following accessories:-

HT Cables, Termination kit, Cable joint, Cable Glands, Straight joint:-

A) HT Cables

- a) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 300 sq.mm. Qty- As per site requirement.
- b) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 240 sq.mm Qty- As per site requirement.
- c) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 185 sq.mm Qty- As per site requirement.
- d) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 150 sq.mm Qty- As per site requirement.
- e) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 120 sq.mm Qty- As per site requirement.
- f) XLPE ,Armoured, Aluminium conductor, 11 KV HT cable 3 C X 95 sq.mm Qty- As per site requirement.

Note:- Firm shall supply HT Cables mentioned above only after inspection and confirmation of the site required for execution.

B) Termination KIT:- Heat shrinkable type (Indoor) as per the site requirement

C) Straight Joint termination kit:- Heat shrinkable Type (Indoor) as per the site requirement

D) HT cable glands of various sizes and Lugs as per the site requirement



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**E) Termination KIT (Outdoor):- Heat shrinkable type as per the site requirement
Heat shrinkable termination kit with lugs
etc. for 185 sq. mm Ht cables as per the site requirement**

F) LT cables :- Supply, installation, laying, termination, testing and commissioning of following LT cables

- ii) □ 1.5 sq.mm , multi core , copper conductor ,multi stranded , armoured cable, 1.1KV grade XLPE insulated confirming to latest applicable standard as per the site requirement

- ii) 2.5 sq.mm , multi core , copper conductor ,multi stranded , armoured cable, 1.1KV grade XLPE insulated confirming to latest applicable standard as per the site requirement

Note:- Firm should use and supply the reputed brands like – Polycab/Finolex/CCI/Havells/ RR/Gloster or any equivalent for XLPE cables.

Firm should use and supply the reputed brands like Raychem/ Cabseal/Vikchem/Superseal/Mahindra/3M brands or any equivalent for cable jointing kit and cable end termination kit.

4.10. CONTROL WIRING:

A) All control wiring shall be carried out with 1100 volts grade single core, multistrand flexible copper wires with PVC insulation. The conductor size shall be 1.5 sq.mm (minimum) for circuits. Wiring channel may be used for routing the cables. Wire numberings and colour code for wiring shall be as per IS standard. Yellow/Green wires of Size 2.5 sq.mm shall be used for earthing. The wiring diagram for various schematics shall be made on thick and durable white paper in permanent black ink and same should be encased in plastic cover, thermally sealed. It should be kept visibly in a pocket of suitable size of MS sheet of 1 mm thickness, on the interior surface of the door of C & R Panel.

B) All front mounted as well as internally mounted items including MCBs shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation.

C) Further it shall be ensured that any control wiring if at all routed through the H.T chamber is properly insulated and provided with metallic barriers to prevent damages due to heat.



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5.0 WIRING AND CONTROL WIRING TERMINALS:-

5.1. Terminal blocks shall be of clip-on design made out of non-trackable insulating material of 1100 V grade. All terminals shall be stud type, with all current carrying and live parts made of tinned plated brass.

5.2. The terminal connector/blocks shall be disconnecting type terminal connectors with shorting of C.T. secondary terminals shall be provided in CT secondary circuit. 2.5 sq mm wires shall be used for CT secondary. All other terminal connectors shall be Non- disconnecting type. Terminal should be shock protected in single moulded piece. Terminal block should have screw locking design to prevent loosening of conductor.

5.3. Spare terminals shall be provided in panel. All terminals shall be provided with ferrules indelibly marked or numbered and identification shall correspond to the designations on the relevant wiring diagrams. The terminals shall be rated for adequate capacity which shall not be less than 10 Amps for control circuit. For power circuit it shall not be less than 15 Amps.

5.4. All front mounted as well as internally mounted items shall be provided with individual identification labels. Circuit identifications name plate at the front and back side for identifications should be present. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation. Labelling shall be on aluminium anodised plates of 1 mm thickness, letters are to be properly engraved.

5.5. All fuses used shall be of HRC type and all MCBs as per latest IS standard (amended up to date) of adequate rating shall be used.

5.6. **Danger Board Plate-** The danger board shall be riveted /pasted on the front and back side of each VCB panel as per the standard in force. Each panel shall be riveted on front and back side of each VCB panel with nomenclature of respective Incomer/ feeder for easy identifications.

5.7. **Name plate marking:** - The switchgear panels shall have the name plate carrying the following data indelibly marked:-

- Name of manufacturer
- Purchase Order Number with date
- Designation & serial number,
- year of manufacturer,
- Rated voltage,



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- Rated normal current,
- Rated frequency,
- Rated Short Circuit Making capacity,
- Rated Short Circuit Braking capacity,
- Short time Current for 1 sec.(kA) 3 sec
- Rated Insulation Level
- Rated Operating sequence Aux. Voltage (DC/AC)

6.0 CONTROL AND RELAY PORTION OF 11 kV INDOOR SWITCHGEARS:

6.1. The relays, meter and equipment as described below should be provided on the switchgear for each **incomer, bus-section, and feeder as follows:-**

Description:-

1. **Vacuum Circuit Breaker for Each Incomer:** - 12 kV, 1250 Amps,
2. **Vacuum Circuit Breaker for Each Bus coupler:** - 12 kV, 1250 Amps,
3. **Vacuum Circuit Breaker for Each outgoing feeder:** - 12 kV, 1250 Amps,
4. Motor for spring charge.
5. Starter with fuse and link for Motor.
6. Ammeter, with selector switch, **DIGITAL TYPE.**
7. Power factor meter. (Only for Incomers)
8. Voltmeter, with selector switch (Only for Incomers), **DIGITAL TYPE**
9. Trivector energy meter (Only for Incomers)
10. Frequency Meter (Only for Incomers), **DIGITAL TYPE**
11. Control switch for circuit breaker.
12. Local/Remote selector switch.
13. Auto/Manual selector Switch.
14. Indicating LED (Amber colour) for 'Trip Circuit Healthy' (for all breakers)
15. Push button for 'Trip circuit Healthy Test'
16. Indicating LED (White colour) for 'spring charged'
17. Indicating LED (Red colour) for C.B. 'ON'
18. Indicating LED (Green colour) for C.B. 'OFF'
19. Indicating LED for Auto Trip
20. Surge Arrestor for all incomers in substation no-5
21. All Incomers, Bus couplers, and outgoing feeders should have Numerical over current and earth fault relay with communication protocol for SCADA compatibility . The relay shall be 50/50N, 51/51N, 95 (Trip circuit supervision relay).
22. High Speed Master Trip Relay



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23. Alarm scheme consisting of alarm relay(s), indicating LED and Accept/Reset push button(s)
24. Space heater along with MCB
25. Thermostat
26. Toggle switch for Heater
27. Cubicle illumination lamp along with door operated control switch.
28. TNC switch

6.2. Alarm equipments:-

All the VCB panel (Incomer, Bus coupler, Outgoing feeders) shall be provided with:-

- Eight point (8) annunciators
- One alarm hooter and alarm indicating auxiliary relays.
- It shall indicate the tripping of the circuit breaker under fault condition.
- It shall be complete with the indicating lamp with acknowledge and reset push button.
- **Make:- Alan/Seco or equivalent**

6.3. Trip circuit supervision scheme shall be provided for each circuit breaker with trip circuit supervision relay facility.

7.0 TESTS:

7.1. **TYPE TESTS:** The equipment offered in the tender should have been successfully type tested at ERDA/CPRI/PEHLA laboratories by the successful bidder/or the principle Manufacturer/ or OEM/ or Panel Integrator for following tests in line with the relevant standard and technical Specification, and to submit complete set of the type test reports along with the **offer** and also submit these reports before commencement of supply.

- a) Short time withstand current test
- b) Temperature rise test
- c) Lightning impulse voltage test
- d) Power frequency voltage test

7.2. Routine Test:-

All routine test as per IS or IEC standard shall be carried out and submit the reports with Materials.

- a) Functional test
- b) Power frequency voltage withstand test
- c) Primary current injection test
- d) Insulation resistance test
- e) Interchangeability of similar rating circuit breaker



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- f) Dimension check
- g) Mechanical operation of circuit breakers.

8.0. EARTHING FOR S/S V INDOOR CUBICAL VCB PANEL:-

8.1. The maintenance free earthing of adequate quantity should be done.

8.2. Supply of earthing system: Detailed Technical Specification:

This specification covers adequate quantity of earth electrodes, ground enhancing materials used for a maintenance free earthing system in line with the guidelines given in the latest applicable Indian standards to ensure that the resistance of the earth pits will be as per applicable standard limit i.e. around 2 Ohms or lower.

8.3. **Earth Electrode:** High tensile low carbon steel rod of 3 Mts length & 32 mm dia. with bonded copper on the outer surface. The Carbon Steel Rod shall be tested & certified for short current time rating as per latest IS standard.

8.4. **Activated Carbon Based/ or equivalent Back-fill Grounding Compound:** The Back-fill compound will be strictly Activated Carbon based/or equivalent conductive type, having a very low resistivity as per standard. The Back-fill shall be tested as per applicable IEC. The composition of Back-fill compound will be such that it will not require the continuous presence of water / moisture / salt to maintain its conductivity. The Back-fill compound will contain corrosion inhibitor to prevent oxidation of Earth electrode. The Back-fill compound will not contain hazardous chemicals to human & soil.

Earthing Compound Make - Indelec / Jef Techno System /Erico/equivalent

8.5. Installation of Earthing System:-

The firm shall carry out the digging work required for the earth pit of size 3 Mtr depth at specified location and it will be filled with carbon based or equivalent material earthing powder in proper proportion in mixture as per standard guideline. The firm shall connect the earthing electrode with suitable size of copper connector to the earthing strip. The firm shall install the test link box at the earth pit chamber with the all required accessories to complete the earthing system. After completion of the earthing system work, the firm shall carry out the earthing resistivity test and value of the resistance will be maintained less than 2 ohm as per



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applicable Indian standard. The earth pit will be properly covered with heavy duty PVC/metallic removable cover.

8.6. Supply of GI Earthing Conductor:-

Earthing Material of conductor: Soft Mild steel with Galvanized Size of conductor: 50mm x 5 mm Supplied GI Conductor should have Zinc coating of 100-150 Microns to avoid corrosion or deterioration due to environmental factors.

8.7. Installation & Commissioning of GI Earthing Conductor:-

The firm shall route and lay the GI earthing Conductor (size: 50mm x 5 mm) from New earth pits to the New HT switchgear panel as per standard guideline.

9.0 OTHER IMPORTANT WORKS:-

9.1. Statutory permission for energising the switchgear panel:-

The bidder firm should be responsible for Statutory permission for energising the switchgear panel from Central Electricity authority / state electricity authority as per CEA regulation, and shall be arranged by the bidder firm. The permission will include the submission of application, site inspection visit, test reports and all related documents required for getting the installation approved certificate from authority.

9.2. Third party (government approved Electrical contractor) testing:-

The entire New HT electrical installations should be tested through third party agency/firm .Third party testing shall be arranged by the successful bidder.

Testing for Followings:-

- i) Electrical HT panels
- ii) Earthing
- iii) HT Cables

9.3. GENERAL REQUIREMENTS FOR PROTECTIVE, MEASURING & CONTROL EQUIPMENTS:-

Principal requirements of protective relays, metering equipment, auxiliary relays breaker control switches etc. are as follows:

I) Numerical protection Relay O/C and E/F:-



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Setting for O/C	50% to 200% of Base Current
Setting for E/F	10% to 40% of Base Current
CT Secondary current	5 Amp.
Contacts	2 set of Self Reset N/O Contacts or as per design.
Mounting	Flush.
Type	numerical protection relay over current and earth Fault.
Auxiliary voltage	24 V DC ---30 V DC (for S/S No.5)
Operational indicator	Flags
IS reference	latest version

II) HIGH SPEED MASTER TRIP RELAY

Type	High speed of operation.
General Design	Electromechanical
Coil Rating	24-30V DC (For S/S-5) or as per the site condition
Time setting	Instantaneous
Aux contacts	As per the design
Operational indicator	Mechanical Flag in window, Hand Reset Type
Mounting	Flush
Application	High speed tripping duties to serve as master
Trip relay in C. B.	Control panel.
IS reference	latest version

III) Auxiliary relay for Bucholz, Oil & winding- Alarm and Trip

General Design	Electromechanical
Coil Rating	24 V---30 V DC /110 V DC or as per the site condition/requirement
Time setting	Instantaneous
Aux contacts	as per the site condition/ requirement with spare provision.
Operational indicator	Mechanical Flag in window : Hand Reset Type
Mounting	Flush
Application	For Alarm and Trip (through a master trip relay)

Make:- ABB/Schneider/Alsthom/C&S/Siemens/Ashida or equivalent

IV. Measuring Instruments:-

a) AMMETER:



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IN each circuit , one ammeter and associated selector switch shall be provided.

Mounting	Flush
Response Time	1 second
Operating Temperature	Up to 55°C
Frequency	50 Hz
Operating Current	5 A from CT Secondary.
Type	Digital Display

b) VOLT METER:

Mounting	Flush
Response	Time 1 second
Operating Temperature	Up to 55°C
Auxiliary Supply condition/requirement	As per the site
Frequency	50 Hz
Operating Voltage	110 V from PT Secondary.
Type	Digital Display

c) DIGITAL FREQUENCY METER:

Mounting	Flush in 96 sq.mm. case
Size	96 sq.mm Range 45 Hz to
55 Hz	
Dielectric Strength	2 kV RMS for 1 minute
Type	Digital frequency meter.

Make:-Rishab/secure/schnieder/ABB or equivalent

V) SPACE HEATER with thermostat provision

Capacity	80 Watts
Voltage	240 V AC
Type	Strip type
Make	Any standard Brand

VI) THERMOSTAT:

Voltage	240 V AC
Range	30-90 Deg.C

VII) CONTACTOR FOR ANTIPUMPING DUTY:

Contacts 2 N/O + N/C or as per site condition/requirement
Coil voltage 30 V/110 V DC. or as per site condition/requirement
Make-ABB/Schneider/Siemens or equivalent

VIII) L/R. SWITCH:



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- 2 positions stay put handle
- Contacts 2 contacts to close in each position as per the site condition/requirement.

Make:- Rishab/secure/kayce/switron /teknic or equivalent

IX) AUTO MANUAL SELECTOR SWITCH:

Stay put type, firm grip handle, 2 contacts to close in each position
Auxiliary voltage 30 V/ 110 V DC. as per the site condition/requirement

Make:- Rishab/secure/kayce/switron /teknic or equivalent

X) LED Indication Lamps, Push button:-

Operating voltage 24- 30 V dc and 110 V dc

TNC switch:- Spring Return Type

Make:- Rishab/secure/kayce/switron /teknic or equivalent

9.4. Electrical High Voltage Insulating Mats:-

Firm should provide the electrical High Voltage insulating mats as an insulating media for floor covering in front of VCB panel as a safeguard against any leakage or short-circuit current. Electrical high voltage insulating rubber mats as per latest standard and suitable for working up to 33 KV voltage applications.

Thickness- 3 mm

Size- As standard

Total length - The electrical high voltage insulating mats shall be provided in such a length to cover the total length of VCB panel /panels for the sets as mentioned above.

9.5. The successful bidder should submit the updated single line Diagram of the installation.

9.6. The successful bidder should supply & install the followings:-

- a) Shock treatment chart-
- b) First aid kit with wall mounting stand
- c) Portable fire extinguisher
- d) sand bucket with stand

9.7. The successful bidder should disconnect and remove the existing Ht/Lt cables of various sizes from the cable trench, cable tray, duct etc. wherever required including civil works if any.

Civil works:- For the successful installation of HT 11 KV VCBs switchgear panel all ancillary civil works are the part and parcel of scope of work which includes the followings:-



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- i) Construction of base foundation,
- ii) New trench.
- iii) Reconstruction of existing cable trench/ new cable trench.
- iv) Providing M.S. chequered plates.
- v) All other ancillary civil works as per the foundation details, general floor plan & GA drawing which are not mentioned /specified here but necessary for installation, commissioning of the VCB panel shall be executed in the same cost and price without any additional cost to purchaser. The floor level shall be Plain (zero level) without any slope for smooth insertion of CB trolley, for smooth closing and opening of doors, aesthetic look of panel positioning. The successful bidder should check and confirm the floor level before placing of VCB panels. The work which is not specifically indicated but necessary for equipments/panels successful installation and commissioning shall be the part of the order without any additional cost to Purchaser.

9.8. Tools and Tackles:-

- A. Special Tools and tackles which are necessary for installation, erection, commissioning, maintenance and overhauling of the equipment shall be arranged and supplied with Each panel for substation V separately.
- B. Firm should supply the Metal tool box containing all standard tools as per the best engineering practice for substation V separately.
- C. Firm should supply the standard Ratchet tool box as per the best engineering practice for substation V separately.

10.0. INSPECTION:

10.1. The inspection shall be carried out by the purchaser at any stage of manufacture. Also before the dispatch, pre dispatch inspection shall be carried out at seller's site. The successful Tenderer shall grant free access to the purchaser's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

10.2. The supplier shall keep the purchaser informed in advance, about the manufacturing program so that arrangement can be made for stage inspection.



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10.3. The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the purchaser informed, in advance, about such testing program.

11.0 PERFORMANCE GUARANTEE:

Goods offered shall be guaranteed for a period of 36 months from the date of commissioning & completion of FAT of both schedules. The stores /materials found defective within the above guarantee period shall be replaced/ repaired by the supplier free of cost; within one month of receipt of intimation. The undertaking to this effect should be furnished along with the offer.

12.0 DOCUMENTATION:

12.1. After placement of Purchase order, the successful bidder shall submit 1 set of complete Drawings for approval. If any modifications are required on these, the same will be conveyed to the supplier who shall modify the drawings accordingly and furnish final drawings for approval.

12.2. List of drawings to be submitted:-

All the Drawings shall be submitted in 03 (Three) sets.

- GA of indoor panels Switchgear.
- Typical single line diagrams for panel Switchgear.
- Sectional view of incomer, bus coupler & feeder panels.
- Electrical circuit diagram showing all details with nomenclature/parts designation.
- GA of Circuit Breaker truck.
- GA of Current Transformer
- GA of Potential Transformer.
- Technical particulars of Switchgears./maintenance procedure.
- Foundation details for Panel Switchgear.
- Schematic Diagram for incomer bus coupler & feeder section of Switchgear.
- Protection Circuit for incomer bus coupler & feeder section of Switchgear.
- DC control circuit for incomer, bus coupler & feeder section.
- Metering circuit for incomers, bus coupler & feeder section.

13. General Terms and conditions:-

1. The entire works being on turnkey basis, the firm may inspect the site with prior intimation to CNP to see the actual quantum of works which may include breaking of floor, construction of new cable trench, supply



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of chequered plates, any type of civil works in addition to the main scope of work. However, it is strongly recommended to inspect the site before submission of bid by the participating firm.

2. Any additional item/items i.e. Civil, Electrical, Mechanical or any category which are not mentioned in this tender but necessary for equipment's/panels successful installation and commissioning shall be the part of the order without any additional cost to Purchaser. Hence, bidder firm must keep in mind these unforeseen works may be the part and necessity of project for successful installation and commissioning of the item/Items and quote accordingly.

3. Statutory permission for energising the switchgear panel from Central Electricity Authority as per CEA regulation shall be arranged by the supplier. Purchaser will only pay the statutory licence fee as per the Government Norms.

4. The participant bidder should have 05 years practical experience of HT Installations.

5. The firm should attach the valid electrical contractor's licence along with the quotation otherwise quotation will not be considered.

6. Before execution of works, the temporary supply arrangement shall be made by the firm to feed the power supply to the existing feeders connected on these Bus to avoid the production loss.

7. The entire work is on turnkey basis; hence all tools, tackles and all other related ancillary should be arranged by the firm.

8. For the successful installation, commissioning of HT VCB panels all civil works related to this job including foundation, trench making, GA arrangement for foundation, floor levelling, chequered plate provision etc. shall be carried out by the firm being a turnkey project.

9. Firm shall arrange and execute all necessary requirements for partial Temporary arrangement to facilitate the VCB switchgear panels installation at both locations to keep the power supply available to run the plant without hampering production.

10. The works which is not specifically indicated/mentioned in the works but necessary for equipments/VCB switchgears panels successful



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installation, testing and commissioning shall be the part of works & shall be executed by the firm without any additional cost.

11. If shutdown is essential for erection of works, one by one shutdown will be arranged by CNP on pre intimation basis.

12. The firm should take necessary precautionary measures and follow safety norms as per the safety codes.

13. Firm should give 03 Years guarantee of the entire panels, which includes vacuum bottles also.

14. During Execution of work, in case of any major or minor accident at site, it will be the sole responsibility of the firm and no compensation or penalty to any employee of the firm and their contractors will be borne by CNP.

15. Firm shall remove all the existing old OCB panels of respective substation to facilitate for new VCB panels installation as per the site condition.

16. It's firm responsibility to remove scrap / old unused materials like old OCB panels, old OCBs, pieces of cables etc. of this work & to be shifted to CNP scrap yard as per the directives of CNP official.

14. Relay Testing:-

Before energising of 11 KV HT VCB Panel at Substation No. V, the relay testing should be done by the firm & submit certificate.

15. FAT:-

After successful installation & commissioning of 11 KV HT VCB Panel at Substation No. V, its performance will be observed for one month as FAT. If any fault/ failure observed during this period, firm has to repair/replace the same and performance will be observed for further one (1) month after resolution of fault. On successful completion of 1 month, suitability will be given.



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SECTION VIII : QUALITY CONTROL REQUIREMENTS

SAFETY CODES TO BE FOLLOWED BY THE CONTACTORS/THEIR EMPLOYEES.

1. The principle firm to whom the job work has been assigned will be primarily responsible to ensure the safety of all their employees working under them while they work inside factory premises.

2. The principle firm to whom the job work has been assigned will be responsible for any act of the contractors, which amounts to contravention of any provision of the Factory Act 1948 and the Maharashtra factory rules 1963.

3. The principle firm to whom the job work has been assigned will ensure and monitor the following:-

3.1 The firm has to nominate one of the competent supervisors, who in addition to his duty will also be responsible to look after the safety of employees working under them and safety of nearby other plant equipment.

3.2 The firm will provide personal protective equipment to his employees to ensure their safety.

3.3 Electrical connection will be taken only with the written permission from the electrical department CNP.

3.4 The firm will ensure that the hand tools, power tools, forklifts, Hydra, ladders, slings and equipment etc. are maintained in good working condition and will also ensure that they are safe and free from risk to employees.



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3.5 All the machines brought by contractor for their job work should be properly guarded/ maintained in proper condition for their safe working.

3.6 All the lifting machines, lifting tackles, chain ropes, pulleys etc. will not be allowed in factory premises unless they are thoroughly and certified by the competent person(as per Factory act 1948) once in every Six month.

3.7 In Case of any accident, the firm representative will arrange to inform it to the safety dept. CNP immediately. The agency will also arrange to inform the inspector of Factories Nashik. The agency will provide proper information to the inspector of factories and safety officer during their inspection.

3.8 Selected contractor needs to provide PVR of Supervisor/ labour's/person's entering in press premises.



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Section IX: Qualification / Eligibility Criteria

MINIMUM ELIGIBILITY CRITERIA

The following shall be the minimum eligibility criteria for selection of bidders:

1. Experience and past performance:

The bidder should have experience of having successfully completed an order for Supply, Installation, Testing & Commissioning of indoor type 11 KV HT Vacuum Circuit Breaker Switchgear Panels by with associated items of similar or higher specification in any one year during last 5 years from bid opening date. At least one number of the product offered for supply should be in successful operation for at least one year on the date of bid opening.

2. Capacity and Capability:

The bidder should having capacity of successfully completing order for Supply, Installation, Testing & Commissioning of indoor type 11 KV HT Vacuum Circuit Breaker Switchgear Panels with associated items of similar or higher specification.

Note: All experience, past performance and capacity/ capability related data should be certified by the authorized signatory of the bidder firm.

3. Financial Standing:

(a) Average Annual turnover of the bidder firm should be more than Rs.1,43,27,700/- during last three years i.e. 2020-2021, 2021-2022 and 2022-2023.

(b) The net worth of the firm should not be negative in FY 2022-2023 and should not have eroded by more than 30% in the last three financial years i.e. 2020-2021, 2021-2022 and 2022-2023.

4. The bidder should submit Power of Attorney of the Authorized Signatory for signing the bid, entering in to contract, if awarded and for any other correspondences.

5. The bidders shall enclose attested copy of GST Registration (in REG 06) & attested copy of PAN.

6. The bidder should give undertaking/declaration that they have read and understood all the terms (with technical specification) & conditions of tender documents and submitting unconditional acceptance to all terms & conditions.



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7. The bidder should give a declaration that they have not been black-listed/debarred for dealing by Government of India in the past.
8. The firm should attach valid authorization certificate from manufacturer for offer product.
9. The firm shall attach the detailed product catalogue for all product along with the quotation.
10. The interested bidder must be holding valid electrical contractor's licence/electrical supervisor licence issued by the competent authorities (State/Central) and copy of the same shall be enclosed along with the bid.

1. Note:-

- (i) In support of experience & capability criteria, the bidder has to submit attested copies of P.O's, Experience certificates issue by customers.
- (ii) All experience, past performance & capacity/ capability related/data should be certified by the authorized signatory of the bidder firm.
- (iii) All financial standing data such as Balance Sheet, Profit & Loss account statement etc. should be certified by certified accountants e.g. Chartered Accounts or Cost Accountant. Financial statement duly certified by CA for year 2020-2021, 2021-2022 and 2022-2023 to be submitted with UDIN no.

Bidder to furnish stipulated documents support of fulfillment of qualifying criteria. Non submission or incomplete submission of documents may lead to rejection of offer.



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Section X: Tender Form

To,
Currency Note Press, Nashik
A Unit of Security Printing & Minting
Corporation of India Limited
Wholly Owned by Govt. of India
Nashik

Ref: Your Tender document No. 6000018704 dated:

We, the undersigned have examined the above-mentioned tender enquiry document, including amendment No. -----, dated ----- (if any), the receipt of which is hereby confirmed. We now offer to supply and deliver..... (description of goods and services) in conformity with your above referred document for the sum shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 6, read with modification, if any, in Section V –“Special Conditions of Contract”, for due performance of the contract.

We agree to keep our tender valid for acceptance for a period upto -----, as required in the GIT clause 19, read with modification, if any in Section-III –“Special Instructions to Tenderers” or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender upto the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We confirm that in case of downloaded Tender Document, we have not changed/edited its contents. We realise that in case any such change is noticed at any stage including after the award of contract, we would be liable to action under clause 44 of the GIT.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We also solemnly declare as under:

1. MSMEs Status:

Having read and understood the Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 (as amended and revised till date), and solemnly declare the following:



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- (a) Company /Partnership Firm /Proprietary Concern / Society/Trust / NGO/Others (Please Specify):
- (b) Micro/ Small / Medium Enterprise/ SSI/ Govt. Deptt. / PSU/ Others:
- (c) Name of MSME Registering Body (NSIC/ DIC/ KVIC/KVIB etc.):
- (d) MSME Registration no. (with copy of registration):.....
- (e) Udyog Aadhaar Memorandum no.....
- (f) Whether Proprietor/ Partner belongs to SC/ ST or Women category.
(Please specify names and percentage of shares held by SC/ST Partners) :
.....

2. Make in India Status:

Having read and understood the Public Procurement (Preference to Make in India PPP_MII) Order, 2017 (as amended and revised till date) and related notifications from the relevant Nodal Ministry/ Department, and solemnly declare the following:

- (a) Self-Certification for category of supplier:
- Class-I Local Supplier/
 - Class-II Local Supplier/
 - Non-Local Supplier.
- (b) We also declare that
- There is no country whose bidders have been notified as ineligible on reciprocal basis under this order for offered product, or Tender Form

SPMCIL

- We do not belong to any Country whose bidders are notified as ineligible on reciprocal basis under this order.

3. Restrictions on procurement from bidders from a country or countries, or a class of countries under Rule 144 (xi) of the General Financial Rules 2017 having read and understood the Order (Public Procurement No. 1) issued vide F.No.6/18/2019-PPD dated 23rd July 2020 (and its amendments if any) by Department of Expenditure, Ministry of Finance under the above provision and solemnly declare the following:

- We do not belong to any Country whose bidders are notified as ineligible under this order

4. Debarment Status: Please state whether business dealings with you currently stand suspended/ banned by any Ministry/ Deptts. of Government of India or by any State Govt:

- Yes (with period of Ban)
- No, We, solemnly declare that neither we nor any of our affiliates or subsidiaries- including subcontractors or suppliers for any part of the contract- do not stand declared ineligible/ blacklisted/ banned/ debarred by any Government Agency anywhere in the world, for participating in its tenders, under that country's laws or official regulations.



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5. Penalties for false or misleading declarations: I/we hereby confirm that the particulars given above are correct and complete and also undertake to advise any future changes to the above details. We understood that any wrong or misleading self-declaration by us would be violation of code of Ethics and would attract penalties as mentioned in this tender document, including debarment.

.....
(Signature with date)

.....
(Name and designation)

Duly authorized to sign tender for and on behalf of

.....
.....

Validate

Print

Help

Item Rate BoQ

Tender Inviting Authority: Rajkumar R, M (M)

Name of Work: Upgradation of Existing Indoor 11 KV HT Oil Circuit Breaker Switchgear Panels by Vaccum Circuit Breakers Switchgear Panels in Main receiving station and 11 KV V/415 V indoor substation no.V.

Tender No: 6000018704

Name of the Bidder/ Bidding Firm / Company :	
---	--

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder Rs. P	GST (Rs.)	Total rate per unit (Rs.) (FOR CNP, Nashik) inclusive of GST and Other Charges Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8
1	Upgradation of OCB to VCB Panel in MRS	1	AU			0.00	INR Zero Only
2	Upgradation of OCB to VCB Panel in S/S-V	1	AU			0.00	INR Zero Only
Total in Figures						0.00	INR Zero Only
Quoted Rate in Words		INR Zero Only					



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- SECTION XII: VENDOR DETAILS
 SECTION XIII: BANK GUARANTEE FORM OF EMD
 SECTION XIV: MANUFACTURER'S AUTHORIZATION FORM
 SECTION XV: BANK GUARANTEE FORM FOR PERFORMANCE SECURITY
 SECTION XVI: CONTRACT FORM
 SECTION XVII: LETTER OF AUTHORITY FOR ATTENDING A BID OPENING
 SECTION XVIII: PROFORMA OF BILLS FOR PAYMENTS
 SECTION XIX: NEFT MANDATE
 SECTION XX: INTEGRITY PACT

Please [CLICK](#) the link for further details

<https://www.spmcil.com/wp-content/uploads/2024/03/SecXII-XX-PM-3.0-2024-1.pdf>

**TWO BID, SINGLE STAGE (TWO PACKETS) TENDER BIDDER'S CHECK LIST
 BEFORE TENDER SUBMISSION**

Part I: - TECHNO-COMMERCIAL BID

Sr. No.	Tender Submission Check Points	Check before submission Tick (✓)
1	EMD FEE /Bid Security Declaration	
2	Tender Document duly Seal & Signed	
3	Term of Delivery :- FOR, CNP Nashik road, duly unloaded	
4	Tender Validity 120 days as per the tender	
5	Technical Specification –Section VII as per tender	
6	Submit Manufacturer's Authorization form (As Applicable)	
7	Accept the Warranty clause as per tender (As Applicable)	
8	Submit the documents as per Qualification / Eligibility criteria – Section IX (As Applicable)	
9	Fill Tender Form – Section X duly seal & sign (Without mentioning price)	
10	Delivery Period: Acceptance of delivery period as per Section VI of tender Document.	
11	Blank price schedule format as per Section XI indicating 'XXXX'	
12	Power of Attorney for signing the bid document and contract, if awarded.	
13	Section II - General Instructions to Tenderer's (GIT)	
14	Section IV - General Conditions of Contract (GCC)	
15	Section XII to XIX of Tender Documents	

Part II: - PRICE BID

Sr. No.	Tender Submission Check Points	Check before submission Tick (✓)
1	Price Bid as per Section XI (Price including all taxes & other charges)	

..... (Bidder's Seal & Sign)



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Bid Security Declaration Format
(To be printed on letter head of bidder)

Date:

To,
The Chief General Manager
Currency Note Press
Nashik Road

Sub: Bid Security Declaration-Reg.

Ref: 1. Tender No. _____ Dtd: _____
2. Bidder's offer no. _____ Dtd: _____

I, _____ (Name of authorized signatories), on behalf of _____ M/s. _____ (Bidder's name and address), duly authorized to sign the tender document and enter into contract (if awarded), herewith accept that if the bidder withdraw (or) modify our bid during period of validity i.e. within 120 days of opening of bid etc., the bidder will be suspended/debarred/blacklisted for a period of two years from the due date of the tender.

(Signature of Authorized Signatory)

Designation:
Name of Bidder:
Seal:

(Non submission of this declaration may result in disqualification)

Signature Not Verified

Digitally signed by PRAVIN JANARDAN
DESHMUKH
Date: 2024.06.19 13:09:39 IST
Location: eProcurement System for Central
PSUs