Office of the Executive Engineer
Maintenance South Division
NEW DELHI MUNICIPAL COUNCIL
33 KV Electric Sub-Station, Kidwai Nagar (West),
NEW DELHI -110023

QCM

QCM/ No. 11/AEE-I M/S/EE(M/S) (E)-2016-17 Dated:- 21.03.2017

Due Date:- 23.03.2017

M/s.....

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Dear Sir,

Please quote your lowest rate for the following work in sealed cover duly super scribed with quotation number and date. Your sealed quotation must reach this office by 1500 hrs. on the due date. Quotations received will be opened at 15.30 hrs, on the same date in the presence of intending contractor or their authorized representatives.

It shall be the responsibility of the quotationer to ensure that their quotation reaches in time. As such the quotation received after the due date and time will not be considered.

Name of work : Automatic Switch over system from one source to another source at 11KV Electric Supply System in Khan market area. (Pilot Project).

Sub-Head : Supply, Installation, Testing & Commissioning of Sub Station Equipments and Laying of 11KV Cables in S/S Loknayak Bhawan.

S.No.	Name of materials / Items	Qty.	Rate	Unit	Amount
	A - MATERIAL				
1	HS type St. th. Joint boxes suitable for 400 sq. mm/3c XLPE HT cable Make: Raychem/Cabseal/Denson	2 no.		Each no.	
2	HS type St. th. Transition Joint boxes suitable for 300 sq. mm/3c 11KV cable Make: Raychem/Cabseal/Denson	3 nos.		Each no.	
3	End Termination for 400 Sq.mm/3c 11KV XLPE Cable. Make: Raychem/Cabseal/Denson	5 nos.		Each no.	
4	End Termination for 150 Sq.mm/3c 11KV XLPE Cable. Make: Raychem/Cabseal/Denson	4 nos.		Each no.	
5	Supply of 11kV HT, 630 Amp, Panel Board comprising of 6 Nos Panels with Copper Bus Bar (without separate C&R Panel) having Microprocessor based relay supporting 61850 Protocol via two Ethernet port and having inbuilt Arc Flash Protection feature. .as per specifications at Annexure 'TS-III' and amendments Sr. No. 31 to 49.				
(a)	Supply of Incomer Panel with Auto changeover scheme (without separate C& R Panel). CT Ratio: 600/300/5+5 and necessary logic.	2 nos.		Each no.	
(b)	Supply of Outgoing Panels(without separate C& R Panel). CT Ration : 100/50/5+5 - 2 Nos Outgoing CT Ratio: 600/300/5+5 – 1 Nos Outgoing	3 nos.		Each no.	

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(c)	Supply of Bus-coupler Panel (without separate C& R Panels).	1 no.		Each no.	
6	Providing of CT of ratio 600/300/5A+5A class of accuracy 0.5, burden-15VA bar type suitable for 11KV panel (As per sample) Areva Make	1 Set of 3 CTs		Each set	
7	Supply of 30V D.C. 100Ah, BTU complete with maintenance free Battery Cells positioned in closed rack, with Battery charger.(Inclusive of all Taxes) compatible to above HT panels.	1 No.		Each No.	
B-LABOUR		- - -		-	
8	Handling/laying of 11KV XLPE Cable 300/400 sq.mm/3C cable which are not necessarily laid in ground but part of it going upto pole, panel, pillar and part in the building in open trench, pillar, panel ar other wise.	20 mtrs		Per mtr.	
9	Handling/laying of 11KV XLPE Cable 150 sq.mm/3C cable which are not necessarily laid in ground but part of it going upto pole, panel, pillar and part in the building in open trench, pillar, panel ar other wise.	12 mtrs		Per mtr.	
10	Drawing of 11KV XLPE Cable 150/300/400 sq.mm/3C in existing RCC/HDPE pipe closed ducr in duct subway or S/S	178 mtrs		Per mtr.	
11	ETC of 11kV HT Panel. **Note:** Civil work/Trench making is excluded from the scope. However minor modifications in the existing trench is inclusive.	6 jobs		Each job	
12	Installation of CT of ratio 600/300/5A	3 jobs		Each job	
13	Installation, Testing and Commissioning of BTUs including Distribution board, complete with all accessories, Wiring and inter-connection etc. as required (Inclusive of all Taxes)	1 Job		Each Job.	
14	Supplying, laying and fixing of PVC insulated copper conductor armoured control cable of size 2.5 Sq.mm/4C from HT panel to BTU.	25 mtrs.		Per mtr.	
15	Supplying, laying and fixing of PVC insulated copper conductor armoured control cable of size 1.5 sq.mm/10C with suitable clamping arrangement from HT panel to transformer including making connections etc. complete as required for the connection of Relay, WTI & OTI.	110 mtrs.		Per mtr.	
16	Earthing with supply, installation of one Grid of three nos. of Marconite earth electrodes with copper bonded MS rod of Dia 40 mm & length 03 meters each, interconnected with Copper Bonded MS flat of 50 mm x 6 mm with marconite embedding and two test links for connection in all kind of soils i.e Rocky/Semi rocky/Soft soils.	1 Grid		Each grid	
17	Connection of earth pit test links with application with 50mm x 6mm hot dip GI flat.	60 mtrs		Per mtr.	
				Total A&B	

Say Rs.

Rates should be Inclusive of all taxes
Total Amount in Words:-

OTHER TERMS AND CONDITIONS

1. **Rates**: The rates will be written in figures.
2. **Authorization**: The firm should be OEM/Authorized Dealer of 11 KV HT panels.
3. The offer shall be accompanied by CPRI Type Test Reports in respect of 11 KV panels.
4. **Validity**: The rate should hold good for two months from the date of opening of the quotation.
5. **Completion period**: The work as specified in the Q.C.M. is to be completed in 02 months from the date of issue of work order.
6. **Compensation/Liquidated damages** in the event of any delay the penalty @1% per week or part thereof subject to a maximum of 10% will be imposed on the amount of total work against this Q.C.M.
7. **Risk & Cost:** The firm will be legally bound to execute the order after it's acceptance within the completion period as stipulated in the work order. In case the firm fails to execute the order either in full or in part within the stipulated period this department reserves the right to get the work done at the risk & cost of the firm without making any reference and there after make recoveries from the firm if deemed necessary.
8. **Payment:** Our standard terms of payment is within 30 days after the receipt of bill in duplicate duly stamped and pre –receipted subject to timely completion of work as per the specifications and to the entire satisfaction of the Engineer –in-charge.
9. **Terms and conditions:** if any imposed by the firm other than the ones specified by us shall not be acceptable to us. The department reserves the right to accept the rates other than the lowest or reject any tender without assigning any reason or not award the work against the enquiry under reference.
10. **Guarantee Period:-** 48 months from the date of commissioning or 60 months from the date of supply whichever is earlier.
11. **Performance Guarantee:** The successful firm shall submit the amount equal to 5% of the total value of the order, within 7 days from the date of issue of LOA, as performance Guarantee in the form of FDR/DD/BG which shall be returned after completion of work.
12. **Security**:- An amount equal to 2.5% on total value of work order (inclusive of taxes & duties) will be collected/ deduction from the bills of the contractor or a Bank Guarantee (BG)/FDR be furnished for the same value valid through the guarantee period upto 60 days beyond the Guarantee Period.
13. **Arbitration:-** In the event of any dispute or difference arising between the contractor and the NDMC, the same will be referred to the sole Arbitrator appointed by the Spl. Officer/head of NDMC or his nominee whose decision shall be final and binding on both the parties. The venue of arbitration shall be National Capital Territory of Delhi.
14. **Agreement:** The successful firm shall enter into an agreement on a non-judicial stamp paper of Rs. 50/-.
15. The site can be inspected by the contractor before quoting the rates.
16. Terms & Conditions if any imposed by the firm other than the one specified in the QCM shall not be acceptable to us. The deptt. reserves the right to accept the rates other than the lowest or reject any quotation without assigning any reason or not award the work to any of the contractors quoting against this QCM.

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Additional technical specifications:

In addition to the detailed specifications as per Annexure- TS-III, the Customized HT Automatic Switchover System including panels should be comprising of the following special features:

- Both the Incomer Panel should have Auto Changeover Scheme with interlock for Bus-coupler. [In normal condition when both the incomer supply is available, both the Incomer breaker will be closed and Bus coupler breaker will be open. In case any of the Incomer supply goes off then the Incomer Breaker in which supply is not there will be opened and the Bus coupler Breaker will close. Once the supply is restored for both the Incomer Breaker, it will regain its original condition with both the Incomer breaker closed and Bus coupler breaker open] with manual override.

- Panel should have single numerical relay having 3 O/C + 1 E/F protection with 61850 protocol for communication (Having two Ethernet Ports for SCADA Connectivity) with inbuilt Arc Flash Protection feature with self supervision.

- Panel should have 3 Sensors for Arc Flash sensing and all these Sensors should be connected to Relay for ARC Flash Protection.

- Panel should be Type tested for Internal ARC for 1 Sec.

- CT Ratio for Incomer/Outgoing Panel has to be 600/300/5+5, accuracy class 0.5, 15VA burden (Bar Type) and for Transformer panel 100/50/5+5, accuracy class 0.5, 15VA burden (Bar Type).

- All the panels should have PT except bus-coupler.

- Panel should be as per IEC 62271-100 and IEC 62271-200.

SPECIAL CONDITIONS

1. The work shall be carried out strictly in accordance with the specifications and shall also conform to requirement of Indian Electricity Rules in force as amended up to date.
2. The contractor will work strictly in accordance with the instruction of Engineer-in-Charge or through his staff, if so authorized.
3. The works executed by the Contractor shall be open, at all times, for inspection of Engineer in Charge or his authorized representative.
4. The contractor will be fully responsible for the safe custody of the material right from the time of possession taken of the same from the NDMC's Engineers.
5. Free making of joints & end termination shall be provided by the firm.
6. No compensation for any damage caused to the works or materials by rain, flood or other natural calamities shall be paid to the contractor. The contractor shall have to bear the complete cost to repair/replace the damaged work/material.
7. Minor material such as nuts, bolts, washers, M.S. Hooks, thimbles, ferrules, clamp etc. require to complete the job will be provided by the contractor without any extra charges.
8. The contractor shall use the good quality or ISI mark material for various items of work.
9. The NDMC reserves the right to accept and reject any quotation in part of full without assigning any reason.
10. The contractor must inspect the site of work before quoting the rates in their own interest for assessing the actual work involved to complete the job.

11. The contractor shall make all the arrangements for the safety of his staff. NDMC shall not be responsible in any way for injury/disablement/death, due to accident to any workman at site and NDMC will be free from any legal bindings in this account. The contractor shall provide a list of workers working at site.
12. The Contractor shall make necessary arrangement for the safe custody of material issued to him by NDMC for incorporating in the work, to avoid any loss due to theft, pilferage, fire etc.
13. In case of any dispute between the contractor and the Council relating to the terms & conditions of any way arising out of the work the same shall be referred to the sole arbitration of the Chairperson, NDMC, New Delhi whose decision shall be final and binding on the both parties.
14. In case the contractor fails to undertake the work assigned to him by the department within the specified time, the same shall be got executed by the department from other sources at his risk & cost.
15. Any work not mentioned in the schedule of work and which is essentially required for entire completion of the Work is deemed to have been included in the scope of work. Nothing extra on any such account shall be paid.
16. No advance shall be paid against material and payment shall be made as per Terms & Conditions or after entire completion of the works.
17. For evaluation of quoted prices, the total amount of the entire work including taxes & duties etc. shall be considered. (Item rates shall not be considered for evaluation).
18. Agency/Contractor will provide all details of employees engaged for this work i.e. EPF & ESIC.
19. All the necessary safety equipments like safety belts, helmets etc required for the safe guard of the workers working at the site shall be provided by the contractor.
20. NDMC shall not be responsible in case of any mis-happening, related to men and material during the execution of work and shall be free from all legal bindings.
21. Necessary precautions as required for the men and materials shall be taken by the contractor.
22. All the tools/tackles and material required for carrying out the work shall be arranged by the contractor.
23. The contractor shall arrange the crane, ladders and other allied equipments as required for carrying out the work in safe and secure manner.
24. Electric and water supply if required for the execution of work will be provided by NDMC, free of cost.
25. 11 KV cable shall be supplied by NDMC.
26. All panels except Bus-Coupler should have PTs as customized requirement for smooth operation of auto-changeover.
27. Anything specifically not mentioned above, for safe, secure and satisfactory completion of this work shall deemed to have been included in the offer and nothing extra shall be payable on this account.
28. **INSPECTION OF SUPPLIES:** Supplies shall be inspected at site /works of manufacturer by the NDMC and/ or their authorized agency like DGS&D/ RITES (Inspection fee will be reimbursed to the agency on production of satisfactory test report and against receipt of fee alongwith their bills for the supply) and decision of NDMC shall be binding. The cost of inspection shall be borne by NDMC unless stipulated otherwise except the cost of material consumed in testing. The date on which the material is offered for successful inspection, shall be taken as the date of delivery. In case of failure of inspection, cost of the failed and subsequent failed/ successful inspections for the same lot shall be borne by the supplier.
29. NDMC has adopted Integrity Pact for all its contracts for Rs 50Lacs and above. It is mandatory for the bidder/contractor to sign the IP. The bid of bidder/Contractor who do not sign the "IP" shall not be considered. Integrity Pact is available at Annexure-I.

    Details of "Independent External Monitor"

    i)

    ii)

    In case of any grievances about the tender, the same may be sent to IEM/Vigilance Department of NDMC with the name and address of the sender.

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Executive Engineer (E)
M/S Division

Annexure –TS-III

1. 11 kV 350MVA 630 AMP VCB Switchgear Panels (MC VCB) - Indoor

1.1. INTRODUCTION

1.1.1. The section covers the specification of metal clad indoor vacuum type switchgear unit with horizontal draw out circuit breaker as per IS 13118 [1991] / IEC 62271-100 or latest amendment thereof.

1.1.2. All the equipments shall be suitable for satisfactory operation in tropical climates and dry dust laden atmosphere prevailing in the location where it shall be used against the Contract. The equipment shall be able to with stand a wide range of temperature variation in the required location

1.1.3. All the plant/apparatus/equipment supplied shall comply in all respect with the requirement of Indian Electricity Act 2003 and Indian Electricity Rule 2003/IS and latest amendment thereof during the execution of contract where-ever applicable.

1.1.4. 11kV HT Panel Manufacturer should also be a manufacturer of VCBs and Relays.

1.1.5. The panel should be SCADA compatible having two nos. IEC 61850 protocol compliant Ethernet RJ45/F.O port for communication with SCADA system through two managed Ethernet Switches operating in redundant mode. The communication shall be made in 1+1 mode between individual IED to Switch, such that failure of one set of LAN shall not affect the normal operation of SCADA. However, it shall be alarmed in SCADA. Functioning of Relay shall not hamper to fault occurring any interconnected relay.
One Front port Ethernet RJ45/USB 2.0 for relay parameterization and configuration etc. with the help of PC. In case RS-232 port offered, suitable interfacing cable with one end having RS 232 port and other end USB 2.0 to be provided to connect with PC free of cost. Relay should generate GOOSE message as per IEC 61850 standard for interlocking and also ensure interoperability with third party relays.

1.2. STANDARDS.

The circuit Breaker shall confirm to the latest revision with amendment available of relevant standards, rules, and code. Some of which are listed herein for ready reference.

Sl. No.	Standard	Item
1.	IEC- 62271-100 /IS-13118(1991)	Switchgear
2.	IS-2705 (1992)	Current Transformer
3.	IS-3156 (1992)	Voltage Transformer
4.	IS-3231 (1987)	Relays
5.	IS-1248	Ammeter & Voltmeter
6.	IS-375	Arrangement of Breakers Bus Bars main connection and auxiliary wiring.
7.	IEC-60687/CBIP REPORT NO-88 (JULY) 1996)	Tri vector meter

1.3. CONSTRUCTION

1.3.1. The switchgear shall be of CRCA steel construction with sheet not less than 3mm thickness for load bearing section and not less than 2 mm thickness for non-load bearing and shall totally dust and vermin proof. However, if vendor has standardized the thickness of enclosure other than above mentioned and it meets the performance requirements and the design has been established through type test, the same shall be accepted. The panels shall be rigid without using any external bracings. The switchboard panels should comply with relevant IS/IEC and revision thereof and shall be designed for easy operation maintenance and further extension. Bus bar, metering circuit breaker chamber, cables and cable box chamber should have proper access for maintenance, proper interlocks should be provided. All instruments shall be non-draw out type and safe guard in every respect from damages and provided with mechanical indicator of connection and disconnection position. The switchgear shall be completed with all necessary wiring fuses, auxiliary contacts terminal boards etc.

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1.3.2. The arcing contacts and bus bar should be rated for 350 MVA for 3 seconds. Bus bars shall be capable of connecting one switchgear panel to other through proper insulated arrangement, which does not decrease the insulation strength of the bus bar at the point of connection between two panels. **The panels shall be modular in design.**

1.3.3. The breakers should be able to be drawn out in horizontal position at ground level when breaker is drawn out in horizontal position none of the live components inside the 11 KV switchgear panel should be accessible. The safety shutters shall be robust and shall automatically cover the live components when the breaker is drawn out. The switchgear shall have complete interlocking arrangements at the fully inserted and fully drawn out and test positions. Withdrawal of the breaker should not be possible in ON position, it should not be possible to close the circuit breaker in service unless the entire auxiliary and control circuit are connected.

1.3.4. Breaker should have three distinct positions inside the cubical; i.e. service, test and isolated.

1.3.5. Built-in/separate trolley mounted earthing switches for incomer and outgoing shall be provided.

1.3.6. All the high voltage compartments must have pressure discharge flap for the exit of gas due to internal are to insure operator safety. **All the HV compartment design ensures conformity to IEC-60298 and must be type tasted for Internal Arc Test for one second.**

1.3.7. For charging, closing mechanism and indicators of VCB, 220V AC voltage shall be used. For tripping mechanism of VCB, 30 V DC shall be used.

1.4. BUS BARS AND CONNECTORS

1.4.1. Bus bars and all other electrical connection between various components shall be made of electrolytic copper of rectangular cross sections. The bus bars section shall be ample capacity to carry the rated current of minimum630 Amp continuously without excessive heating and for adequately meeting the thermal and dynamic stresses in the case of short circuit in the system up to full MVA rating specified in Para 3.2 above.

1.4.2. All bus bars connections shall be firmly and rigidly mounted on suitable insulators to withstand short circuit stresses and vibrations.

1.4.3. Adequate clearance between 11 KV point and earth and between phase shall be provided to ensure safety as per provision in Indian Electricity Rule 2003 and its amendment thereof and also in accordance with the relevant Indian standard specification and the same shall be capable of withstanding the specified high voltage tests as per IS-13118/ IEC 62271-100 and amendment thereof.

1.4.4. Sharp edges and bends either in the bus bars or bus bar connections shall be avoided as far as possible. Wherever such bends or edges are un-avoidable, suitable compound or any other insulation shall be supplied to prevent local ionization and consequent flashover.

1.4.5. The current density of Bus- Bar for 11 KV panel shall not be less than 1.2 Amp per Sq. mm.

1.5. CIRCUIT BREAKER

1.5.1. The vacuum circuit breaker shall be draw out type suitable for installation in the switchgear cubicles (indoor). The breaker shall comply with IS-13118 (1991)/ IEC 62271-100 and latest amendment thereof. Construction of breaker shall be such that the points, which require frequent maintenance, shall be easily accessible.

1.5.2. The circuit breakers shall be spring operated, motor/manually charging of the spring feature, manually released. VCB shall have spring closing mechanism for 3 pole simultaneous operation. The speed of closing operation shall be independent of the speed of hand operating level. The indication device shall show the OPEN and CLOSE position of breaker visible from the front of cubical.

1.5.3. The breakers shall be capable of making and breaking the short time current in accordance with the requirement of IS 13118(1991)/ IEC 62271-100 and latest amendment thereof and shall have three phase

rupturing capacity of 350MVA for 3 second at 11 KV. The continuous current rating of breaker shall not be less than 630 Amp for all items. The total break/make time shall be not more than 4 cycles for break and 6 cycles for make time for all breakers.

1.5.4. The vacuum circuit breakers shall ensure high speed extinction and adequate control of pressure during breaking of current and also designed to limit excessive over voltages.

1.5.5. Comprehensive interlocking system to prevent any dangerous or inadvertent operation shall be provided. Isolation of circuit breaker from bus bar or insertion into bus bar shall only be possible when the breaker is in the open position.

1.5.6. Vacuum Circuit Breaker shall have completely sealed interrupting units for interruption of arc inside the vacuum. The vacuum bottle sealed for life shall be provided with contact wear indicator.

1.5.7. Vacuum interrupter should have an expected life of 10000 operations at rated current and should be capable for operating more than 100 times at rated short circuit current.

1.5.8. Vacuum interrupter technical data particularly provided by the manufacturer should also be provided with Bid.

1.6. PROTECTION RELAYS

1.6.1. All relays shall conform to the requirements of IS:3231/IEC-60255 or other applicable standards. Relays shall be suitable for flush or semi-flush mounting on the front with connections from the rear. The relay for entire project shall be of same type. The protective relay shall be SCADA Compatible numerical type. Composite relay unit having O/C, E/F & directional element etc. shall be preferred.

1.6.2. The protective relays mounted on the panels shall be of the modular type. The relays must be capable of resetting with out necessity of opening the case. The relays shall be provided with flag indicators. Each functional element of a relay shall be provided with its own flag indicator to enable the type of fault condition to the identified.

1.6.3. Each of the incomer/outgoing switchgear units shall be provided with 3 elements of 5 Amp Non-directional, over current relays and 1 element non-directional, earth fault relay with self/hand reset contacts. The O/C element shall have setting of 30 to 120% in seven steps and E/F element shall have setting of 10 to 40% in seven steps. However, final decision regarding selection of steps and setting of relay shall be decided during detail Engineering for proper co-ordination of protection system.

1.6.4. High set instantaneous element of low transient over reach not exceeding 5% should be incorporated in the O/C and Earth Fault relays for all the outgoing feeder panels capable of adjusting the setting from about 5 to 20 times normal rating in the O/C relays and 2 to 8 times in Earth Fault relays.

1.6.5. During detail engineering provision for shunt trip relays shall be decided by Employer for which contractor should not have any objection. Further, in this case, the series trip relays auxiliary unit contracts in the tripping circuit should be designed to handle current up to 150 Amp. and like wise trip coil voltage which appears across open contact of the series-tripping unit, be limited to 150 volts.

1.6.6. With CTs used and taking into account the trip coil impedance of breaker with the plunger DOWN and with plunger UP position, the VA burden of relays offered etc. should be duly coordinated, so that the protection operates without errors at fault current corresponding to the fault MVA of 350 for all the tap position of the relays and the values of the impedance of the choke and resistance which may be required should also be determined and incorporated

1.6.7. The protective relays shall withstand 20 times the maximum current for 3 second on any tap setting. The over shoot time on removal of current setting shall not be greater than 0.05 seconds.

1.6.8. Arc flash Numerical relays to be provided with integral (no separate unit) arc flash protection system based on both current & optical input methods. Arc sensors shall be in cable chambers, bus bar chambers & circuit breaker chamber. Sensor shall cover any flash over occurring in the respective chambers.

1.6.9. All numerical relays shall be compatible to work with 5A as well as 1A of secondary side of CT's.

1.6.10. There shall be no password for resetting of numerical relays.

1.7. **CURRENT TRANSFORMERS**:

1.7.1. The requirement of ratio, VA capacity, class or accuracy, limit factor etc. for resin cast CTs installed in different type of units are given in BOQ

1.7.2. Short time rating of CTs shall be 18.4 KA for 3 second. CTs shall be quard core and dual ratio. Saturation factor for metering core shall not exceed 2.5.

1.7.3. The designed accuracy should be available even at the lowest ratios and all CTs shall withstand fault current corresponding to 350 MVA for 3 sec.

1.7.4. The secondary terminal of the current transformers shall be such that effective and firm wire terminations are possible. Shorting links of adequate capacity shall be provided at the terminal blocks for sorting of the leads from secondary terminals of current transformers. The secondary terminal of the CTs shall be earthed at one point.

1.7.5. The secondary winding resistance of CTs shall be as low as possible but not greater than 0.2 ohms per 100 turns.

1.7.6. CTs shall confirm to IS 2705 with latest amendment, if any in all respect and will be subjected to all routine and type test specified in the IS.

1.8. **CABLE GLANDS AND CLAMPING ARRANGMENT FOR HOLDING SUITABLE CABLE BOXES**

1.8.1. Two nos., brass-wiping glands for each incomer and one no. Brass wiping gland for each outgoing panel of adequate dimension for XLPE cable of 3 cores up to 400 sq. mm size shall be supplied along with panels. For bus coupler no cable glands should be provided.

1.8.2. Suitable cable boxes as per requirement of cable shall be arranged by the purchaser at his end. The panel shall however provide a flat of size 50X6 mm^2 with suitable clamp made of 50X6 mm^2 flat along with Nuts Bolts and Washers for holding the cable boxes. The flat should be fitted at a suitable height with allotted arrangement for adjustment of height from 300mm to 500mm at site. The clamp and flat shall have suitable stud type arrangement for earthing cable and cable box.

1.8.3. All control cable/wire entries shall be by means of suitable cable glands, such glands shall be of brass and tinned.

1.8.4. Insulated boot to be provided to cover the termination thimble.

1.9. **AUXILIARY/CONTROL WIRING**

All the secondary wiring in the panel shall have high quality FRLS insulation and the same shall have conductor size of not less than 2.5 mm^2 of multi stranded copper except CT wiring which shall be done from zero halogen, 4.0 mm sq. of multi standard copper. Colours of the secondary/auxiliary wiring should confirm to IS 375/1963 and latest amendment thereof if any. All wiring shall be neatly run and group of wiring shall be securely fixed by clips so that wiring can be checked without necessity of removing the clamps. Wiring between fixed and moving portion of the panel shall be run in flexible tubes and the same shall be so mounted to avoid any damage to them due to mechanical movements. Ferrules with number shall be provided on both end of the wiring. U type / Ring type thimble at the end of control cable shall be used. Isolating link type connector strip shall be used for connecting control cables.

1.10. **MARKING OF PARTS**

For facilitating the erection, the several parts of the plant and equipment shall be suitably marked.

1.11. **NAME PLATE AND DIAGRAM PLATES**

All equipment shall have weather proof and non corrosive metal plates fixed in suitable position with full particulars engraved thereon with white letters against black background.

The firm shall affix a name plate on each Switchgear panel having following information:

1. Manufacturer's name and trade mark.
2. Unique No.
3. Type of Panel.
4. CT Ratio.
5. Rated Voltage.
6. Rated Insulation Level
7. Rated Frequency
8. Rated Normal Current
9. Rated Short Circuit Breaking Current.
10. Weight
11. Specification No.
12. Order No. and Date
13. Year of supply.
14. Property of NDMC

1.12. PAINTING

All metallic surface [except enameled and bright parts] exposed to weather shall be given suitable primer coat and two coats of first quality paint of approved colour. The supplier shall also supply adequate quantities of paints, Varnish etc. for use of finished cost and for use of patching up any scratches received during transport, handling erection testing and commissioning.

Instead of above proper powder coating after proper pre treatment is acceptable and in that case earlier condition will not applicable.

1.13. DETAILED FITTING AND MOUNTING

Detailed fittings and mountings of equipments in various switchgear panel shall be as follows

1.13.1. ITEM NO. 1 – INCOMING PANELS RATING; 630 AMP

Each unit shall have the fittings and equipments as follows:

- 1 No steel totally enclosed, fully interlocked, indoor industrial pattern, metal clad, horizontal draw out, floor mounting switch unit complete with transportation truck having integral mechanism and all necessary supports each equipped as under:

- 1 No Fabricated sheet steel housing.
- 1 No. Complete set of mechanical interlocks.
- 1 No. Set of isolating plugs and sockets [6 nos. rated for 630 Amp. With automatic safety shutters and pad locking arrangements. Facilities shall be provided for proper opening of the safety shutter for cleaning, inspection and testing.
- 1 No. 630 Amp triple pole VCB fitted with isolating sockets, spring operated, manually as well motor charged, manually/ electrically released spring closing mechanism with mechanical ON/OFF indicators suitable for a rupturing capacity of not less than 350 MVA at 11 kV for 3 seconds and fitted with one set of direct acting trip coils suitable for operation with AC series trip relays.
- 1 No. Auxiliary switch with minimum four normally closed and four normally opened contacts. The contact terminals shall be brought out and terminated at Terminal Board irrespective of whether terminals are used or not.

- 3 Nos. CTs of ratio mentioned in BOQ
- 1 No. Ammeter digital static ammeter suitably scaled and must suit CT ratio.

- 1 No. 3 phase resin cast, draw out type bus bar connected potential transformers of Ratio 11000/110 volts class 0.5 accuracy having minimum 50 VA output per phase to operate the A.C. static H.T. Tri-vector meter, voltmeter etc. and complete with HT fuse and LT MCB with monitoring contacts.

- 1 No. Voltmeter round flush pattern digital static suitably scaled to suit the PT ratio.

- 1 No. 3 way and off voltmeter selector switch for reading the voltage between any two phases on the voltmeter.

  1 No. static digital Tri vector energy meter suitable for three phase 3 wire un-balanced load and CT, PT, ratio mentioned above, 0.5 accuracy class with load, survey and TOD/Tariff and MRI facility. TVM shall be as specification attached with this specification.

- 1 No. Non directional adjustable IDMT series trip O/C relay with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting from 50 to 200% of 5A on all three over current elements mounted in draw out case tropicalised with flag indicator.

- 1 No. set of indicating lamps operating at 230V AC single phase one coloured RED and other GREEN to show the closed or open position of circuit breaker.

- 2 No. 80 watts continuously rated tubular/strip type heater with manual ON/OFF switch having temperature controller working on 230 VAC single phase supply.

- 1 No. set of copper bus bars of not less than 630 Amp. Continuous rating.

- 1 No. multi way plug box for secondary wiring between the fix and moving glands.

- 1 No. set of independently operated automatic shutters for bus bar cable and voltage transformers orifices, which shall be clearly levelled and individually pad-locked.

- 1 No. Sheet instruments panel mounted on the front of the unit with hinged access doors and totally enclosed wiring terminals mounted there.

- 1 No. Complete set of self contained inter connectors, foundation bolts, fine Wiring, wiring terminals board, sundries to complete the unit.

- Line PT shall be provided only on Incomer panels. In other panels for function of tri-vector meter, there shall be provision of wiring to connect with PT of main incomer panel.

1.13.2. **ADDITIONAL FEATURE INCOMERS panel of CT ratio 600-300/5(0.5)-5(1.0)-5 (5P10)-1(PS)-0.578(PS).**

This switchgear shall be used with 10MVA or above, 33/11 KV or 66/11kV Transformer having delta in primary and grounded star in secondary, conventionally differential protections is essential for the transformer. For 11 kV side 3 nos. CTsof ratio mentioned in BOQ [Class PS and appropriate knee point voltage] and matching inter posting CTs (if required) shall be provided in this switchgear panel. The mounting inter connection and termination etc. for these additional devices/relays shall be covered in scope of supply.

1.13.3. **CLARIFICATION**

- CT for each phase shall be provided in each VCB panel.
- The arrangement of cable termination in panel should be parallel with respect of front facing of panel (i.e horizontal along the width of the panel).

1.13.4. **ITEM NO. 2 OUTGOING FEEDER PANEL**

The fittings and mountings shall be similar to item no. 1 above except the following:

- The CT ratio will be as per BOQ.
- The voltage transformers voltmeter and voltmeter selector switch shall be deleted.
- 3 nos, CT operated overload releases are to be provided.
- 1 no. non directional triple pole adjustable IDMT, combined O/C and E/F [3 no. O/C and 1 no. E/F] AC series trip relay with instantaneous high set trip feature of low transient over reach not exceeding 5% with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting 30-120 % of 5 Amp. And for earth fault protection with setting 10-40 % mounted on a draw out case tropicalised with flag indicators. High set element of O/C shall have setting range of 5 to 20 times the rated current and the E/F elements shall be 2 to 8 times of rated current.

1.13.5. **BUS COUPLER PANEL**

Each unit shall have the fittings and equipment as follows:

- 1 No. All steel totally enclosed fully interlocked indoor industrial pattern, metal clad horizontal draw out, floor mounting switch unit complete with transportation truck having integral circuit breaker mechanism and all necessary supports each equipped as under:
- 1 No. Fabricated sheet steel mounting.
- 1 No. Complete set of mechanical interlocks.
- 1 No. Set of isolating plug and sockets [6 nos. Rated for 630 Amp.] with automatic safety shutters and pad locking arrangement. Facilities shall be provided for proper opening of the safety shutter for cleaning inspection and testing.
- 1 No. 630 Amp. Triple pole VCB fitted with isolating sockets, spring operated, manually charged, and manually released spring closing mechanism with mechanical ON/OFF indicators suitable for a rupturing capacity of not less than 350 MVA at 11 kV for 3 second.
- 1 No. A set of Red and Green LED lamps for indicating opened and closed position of breaker.
- 1 No. 3 way auxiliary switch with 4 normally closed and eight normally open contacts.
- 2 No. 80 watt. 230 VAC heaters with 6 Amp. Rotary cam switch having temperature controller.
- 1 No. Bus bar chamber with 630 A rated copper Bus Bars.
- 1 No. A set of self aligning horizontal/vertical isolation type auxiliary plug and sockets.
- 1 No. Sheet steel instrument panel mounted on the front of the unit with hinged across doors and totally enclosed wiring terminals mounted there.
- The panel shall be without any metering protection CTs, cable box, series trip coils, and relays.

The HT chambers [adopter chamber] will be gasketed to make it vermin proof. The gasket shall be as specified in Section-I(Introduction and general technical requirements).

NOTE: Separate spring charging handle shall be provided and supplied with each set of the VCB.

1.14. **ANNUNCIATION SYSTEM**

Alarm annunciation system shall be provided in the control board by means of visual alarm in order to draw the attention of the operator to the abnormal operating conditions or the operation of some protective devices. The annunciation equipment shall be suitable for operation on the voltages specified in this specification or as existing DC supply system of the utility (This shall be verified by the successful bidder before submission of the drawing for approval).

Annunciation for the failure of DC supply to the annunciation system shall be provided and this annunciation shall operate on 240 Volts AC supply. Facia window shall remain steadily lighted till the supply to annunciation system is restored.
A separate voltage check relay shall be provided to monitor the failure of supply (240V AC) to the scheme mentioned in Clause above. If the failure of supply exists for more than 2 to 3 seconds. this relay shall initiate visual annunciation. This annunciation shall operate on Annunciation DC..

1.15. TESTS

The design of circuit breaker shall be proven through all the routine and in accordance with IS 13118: 1991/IEC 56 and any amendment thereof. Photocopy of all the test reports must be enclosed with the tender. Type test report earlier than 7 year from the date of tender opening shall not be acceptable.

TYPE TESTS:

Each circuit breaker shall comply with requirements of type tests prescribed in IEC publication No.56.

i. Short time and peak withstand current test.

ii. Short circuit breaking capacity and making capacity.

iii. Capacitive current switching test: Cable charging current breaking test (Ur less than or equal to 52 kV).

iv. Dielectric test i.e., power frequency withstand and impulse withstand test

v. Temperature rise test.

vi. Mechanical Endurance Test at ambient temperature.

vii. Measurement of resistance of the main circuit.

viii. Internal arc test.

1.16. COMMISSIONING CHECKS/TESTS

After installation of panels, power and Control wiring and connect Contractor shall perform commissioning checks. as listed below to proper operation of switchgear/panels and correctness of all respects.

In addition the Contractor shall carry out all other checks and tests recommended by the manufacturers.

1.16.1. GENERAL

i) Check name plate details according to specification.

ii) Check for physical damage

iii) Check tightens of all bolts, clamps and connecting terminal

iv) Check earth connections.

v) Check cleanliness of insulators and bushings.

vi) Check heaters are provided.

vii) H.V. test on complete switchboard with CT & breaker/ contractor lubricated in position.

viii) Check all moving Parts are properly lubricated.

ix) Check for alignment of busbars with the insulators to ensure alignment and fitness of insulators.

x) Check for inter changeability of breakers.

xi) Check continuity and IR value of space heater.

xii) Check earth continuity of the complete switchgear board.

1.16.2. **CIRCUIT BREAKER**

i) Check alignment of trucks for free movement.

ii) Check correct operation of shutters.

iii) Check slow closing operation (if provided).

iv) Check control wiring for correctness of connections, continuity and IR values.

v) Manual operation of breakers completely assembled.

vi) Power closing/opening operation, manually and electrically at extreme condition of control supply voltage.

vii) Closing and tripping time.

viii) Trip free and anti-pumping operation.

ix) IR values, resistance and minimum pick up voltage of coils.

x) Simultaneous closing of all the three phases.

xi) Check electrical and mechanical inter locks provided.

xii) Checks on spring charging motor, correct operation of limit switches and time of charging.

xiii) Check vacuum (as applicable).

xiv) All functional checks.

1.16.3. **Current Transformers**

i) Megger between windings and winding terminals to body.

ii) Polarity tests.

a. Ratio identification checking of all ratios on all cores by primary injection of current.

b. Magnetization characteristics & secondary winding resistance.

iii) Spare CT cores, if any to be shorted and earthed.

1.16.4. **VOLTAGE TRANSFORMERS**

i) Insulation resistance

ii) Ratio test on all cores.

iii) Polarity test

iv) Line connections as per connection diagram.

1.16.5. **CUBICLE WIRING**

i) Check all switch developments.

ii) It should be ensured that the wiring is as per relevant drawings. All interconnections between panels shall similarly be checked.

iii) All the wires shall be meggered to earth.

iv) Functional checking of all control circuit e.g. closing, tripping, interlock, supervision and alarm circuit including proper functioning of component/ equipment .

v) Check terminations and connections. To check wiring related to CT and PT circuits, carryout primary injection and then check for secondary value at relay and metering instrument terminals.

vi) Wire ducting.

vii) Gap sealing and cable bunching

1.16.6. **RELAYS**

i) Check internal wiring.

ii) Megger all terminal body.

iii) Megger AC to DC terminals

iv) Check operating characteristics by secondary injection.

v) Check minimum pick up voltage of DC coils.

vi) Check operation of electrical/ mechanical targets.

vii) Check CT connections with particular reference to their polarities for differential type relays.

viii) Relay settings.

1.16.7. **METERS**

i) Megger all insulated portion.

Check CT & VT connections with particular reference to their polarities for power type meter.

AMENDMENTS

31	**volume-III: at page 63 clause 1.3.1** The switchgear shall be of CRCA steel construction with sheet not less than 3mm thickness for load bearing section and not less than 2 mm thickness for non-load bearing and shall totally dust and vermin proof. However, if vendor has standardized the thickness of enclosure other than above mentioned and it meets the performance requirements and the design has been established through type test, the same shall be accepted. The panels shall be rigid without using any external bracings. The switchboard panels should comply with relevant IS/IEC and revision thereof and shall be designed for easy operation maintenance and further extension. Bus bar, metering circuit breaker chamber, cables and cable box chamber should have proper access for maintenance, proper interlocks should be provided. All instruments shall be non-draw out type and safe guard in every respect from damages and provided with mechanical indicator of connection and disconnection position. The switchgear shall be completed with all necessary wiring fuses, auxiliary contacts terminal boards etc	The switchgear shall be of CRCA steel/ALU ZINC construction with sheet not less than 3mm thickness for load bearing section and not less than 2 mm thickness for non-load bearing and shall totally dust and vermin proof. However, if vendor has standardized the thickness of enclosure other than above mentioned and it meets the performance requirements and the design has been established through type test, the same shall be accepted. The panels shall be rigid without using any external bracings. The switchboard panels should comply with relevant IS/IEC and revision thereof and shall be designed for easy operation maintenance and further extension. Bus bar, metering circuit breaker chamber, cables and cable box chamber should have proper access for maintenance, proper interlocks should be provided. All instruments shall be non-draw out type and safe guard in every respect from damages and provided with mechanical indicator of connection and disconnection position. The switchgear shall be completed with all necessary wiring fuses, auxiliary contacts terminal boards etc
32	**volume-III: at page 63 clause 1.3.5** Built-in/separate trolley mounted earthing switches for incomer and outgoing shall be provided.	Built-in/separate trolley mounted earthing switches (minimum one trolley for each sub-station for earthing cable end) for incomer and outgoing shall be provided.
33	**volume-III: at page 63 clause 1.3.6** All the high voltage compartments must have pressure discharge flap for the exit of gas due to internal are to insure operator safety. All the HV compartment design ensures conformity to IEC-60298 and must be type tasted for Internal Arc Test for one second.	All the high voltage compartments must have pressure discharge Flap for the exit of gas due to internal arc to ensure operator. All the HV compartment design ensures conformity of latest IEC and must be type tested for internal arc test for one second as per relevant and latest IS/IEC.
34	**volume-III: at page 64 clause 1.6.5** During detail engineering provision for shunt trip relays shall be decided by Employer for which contractor should not have any objection. Further, in this case, the series trip relays auxiliary unit contracts in the tripping circuit should be designed to handle current up to 150 Amp. and like wise trip coil voltage which appears across open contact of the series-tripping unit, be limited to 150 volts.	Provision for shunt relays shall be provided in the panels.
35	**volume-III: at page 65 clause 1.6.8** Arc flash Numerical relays to be provided with integral (no separate unit) arc flash protection system based on both current & optical input methods. Arc sensors shall be in cable chambers, bus bar chambers & circuit breaker chamber. Sensor shall cover any flash over occurring in the respective chambers.	Numerical relays to be provided with integral/independent arc flash protection system based on both current & optical input methods. Arc sensors shall be in cable chambers, bus bar chambers & circuit breaker chamber. Sensor shall cover any flash over occurring in the respective chambers. **If independent arc flash relay is provided than arc protection system should be configurable with add on modules and it should be possible to trip individual or breaker depending on the fault in various compartment. The total operating time of arc flash protection system covering both current and light shall be less than 10 ms (Documentary proof shall be submitted alongwith the bid). The arc flash relay shall have self supervision feature for arc sensors and external/independent module used, if any. The display unit shall be provided at control and relay panel (item no.4 of Price schedule) for protection system.**
36	**volume-III: at page 67 clause 1.13.1 (fourth para from top of the page.)** ❖ 1 No. 1250 Amp triple pole VCB fitted with isolating sockets, spring operated, manually as well motor charged, manually/ electrically released spring closing	❖ 1 No. 1250 Amp triple pole VCB fitted with isolating sockets, spring operated , manually as well motor charged, manually/ electrically released spring closing mechanism with ON/OFF.

	mechanism with mechanical ON/OFF indicators suitable for a rupturing capacity of not less than 350 MVA at 11 kV for 3 seconds and fitted with one set of direct acting trip coils suitable for operation with AC series trip relays.	Indicators suitable for a rupturing capacity of not less than 350 MVA at 11 KV for 3 second fitted with shunt trip.
37	**volume-III: at page 67 clause 1.13.1 (Eighth para from top of the page.)** ❖ 1 No. 3 phase resin cast, draw out type bus bar connected potential transformers of Ratio 11000/110 volts class 0.5 accuracy having minimum 50 VA output per phase to operate the A.C. static H.T. Tri-vector meter, voltmeter etc. and complete with HT fuse and LT MCB with monitoring contacts.	❖ 3 No. 1 Phase resin cast, draw out type line connected potential transformer of ratio 6.35 KV/ 63.5 V, class 0.5 accuracy having minimum 50 VA out put per phase to operte the AC static trivector meter, voltmeter etc and complete with HT fuse and LT MCB with monitoring contacts.
38	**volume-III: at page 67 clause 1.13.1 (Eleventh para from top of the page.)** ❖ 1 No. static digital Tri vector energy meter suitable for three phase 3 wire un-balanced load and CT, PT, ratio mentioned above, 0.5 accuracy class with load, survey and TOD/Tariff and MRI facility. TVM shall be as specification attached with this specification.	❖ 1 No. static digital Tri vector energy meter suitable for three phase 3 wire un-balanced load and CT, PT, ration mentioned above, 0.5 accuracy class, as per relevant IS.
39	**volume-III: at page 67 clause 1.13.1 (twelfth para from top of the page.)** ❖ 1 No. Non directional adjustable IDMT series trip O/C relay with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting from 50 to 200% of 5A on all three over current elements mounted in draw out case tropical zed with flag indicator.	❖ 1 No. Non directional adjustable IDMT O/C relay with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting from 50 to 200% of 5A on all three over current elements mounted in draw out case tropicalised with flag indicator.
40	**volume-III: at page 68 clause 1.13.4 (Fifth para from top of the page.)** 1 no. non directional triple pole adjustable IDMT, combined O/C and E/F [3 no. O/C and 1 no. E/F] AC series trip relay with instantaneous high set trip feature of low transient over reach not exceeding 5% with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting 30-120 % of 5 Amp. And for earth fault protection with setting 10-40 % mounted on a draw out case tropicalised with flag indicators. High set element of O/C shall have setting range of 5 to 20 times the rated current and the E/F elements shall be 2 to 8 times of rated current.	1 no. non directional triple pole adjustable IDMT, combined O/C and E/F [3 no. O/C and 1 no. E/F] relay with instantaneous high set trip feature of low transient over reach not exceeding 5% with definite minimum 3 seconds at 10 times plug setting. The relay shall be arranged for over current protection with setting 30-120 % of 5 Amp. And for earth fault protection with setting 10-40 % mounted on a draw out case tropicalised with flag indicators. High set element of O/C shall have setting range of 5 to 20 times the rated current and the E/F elements shall be 2 to 8 times of rated current.
41	**volume-III: at page 69 clause 1.15** **TESTS** The design of circuit breaker shall be proven through all the routine and in accordance with IS 13118: 1991/IEC 56 and any amendment thereof. Photocopy of all the test reports must be enclosed with the tender. Type test report earlier than 7 year from the date of tender opening shall not be acceptable.	**TESTS** The design of circuit breaker shall be proven through all the routine and in accordance with relevant and latest IS/IEC and any amendment thereof. Photocopy of all the test reports must be enclosed with the tender. Type test report earlier than 7 year from the date of tender opening shall not be acceptable.
42	**volume-II: section III (price schedule) item no. 3 (b)** VCB Panel for Incoming feeder with CT ratio 800 - 400/5 (0.5) - 5 (0.5) – 5 (0.5) - 1 (PS) Amp.	VCB Panel for Incoming feeder with CT ratio 800 -400/5 (0.5) - 5 (1.0) – 5 (5P10) - 1 (PS) Amp.
43	**volume-II: section III (price schedule) item no. 3 (c)** VCB Panel for Outgoing feeder with CT ratio 800 - 400/5 (0.5) - 5 (0.5) – 5 (0.5) - 1 (PS) Amp	VCB Panel for Outgoing feeder with CT ratio 800 -400/5 (0.5) - 5 (1.0) – 5 (5P10) - 1 (PS) Amp

44	**volume-II: section III (price schedule) item no. 3 (d)** VCB Panel for Outgoing feeder with CT ratio 200 -100/5 (0.5) - 5 (0.5) – 5 (0.5) - 1 (PS) Amp	VCB Panel for Outgoing feeder with CT ratio 200 -100/5 (0.5) - 5 (1.0) – 5 (5P10) - 1 (PS) Amp
45	**volume-II: section III (price schedule) item no. 4 (i)** VCB Panel for Incomer transformer with CT ratio 1200 -600/5(0.5)- 5(1.0) - 5(5P 10) - 1(PS) - 0.578 (PS) Amp.- 1 No.	VCB Panel for Incomer transformer with CT ratio 1200 -600/5(0.5)- 5(1.0) - 5(5P10) - 1(PS).- 1 No.
46	**volume-II: section III (price schedule) item no. 4 (ii)** VCB Panel for Outgoing feeder with CT ratio 800 -400/5 (0.5) - 5 (0.5) – 5 (0.5) - 1 (PS) Amp. -11 Nos.	VCB Panel for Outgoing feeder with CT ratio 800 -400/5 (0.5) - 5 (1.0) – 5 (5P10) - 1 (PS) Amp. -11 Nos.
47	**volume-II: section III (price schedule) item no. 4 (iii)** VCB Panel for Outgoing feeder with CT ratio 200 -100/5 (0.5) - 5 (0.5) – 5 (0.5) - 1 (PS) Amp. -1 No.	VCB Panel for Outgoing feeder with CT ratio 200 -100/5 (0.5) - 5 (1.0) – 5 (5P10) - 1 (PS) Amp. -1 No.
48	**volume-II: section III (price schedule) item no. 4 (iv)** VCB Panel for Capacitor bank with Provision of Undervoltage/ OverVoltage relay of ratio 800 -400/5 (0.5) - 5 (0.5) - 5 (0.5) - 1 (PS) Amp. -1 No.	VCB Panel for Capacitor bank with Provision of Undervoltage/ OverVoltage relay of ratio 800 -400/5 (0.5) - 5 (1.0) - 5 (5P10) - 1 (PS) Amp. -1 No.
49	**volume-III: at page 72.** **(New clause) 1.17**	1.17 PROVISION OF NUMARICAL RELAY. 1.17.1Numerical relay shall be provided at (MC VCB) switch gear panel, in equipments against item no. 3 (a),(b),(c), (d) and (e) of price schedule enclosed in volume –II: section-III of bid document. 1.17.2Numerical relay shall be provided at 11 KV control & relay (C&R) panel, in equipments against item no. 4(i),(ii),(iii) and (iv) of price schedule enclosed in volume-II: section –III of bid document. 1.17.3 The technical specification specified for numerical relay in control and relay panel shall also be applicable for numerical relay provided in (MC VCB) panel. 1.17.4 The technical specification specified for numerical relay in indoor (MC-VCB) panel shall also be applicable for numerical relay provided in C&R panel. 1.17.5The tri-vector meter of technical specification specified in (MC-VCB) panel shall also be provided in control and relay panel.

JE(E)M/NT

ANNEXURE - I
PRE CONTRACT INTEGRITY PACT

General

This pre–bid pre–contact Agreement (hereinafter called the Integrity Pact) is made on_____ day of the month of _____20...., between on one hand the New Delhi Municipal Council acting through Shri _____ , The Executive Engineer (hereinafter called the "Principal/Owner", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s_____ represented by Shri _____ (hereinafter called the "Bidder(s)/Contractor(s) which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

Whereas the Principal/Owner proposes to _____. through the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) is willing to offer / has offered the same.

Whereas the Bidder(s)/Contractor(s) is a private company/public company/ Government undertaking/ partnership/ registered export agency, constituted in accordance with the relevant law in the matter and the Principal/Owner is the municipal government of New Delhi established as per NDMC act 1994 performing its functions on behalf of the Council.

Now, therefore,
To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:

Enabling the Principal/Owner to procure the desired said work/ Services/ Stores / Equipments at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption during tendering, execution & public procurement, AndEnabling Bidder(s)/Contractor(s) to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the Principal/Owner will commit to prevent corruption, in any form, by its officials by following transparent procedures.
The parties here to hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the Principal/Owner

1.1 The Principal/Owner undertakes that no official of the Principal/Owner, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the Bidder(s)/Contractor(s), either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2 The Principal/Owner will, during the pre-contract stage, treat all Bidder(s)/Contractor(s) alike, and will provide to all Bidder(s)/Contractor(s) the same information and will not provide and such information to any particular Bidder(s)/Contractor(s) which could afford an advantage to that particular Bidder(s)/Contractor(s) in comparison to other Bidder(s)/Contractor(s).

1.3 All the officials of the Principal/Owner will report to the CVO, NDMC any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the Bidder(s)/Contractor(s) to the CVO, NDMC with full and verifiable facts and the same is prima facie found to be correct by the NDMC, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the NDMC and such a person shall be debarred from

further dealings related to the contract process. In such a case while an enquiry is being conducted by the NDMC the proceedings under the contract would not be stalled.

Commitments of Bidder(s)/Contractor(s)

3. The Bidder(s)/Contractor(s) commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:

3.1 The Bidder(s)/Contractor(s) will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Principal/Owner, connected directly or indirectly with the bidding process, or to any person, organization or third part related
to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

3.2 The Bidder(s)/Contractor(s) further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees brokerage or inducement to any official of the Principal/Owner or otherwise in executing the contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the New Delhi Municipal Council for showing or forbearing to show favour or disfavor to any person in relation to the contract or any other contract with the New Delhi Municipal Council.

3.3 Bidder(s)/Contractor(s) shall disclose the name and address of agents/Brokers/ representatives/ Intermediaries and Indian Bidder(s)/Contractor(s) shall disclose their foreign Principals or associates at the time of bidding.

3.4 Bidder(s)/Contractor(s) shall disclose the payments to be made by them to such agents/brokers/representatives/ intermediaries, in connection with this bid/contract at the time of bidding.

3.5 Deleted.

3.6 The Bidder(s)/Contractor(s), either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in Connection with the contract and the details of services agreed upon for such payments. A copy of contract so made with agents /brokers/intermediaries shall be submitted.

3.7 The Bidder(s)/Contractor(s) will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract. Bidder shall remain responsible to maintain safety & confidentiality of his bid documents during bid process.

3.8 The Bidder(s)/Contractor(s) will not accept any advantage in exchange for any corrupt practice, unfair means, and illegal activities.

3.9 The Bidder(s)/Contractor(s) shall not use improperly, for purposed of competition or personal gain, or pass on to others, any information provided by the Principal/Owner as part business relationship regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder(s)/Contractor(s) also undertakes to exercise due and adequate care lest any such information is divulged.

3.10 The Bidder(s)/Contractor(s) commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts, either to principal/owner or to IEMs so appointed by NDMC.

3.11 The Bidder(s)/Contractor(s) shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

3.12 If the Bidder(s)/Contractor(s) or any employee of the Bidder(s)/Contractor(s) or any person acting on behalf of the Bidder(s)/Contractor(s), either directly or indirectly, is a relative of any of the officers of the Principal/Owner, or alternatively, if any relative of an officer of the Principal/Owner has financial interest/ stake in the Bidder(s)/Contractor(s) firm, the same shall be disclosed by the Bidder(s)/Contractor(s) at the time of filing of tender. The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act 1956.

3.13 The Bidder(s)/Contractor(s) shall not lend to or borrow any money form or enter into any monetary dealings or transaction, directly or indirectly, with any employee of the Principal/Owner.

4. Previous Transgression

4.1 The Bidder(s)/Contractor(s) declares that no previous transgression occurred in the last Five years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged here under or with any Public Sector Enterprise in India or New Delhi Municipal Council that could justify Bidder(s)/Contractor(s) exclusion from the tender process.

4.2 The Bidder(s)/Contractor(s) agrees that if it makes incorrect statement on this subject, Bidder(s)/Contractor(s) can be disqualified form the tender process or the contract, if already awarded, can be terminated for such reason.

5. Deleted.

6. Sanctions for Violations

1.1 Any breach of the aforesaid provisions by the Bidder(s)/Contractor(s) or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder(s)/Contractor(s) shall entitle the Principal/Owner to take all or any one of the following actions, wherever required:-

i) To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the Bidder(s)/Contractor(s). However, the proceedings with the other Bidder(s)/Contractor(s) would continue.

ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond / Guarantee (after the contract is signed) shall stand forfeited and the Principal/Owner shall not be required to assign any reason therefore.

iii) To immediately cancel the contract, if already signed, without giving any compensation to the Bidder(s)/Contractor(s).

iv) To recover all sums already paid by the Principal/Owner, and in case of an Indian Bidder(s)/Contractor(s) with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a Bidder(s)/Contractor(s) form a country other than India with interest theron at 2% higher than the LIBOR. If any outstanding payment is due to the Bidder(s)/Contractor(s) form the Principal/Owner in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

v) To en cash the advance bank guarantee and performance bond/warranty bond, if furnished by the Bidder(s)/Contractor(s), in order to recover the payments, already made by the Principal/Owner, along with interest.

vi) To cancel all or any other contracts with the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) shall be liable to pay compensation for any loss or damage to the Principal/Owner resulting from such cancellation/ rescission and the Principal/Owner shall be entitled to deduct the amount so payable form the money(s) due to the Bidder(s)/Contractor(s).

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vii) To debar the Bidder(s)/Contractor(s) from participation in future bidding processes of the New Delhi Municipal Council for a period ranging from six months to maximum five years. However if the bidder takes corrective measures against transgressions, subject to satisfaction of Principal/Owner & IEMs, the period of debar can be reviewed.

viii) To recover all sums paid in violation of this Pact by Bidder(s)/Contractor(s) to any middleman or agent or broker with a view to securing the contract.

ix) In case where irrevocable Letter of Credit have been received in respect of any contract signed by the Principal/Owner with the Bidder(s)/Contractor(s), the same shall not be opened.

x) Forfeiture of Performance Bond/Guarantee in case of a decision by the Principal/Owner to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

6.2 The Principal/Owner will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the Bidder(s)/Contractor(s) or any one employed by it or acting on its behalf (whether with or without the knowledge of the Bidder(s)/Contractor(s), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

6.3 The decision of the Principal/Owner to the effect that a breach of the provisions of this Pact has been committed by the Bidder(s)/Contractor(s) shall be final and conclusive on the Bidder(s)/Contractor(s). However, the Bidder(s)/Contractor(s) can approach the Independent Monitor(s) appointed for the purposes of this Pact.

IEMs shall examine the transgression and its severity and submit the report to Chairman, NDMC for further action after providing an opportunity and hearing to the affected parties.

7. Fall Clause: Deleted

8. Independent External Monitors

8.1 The Principal/Owner has appointed Independent External Monitors (hereinafter referred to as IEMs) for this Pact in consultation with the Central Vigilance Commission whose names and email IDs have been given in the NIT.

8.2 The task of the IEMs shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.

8.3 The IEMs shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

8.4 Both the parities accept that the IEMs have the right to access all the documents relating to the project/procurement, including minutes of meetings

8.5 As soon as the IEMs notices, or have reasons to believe a violation of this Pact, they shall so inform to Chairman, NDMC.

8.6 The Bidder(s)/Contractor(s) accepts that the IEMs have the right to access without restriction to all Project documentation of the Principal/Owner including that provided by the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) will also grant the IEMs, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to subcontractors. The IEMs shall be under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) confidentiality.

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8.7 The Principal/Owner will provide to the IEMs sufficient information about all meetings among the parties related to the Project provided such meeting could have an impact on the contractual relations between the parties. The parties will offer to the IEMs the option to participate in such meetings.

8.8 The IEMs will submit a written report to the Chairman, NDMC within 8 to 10 weeks from the date of reference or intimation to him by the Principal/Owner/ Bidder(s)/Contractor(s) and, should the occasion arise, submit proposals for correcting problematic situation. However an opportunity of hearing shall be provided by the IEMs to the buyers /bidders before submitting their written report.

9. Facilitation of Investigation

In case of any allegation of violation of any provisions of this pact or payment of commission, the Principal/Owner or its agencies shall be entitled to examine all the documents including the Books of Accounts of the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination

10. Law and Place of Jurisdiction

This pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the Principal/Owner.

11. Other Legal Actions

The action stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

12. Validity

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 12 months beyond the defects liability period of the contracts. In case Bidder(s)/Contractor(s) is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract by the successful bidder.

12.2 Should one or several provision of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intention.

13 The parties hereby sign this Integrity Pact at _____ on _____

Principal/Owner

Bidder(s)/Contractor(s)

Name of the Officer, Chief Executive Officer

Designation

New Delhi Municipal Council

Witness Witness

1. _____ 1. _____

2. _____ 2. _____

* Provisions of these clauses would need to be amended / deleted in line with the policy of the Principal/ Owner in regard to involvement of Indian agents of foreign suppliers.

Executive Engineer (E)