

INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE

TENDER NOTICE [Advt. No. CE/HPC/02/2010]

The Director, Indian Institute of Tropical Meteorology, Pune-411008 (India) invites Sealed tenders under **TWO BID SYSTEM**, i.e., separate sealed tenders (Part-I –Technical Bid, Part-II Commercial Bid) from reputed Indian/foreign manufacturers/ authorized dealers OR their authorized Indian agents for supply, installation, commissioning and Demonstration of following items:

Sl. No	Tender Reference No	Description of Items		EMD IN(Rs)	Cost of Tender in(Rs.)
1	CE/HPC/HTBP/01/2010/	22 kV HT Breaker Panels,	JOB	1,00,000	1,000
2	CE/HPC/TF/02/2010	22/0.433 kV, 1600 kVA Outdoor ONAN Transformer .	(2nos.)	90,000	1,000
3	CE/HPC/UPS/03/2010	1) 200kVA UPS (n+1) configuration	(4nos.)	3,50,000	2,000
		2) 200kVA UPS(n+1) configuration compatible with Existing UPS 2 No.	(2nos.)		
		3) 60kVA UPS	(1nos.)		
4	CE/HPC//DG/04/2010	Minimum rating 600 kVA DGSET	(3nos.)	3,30,000	2,000
		600 kVA Synchronizing Panel For 4 X 600 KVA DG set	(1 nos)		
		HSD Buffer Tank & Fuel Transfer system for 4 x 600 kVA DG sets & 1 x 250 kVA DG set	JOB		
5	CE/HPC/EE/05/2010	External Electrical Work	JOB	5,00,000	5,000

Last Date of Issue of Tender :22.04.2010,
 Due Date for Receipt of Tender : 28/04/2010 up to 1500hrs,
 Date of Opening of Technical Bid : 28/04/2010 16.00 hrs .
 For details, please visit our website <http://www.tropmet.res.in>. Tender documents can be either obtained on payment in the form of Demand Draft from Nationalized Bank Drawn in favour of Director IITM payable at pune, from the Administrative Officer, or may be downloaded from our website. IITM will not be responsible for postal or any delay and reserves the right to reject any or all tenders without assigning any reasons.

Administrative Officer

TENDER DOCUMENTS

FOR

(TECHNICAL SPECIFICATIONS – PART 1)

FOR

22 KV HT BREAKER PANELS

AT

**INDIAN INSTITUTE OF TROPICAL
METEOROLOGY, AT PASHAN,
PUNE.**

TENDER NOTICE

Name of Owner	:	INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE
Name of Work	:	SUPPLY OF 22 KV H.T. BREAKER PANEL. (BUY BACK BASIS WITH 11kV RMU & 11kV COMPACT BREAKER)
Cost of Tender documents	:	Rs. 1000/- (Non Refundable) in form Demand Draft from Nationalized Bank drawn in favour of "Director Indian Institute Of Tropical Meteorology, Pune".
Earnest Money Deposit	:	Rs 1,00,000/ (One Lakh only) in form Demand Draft/Bank Guarantee from Nationalized Bank drawn in favour of "Director Indian Institute Of Tropical Meteorology, Pune".

- 1 Sealed item rate quotations are invited from reputed H.T. Breaker Vendors
- 2 The tender forms will be issued upto **22.04.2010** during office hrs on payment of cost of tender document in the form of Demand Draft from Nationalized Bank at the address given below.
Administrative Officer's office,
Indian Institute of Tropical Meteorology,
Dr Homi Bhabha Road,
Pashan, Pune-411 008.
- 3 Pre-Bid meeting on - **23.04.2010** (1100 hrs.)
- 4 Duly completed tenders shall be submitted in sealed envelopes at the office of owner on address given below on **28/04/2010** (1500 hrs.) and opened on **28/04/2010** (1600 hrs.)

Indian Institute of Tropical Meteorology,
Dr. Homi Bhabha Road,,Pashan,Pune-411 008
Tel No 020-25904200

Contact Person : A . K .Saxena.
Civil Engineer
Tel No-020 -25904335
- 5 The owner reserves right to accept or reject any or all the quotations without assigning any reasons shall not be bound to accept lowest quotation.

Instructions To Bidders

- 1 The tender is to be filled properly and all relevant information asked for shall be provided for in due format.
- 2 **The schedule of Rates shall be given in two sets.**
- 3 **All total amounts shall be written in words as well as in figures.**
- 4 Bidders are requested to give deviations / comments / assumptions clearly in deviation pages based on the site observations.
- 5 **Bidders are requested to specify the makes of materials to be considered.**
- 6 Duly completed tender shall be submitted to following address given below in sealed envelopes

**INDIAN INSTITUTE OF TROPICAL METEOROLOGY
PASHAN, PUNE**

Due Date and Time: 28/04/2010 – 1500 hrs

- 7 The soft copy of technical bid duly filled tenders shall be submitted to IITM in the form of CD

I. **PROJECT INFORMATION :**

OWNER	:	Indian Institute of Tropical Meteorology, Pune
PROJECT	:	HPC BUILDING (HPC UPGRADATION)
AVG. RAIN FALL	:	60 Cms.
TEMPERATURES	:	40°
INCOMING SUPPLY	:	22000V 3 Phase, 3 Wire.
DISTRIBUTION	:	415 Volts, 3 Phases, 4 Wire.

SCOPE:

- 1) DESIGN, FABRICATION, ASSEMBLY, SHOPTESTING & SUPPLY OF 22KV H.T. BREAKER. & HT PANELS WITH SUPERVISION OF SERVICE ENGINEER DURING COMMISSIONING & TESTING AT SITE.
- 2) REMOVAL & BUY BACK OF EXISTING (1 YEAR OLD) 11 kV 630A HT R.M.U. & 11 kV 630 A COMPACT HT BREAKER AT SITE. VENDOR SHOULD VISIT SITE AND OBSERVE THE CONDITION OF HT BREAKERS BEFORE SUBMITTING THE TENDER.

Instructions for Pricing : -

1. HT Breakers & RMU supply BOQ is separate and taxes etc are indicated separately in BOQ.
2. Buy Back BOQ rates quoted here shall be exclusive of applicable taxes.

Selection Criteria -

Selection of the vendors will be purely on commercial ground. Vendors will be short listed after opening of the technical bid as per matching of the requirements and detail specifications given in the tender. Commercial bids of the short listed vendor's only will be opened for price comparative.

TECHNICAL SPECIFICATIONS FOR HV METAL ENCLOSED SWITCHGEAR UPTO 33 KV

1. SCOPE

This specification covers the technical requirements of indoor HV metal enclosed switchgear rated up to 33000 volts with associated equipment mounted there in which hereinafter referred to in this specifications as switchgear / motor control center.

2. CODES AND STANDARDS

2.1 The design, manufacture and performance of equipment shall comply with latest applicable version of statutes, regulations and safety codes in the locality where the equipment will be installed. Nothing in these specifications shall be construed to relive the supplier of his responsibility.

2.2 Unless otherwise specified, equipment shall conform to the latest applicable Indian Standards and in particular to IS : 3427 and relevant clauses of IS : 2516.

3. PERFORMANCE AND CHARACTERISTICS

3.1 Switchgear shall be capable of satisfactory operation for the application, duty and other requirements as specified in this specification, enclosed Data sheets and drawings.

3.2 vacuum circuit breakers / SF6 circuit breaker and vacuum contactors shall be suitable for switching duty of transformers and other devices as shown on drawings and shall be restrike free. Over voltage during switching shall be limited to values which are safe for the connected devices by making suitable provisions in the circuit breakers, contactors if required by providing damping resistors / surge arresters or by surge capacitors.

4. CUBICLE CONSTRUCTION

4.1 Switchgear shall be of indoor, metal - clad, mounted draw out wherever minimum oil circuit breaker SF6 CB or Vacuum CB shall be provided. Switchgear shall be dust tight, moisture and vermin proof suitable for indoor installation. All doors, removable covers, cable gland / box plates shall be gasketed all around with neoprene gaskets. All louvers and vent openings shall have screens or grills made of brass or GI wire mesh and provided with filters.

4.2 Switchgear shall be unit type construction with fully compartmentalized housing to provide a rigid self-supporting and self-contained enclosure for each circuit and its associated components. Each metal enclosed unit shall be made up of rigid welded structural frame enclosed on all sides by cold rolled sheet of thickness not less than 2 mm. Stiffeners shall be provided wherever necessary.

4.3 The stationery unit shall include the racking mechanism, mechanical interlocks, the stationery primary and secondary disconnecting devices, automatic shutters, separate segregated metal compartments for three phase bus bars, instrument transformers and cable terminations. Each compartment shall have a separate cover for individual component servicing without exposing circuits in adjacent compartments. Each unit shall have on the front a separate hinged metal panel for mounting of instruments, meters, relays, indicating lamps, control and alarm devices. Switchgear cubicles shall be provided with hinged doors on the front with locking facility. Each cubicle shall be provided with bottom sheet steel plate of thickness not less than 2 mm. Metal partitions shall be provided between adjacent cubicle and three phase bus bars shall be taken to adjacent cubicle through seal - off bushings or sealed insulating barriers.

- 4.4** The cubicle and circuit breaker units shall be constructed such that each unit is interchangeable with every other unit of similar rating. Switchgear construction shall be such as to provide future extension readily feasible. Also individual compartments shall be provided for circuit breaker with its mobile trolley, bus bars, and cable end box. L.T. auxiliary control equipment.
- 4.5** The cubicle shall be provided with explosion flaps on the top, which open out under pressure, developed under high short circuit conditions.
- 4.6** Each switchgear cubicle shall be affixed on the front and rear with nameplates, engraved with circuit designation. Nameplates shall be 400 mm. high by 150 mm. long with 6 mm. engraved lettering. Also each cubicle-mounted devices such as instruments, relays, control and indicating devices shall be provided with separate nameplates. Nameplates shall be of the black aluminum anodized type, having black surface with white core.

5. SAFETY FEATURES

- 5.1** Operation of circuit breaker or isolator shall not be possible unless it is in service position or drawn out in " test " position or fully drawn out position. Withdrawal or engagement of circuit breaker or isolator into "service" position shall not be possible unless it is open. Operation of the isolator shall not be possible unless its associated breaker is in the open position.
- 5.2** Switchgear cubicle shall be provided with safety shutters operated automatically by the movement of the drawn out carriage to cover the stationery primary disconnecting contacts when the draw out carriage is in " test " or " fully " draw out positions. The safety shutters shall be opened automatically upon insertion of the carriage into " service " position.
- 5.3** Position connection of the switchgear drawout carriage with earth bus of the switchgear shall be maintained when the carriage is in "service" position. The carriage shall make contact with the earth bus before the moving primary disconnecting contacts come in touch with the stationary contacts.
- 5.4** Direct access or accidental contact with main busbars and primary connections shall not be possible when the cubicle door or instrument component door is opened or when the breaker is withdrawn from the cubicle with cubicle door open. The degree of protection against hazardous approach to live parts and moving parts shall be IPH 6 as per clause No. 6 of IS : 3427.
- 5.5** Vacuum contactors cannot be closed until the isolator of the same feeder is 'ON' and isolator cannot be open until the vacuum contactor / vacuum circuit breaker is 'OFF'.
- 5.6** When shown on drawings "Castle" type key interlock shall be provided between two incoming breakers or between breaker and associated isolator or between the incoming breakers and tiebreaker.
- 5.7** A view glass shall be provided on the front door to facilitate observation of the breaker mechanical ON / OFF indication, mechanical operation counter and oil level. The metering compartment which shall be totally enclosed box made up of sheet steel shall be located at front above the breaker compartment. All the low voltage equipments like relays, meters, switches, push buttons, indicating lamps, motor starters disconnecting type terminal blocks fuses etc. shall be mounted in this compartment.

6. BUSBARS AND CONNECTIONS

- 6.1** Main three phase busbars shall be of electrolytic copper or electrolytic aluminium conforming to IS 5082. Bus bars shall be of uniform section throughout the entire length of the switchgear and up to the incoming terminals of the feeder circuit breaker or isolator. Bus bars shall be sized to carry the specified rated current continuously without exceeding the total temperature stipulated in IS : 3427. Bus bars shall be air insulated and segregated from all other compartments, bus bars shall be PVC or polyester sleeved.
- 6.2** Bus bars shall be supported on cast epoxy resin insulators conforming to IS : 2544 and shall have coordinated dielectric properties and strength to withstand dynamic stresses caused by currents equal to the circuit breaker momentary ratings. Inter panel seal off bushings of cast epoxy resin along with a suitable semi conducting neoprene rubber rings shall be provided in the busbar compartment through which the busbar passes.
- 6.3** Busbar connections to stationary primary contacts in cubicle shall be segregated with insulating barriers and the connections at both ends shall be enclosed in insulating shrouds.
- 6.4** Busbar joints shall be covered with Para plast compound.
- 6.5** At bi-metallic joints (copper and aluminum) dowels make conductivity grease shall be applied and cupal sheet (copper and aluminum) shall be provided.
- 7. SF6 CIRCUIT BREAKERS**
- 7.1** Circuit breakers shall be of SF6 CB and draw - out type of Siemens / ABB / Schneider Electric and shall confirm the relevant clauses of IS & suitable for 550 MVA short circuit rating for 1 second at 22 KV.
- 7.2** SF6 Circuit breakers shall have six (6) Nos. primary disconnecting devices; three (3) on the line side and three (3) on the bus side. Each of the primary disconnecting devices shall consist of a stationary element mounted within an insulating shroud and movable element mounted on circuit breaker stud. The movable element shall consist of flexibly mounted, self aligning assembly of bridging elements, formed so that each segment will make a high pressure contact with the fixed terminal at the other end.
- 7.3** The secondary disconnecting devices shall provide connections for the control circuits between the circuit breaker unit and the housing. These connections shall be preferably of the self - aligning multi contact slip type connectors or of the plug and socket type.
- 7.4** The circuit breaker complete with operation mechanism, control devices and interlocks shall be mounted on a draw out type carriage. The frame shall be fabricated from a formed sheet electrically welded to from a rugged support for the breaker. A steel barrier shall separate the high voltage parts of the circuit breaker from the operating mechanism and control device. The entire frame shall be mounted on wheels.
- 7.5** The circuit breakers shall have three definite and distinct positions the "service". "Test" and "Fully draw out" positions with the breaker position clearly indicated.
- 7.6** Circuit breakers shall be electrically operated type. The power operated mechanism shall be motor operated spring power stored energy type suitable for the 230V A.C. Power operated, mechanism shall be anti-pumping type and remote control of breaker operation shall be possible. In order to minimize the power consumption of the tripping release and intermediate stored energy device shall

be provided on the breaker with a shunt trip coil. On failure of power supply to spring charging motor, at least on open - close - open operation of the circuit breaker shall be possible. Also manual-operating gear shall have a spring charging device, which makes the speed of the closing and opening of circuit breaker independent of the operator, shall be provided.

The spring can be tensioned by motor or by hand. Once a closing order has been given it is always completed by the breaker. This is important in the event of a short circuit for example. The operating gear shall have tension springs for closing and opening. The closing springs shall be charged automatically by a motor but can also be tensioned by hand using crank. A closed breaker with tensioned closing springs can be operated open - close - open without intermediate motor or manual tensioning and the breaker can therefore be used for rapid reclosing.

The opening spring is tensioned automatically when the breaker closes. An indication shall be provided to show whether the closing springs are tensioned.

The breaker shall be fitted with a push button for mechanical opening and with magnet coils for closing and opening. A shunt trip coil suitable for 230V, 1 phase A.C. supply shall be provided for tripping the circuit breaker. Also a counter shall be provided to record the number of opening operation of the circuit breaker.

7.7 Circuit breakers shall be mounted on trunk such that circuit - breaker. Potential transformer etc. is racked in or out of the cubicle by means of specially designed racking mechanism. Also circuit breaker can be put in test or service position without opening the cubicle door.

7.8 The gas levels can be seen through the insulating tube which shall be transparent and on which the minimum and maximum gas levels shall be marked for SF₆ CB.

7.9 Circuit breaker shall be suitable for following operation :

- i) Synchronizing duty.
- ii) Rapid power transfer.
- iii) Rapid auto reclosure.
- iv) Switching of transformers under no - load condition.
- v) Tripping of fault currents at very high frequencies of the transient recovery voltage.
- vi) Switching of cables.

7.10 Each breaker shall be provided with auxiliary switches directly operated from breaker operating mechanism. Auxiliary relays or contactors for multiplying the breaker auxiliary contacts are not acceptable. Each circuit breaker shall have minimum 4 'NO' and 4 'NC' potentially free, auxiliary switches, each rated for 10 amps at 230V A.C. and 2 amp (indicated breaking) at 110V D.C. and wired upto terminal block. These contacts shall be in addition to those provided in the control circuit of each breaker.

7.11 All breaker units of like ratings and types shall be physically and electrically interchangeable.

8. VACUUM CIRCUIT BREAKERS

8.1 Vacuum circuit breaker shall be of electrically operated draw out type suitable for 550 MVA short circuit rating for 1 second at 22KV drawout type and shall conform the IEC 56, IEC 298 and BS 5227.

8.2 Vacuum circuit breaker shall have three (3) Vacuum interrupter, one for each pole and maintenance free. The electrode should be gas free, so that the vaporization occurring all over the surface cannot release trapped pockets of gas molecules, which would 'poison' the vacuum and produce

alternative charge carriers. So restriking of arc shall be avoided after a current zero. All material shall permit the arc to become unstable and thus force the current to zero prematurely.

- 8.3** Vacuum circuit breaker shall be provided with 'fail safe' features so that in the unlikely event of a failure of any part of a failure of any part of the driving mechanism, the contacts will open.
- 8.4** A contact wear indicator on the vacuum circuit breaker shall be provided on all three phases and being visible from the front. Thus allowing the operator to access the condition of the interrupts while the unit is in service.
- 8.5** Vacuum circuit breaker shall be of the fixed trip type i.e. the circuit breaker cannot be tripped until it is fully closed, as short travel of contacts and relatively light load, closing time is so short that relays could not impose a tripping instructions before the contacts are fully closed. So a trip free mechanism should not shorten the operating time in any way.
- 8.6** Vacuum circuit breaker shall be electrically operated either solenoid or motor operated spring power supply to spring charging motor / solenoid, atleast one open - close - open operation of the circuit breaker shall be possible. Also manually operating gear shall have a spring charging device, which makes the speed of closing and opening of circuit breaker independent of the operator. Also shunt trip shall be provided for each breaker suitable for 230V A.C.
- 8.7** Breaker shall be provided with auxiliary switches directly operated form breaker operating mechanism. Auxiliary relays or contactors for multiplying the breaker auxiliary contactors are not acceptable. Each vacuum circuit breaker shall have 2 'NO' AND 2 'NC' potentially free auxiliary switches each rated for 10 amperes at 240V A.C. and 2 amperes (inductive breaking) at 110V D.C. and wired upto terminal block. These 2 'NO' AND 2 'NC' contacts shall being addition to those provide in the control circuit of each breaker.
- 8.8** The mechanism should be complete with closing coil, shunt trip coil, auxiliary switched and operation counter. Also mounted on the front face of the module shall be contactor for closing mechanism and selector switch drive unit, which would be interlocked to closing mechanism, the interlock ensuring the selector cannot be operated when circuit breaker is closed. The breaker shall open and close simultaneously on all the three phases for fault on any one phase and / or the phases.
- 8.9** Following technical particulars to be guaranteed for vacuum C.B.

	11 KV Vacuum C.B.	22 KV Vacuum C.B.	33 KV Vacuum C.B.
1. No. of poles	3	3	3
2. Class	Indoor/outdoor	Indoor/outdoor	Indoor/outdoor
3. No. of Phases	3	3	3
4. Rated Voltage	12 KV	24 KV	36 KV
5. Nominal System Voltage	11 KV	22 KV	33 KV
6. Rated insulation Level			
One minute	As per	As per	As per

Power frequency voltage	IS : 2516	IS: 2516	IS: 2516
Impulse withstand voltage	As per IS : 2516	As per 2516	As per 2516
Power frequency withstand voltage on auxiliary circuits of C.B	2 KV (rms)	2 KV (rms)	2 KV (rms)
7. Rated frequency	50 Hz	50 Hz	50 Hz
8. Rated current	As shown on drawings.	As shown on drawings.	As shown on drawings.
Breaking capacity symmetrical	250 MVA	550 MVA	750 MVA
Breaking capacity Asymmetrical	As per IS: 2516 or IEC 56.	As per IS: 2516 or IEC 56.	As per IS: 2516 or IEC 56.
9. Making capacity	shall not be less than 46 KV	shall not be less than 46 KV	shall not be less than 46 KV
10. Short time current rating	26.24 KA for 1 second.	26.24 KA for 1 second.	26.24 KA for 1 second.
11. Limit of temperature rise	As per IS: 2516 or IEC 56.	As per IS: 2516 or IEC 56.	As per IS: 2516 or IEC 56.
12. Nature and number of reclosing operations.	Four shot reclosing, the breaker shall be capable of auto reclosing on faults for four times instantaneous operation and shall be capable of going into lockout after fourth auto reclosing for the persistent faults provision shall be made for converting the four instantaneous operations into two instantaneous and two delayed operations when required at later date.		
13. Requirement of simultaneity of poles	The maximum difference between the instants of contact touching during closing and the maximum difference between the instants of contact separation during opening, between three poles shall not exceed one half cycles of the rated frequency.		
14. Type of closing mechanism	Solenoid and Manually	Solenoid and Manually	Solenoid and Manually
15. Type of mechanism	Fixed trip	Fixed trip	Fixed trip
16. Closing Coil			
16.1 Rated voltage	110 V DC	110 V DC	110 V DC
16.2 Voltage variation	+/-5%	+/-5%	+/-5%
17. Tripping coil			
17.1 Rated voltage	110 V DC	110 V DC	110 V DC
17.2 Voltage variation	+/-5%	+/-5%	+/-5%

9. ISOLATORS /SWITCHES

9.1 Isolators / switches shall be Siemens or equivalent make air break type conforming to IS : 4710. The isolator-operating handle shall be front mounted with provision for padlocking the isolator in open position. When shown on drawing, isolators shall be provided with "Castle" type key interlock

with corresponding breaker or another isolator. Key shall get trapped in one position of isolator and released in another position of isolator as specified in data sheets.

- 9.2** The accessibility to the inner portion of isolator cubicle shall be by opening the cubicle front door. The door shall be provided with suitable interlocking feature so as to prevent opening of panel front door when the isolator is in closed position. The live parts shall be provided with suitable insulating barriers and shrouds so as to completely prevent accidental contact with parts on opening the cubicle front door. Cubicle front door shall be equipped with viewing window with safety glass wire mesh to enable a visual check to be made of the primary contact alignment of the isolator.

10. FUSES

High voltage HRC fuses if required shall be suitable for transformer protection as shown on drawing and shall be complying with BS. 2692, IEC. 282 For voltage transformer high voltage HRC fuses shall comply with BS 2692. A mechanism shall be provided such that H.T. fuses should give a tripping signal to the vacuum contactor in the event of any fuse operating.

11. VOLTAGE TRANSFORMERS

- 11.1** Voltage transformers as specified drawing shall be supplied conforming to relevant IS : 3156. VTs shall be epoxy resin cast and shall be provided with HRC fuse on primary and secondary sides. Prospective interrupting current rating of the fuses shall be same as the momentary current rating VTs shall correspond to the voltage rating of the switchgear.

- 11.2** When drawout type of switchgear is specified, the voltage transformers with their associated primary and secondary fuses shall on a drawout carriage with moveable primary contacts, earthing bus etc.

12. CURRENT TRANSFORMER

- 12.1** Current transformers as specified in drawing shall be provided for each circuit conforming to relevant IS : 2705. CTs shall be epoxy resin cast with bar primary or ring type and shall be mounted on fixed portion of the switchgear cubicle. Facilities shall provided for short circuiting and earthing of CT secondary leads at the terminal blocks. Also test links, shall be provided in CT secondary leads to carry out current and phase angle measurement tests with CTs. in service.

- 12.2** Current transformers shall be designed to withstand the thermal and mechanical stresses resulting from fault currents equal to the maximum interrupting and momentary current ratings respectively of the circuit breakers. Insulation level of the CTs shall correspond to the voltage level of the switchgear. CTs shall have polarity marks indelibly marked on CT terminals and at the associated terminal blocks.

- 12.3** The arrangement of mounting and supporting the CTs shall be such as to take care that tracking along insulator surface from busbars to CT supporting metal clamps, cleats and bolts resulting - over shall be avoided.

13. INDICATING INSTRUMENTS AND RELAYS.

- 13.1** Electrical indicating instruments shall be of moving iron type having 144 sq.mm 90 Deg. scales. These shall be mounted semi-flush with only flanges projecting. Instruments shall be of Industrial Grade 'B' graduated for full load current of the motor with a compressed scale providing for at least six (6) times the full load current. Watt-hour and Var hour meters shall be of the three phase two-element type suitable for unbalance loads and equipped with potential indicating lamps.

13.2 Relays shall conform to IS : 3231 and shall be mounted semi flush with only flanges projecting on the front. All protective relays shall be in drawout cases with built - in test facilities. Necessary test plugs shall be the contractor. Test blocks and switches when supplied separately, shall be located immediately below each relay for testing. Auxiliary relays and timers shall be in non-drawout cases. All protective relays shall be provided with externally hand reset, positive action, and operation indicators.

14. CONTROL AND SELECTOR SWITCHES

14.1 Control and instrument switches shall be of the rotary type provided with escutcheon plates engraved with switch operating positions and suitable for semi - flush mounting with only the switch front plate and operating handle projecting out. The contact assembly at the back of the switch shall be from the back.

14.2 Control switches shall have momentary contacts, spring return to center with pistol grip handles. Instrument and selector switches shall have stay put contacts with oval knurled handles. Three number of contacts, their rating and their operation in each switch shall be as per the requirement of the connected circuit and the control schematics. Controls supply 240 V, 1 A.C. for vacuum contractor and control circuit shall be tapped after main switch.

15. INDICATING LAMPS

15.1 Indicating lamps shall be panel-mounting type with LED type only.

16. ANNUNCIATORS

16.1 Annunciators when specified shall have audible alarm and visual display through translucent plastic window of 50mm x 65mm (minimum) size engraved with appropriate function in block letters on each windows. "Acknowledge" "Reset" and "Lamp Test" pushbuttons with alarm buzzer shall be provided common for the annunciation system on the entire line up of switchgear. All relays for the compartment of switchgear.

16.2 On receipt of an alarm impulse, audible alarm shall be sounded and lamps inside appropriate window shall start flickering. On pressing of "Acknowledge" button the audible alarm shall stop sounding and lamp shall glow steady. By pressing the "Reset" button, the trouble lamp shall not reset unless the alarm condition has disappeared. Annunciator shall provide sealed in lamp indication and audible alarm shall be ready to operate for any new alarm condition immediately after audible alarm is reset for a previous alarm condition.

17. CABLE TERMINATIONS

17.1 For power cables, cable boxes with cable pot heads/sealing ends shall be provided in the switchgear in a separate compartment to suit the types sizes of cables shown in cable schedule. They shall be complete with all furnishing materials including cable compound, tapes binding wires, filters, armour clamps, brass glands etc. Connecting leads of adequate size with terminal clamps/lugs, shall be supplied for connecting cable box terminals to switchgear power terminals.

17.2 For control cable entry each switchgear cubicle, separate removable type gland plate shall be provided with cable through to lead these cables upto the control terminals. Gland plate and control cable through shall be adequately sized for the number of control and instrument cables emanating from the cubicles.

18. SPACE HEATER AND RECEPTACLE

- 18.1** Each switchgear cubicle shall be provided with space heater rated for 230 V, 1 phase, A.C. Supply. The capacity and location of these space heaters inside switchgear cubicles shall be such that temperature throughout the cubicle section is maintained at least 5 deg. C above dew point by common thermostats to prevent any moisture condensation. A switch fuse unit shall be provided inside each switchgear cubicle to control the power supply to the space heaters.
- 18.2** Each switchgear cubicle shall be provided with one, 3pin receptacle - plug with on-off switch rated for 5 Amps, 240V, 1 phase A.C. supply.

19. INTERNAL WIRING

- 19.1** Switchgear shall be supplied completely wired internally to equipment and terminals and ready for external cable connection at the terminal blocks. All wiring for controls and instruments shall be carried with 1100/650 volts grade PVC insulated copper conductor wires of minimum size 2.5 Sq.mm. wire terminations shall be made with solderless, crimping type copper lugs which firmly grip the conductor and insulation. Engraved core identification yellow colour plastic ferrules marked to correspond with switchgear wiring diagram shall be fitted at both end - terminations of all the cubicle internal wiring.
- 19.2** Spare contacts of relays, control switches, auxiliary contacts of circuit breakers etc. Shall be wired to terminal blocks. At least 10% of the terminals shall be provided as spare for future use. Terminal blocks shall be 650 V grade, rated for minimum 15 Amps and complete with insulating barriers, terminal stud, washers, nuts and lock nuts and identification marks. Each terminal shall be suitable to receive 6.0 sq.mm. conductor.
- 19.3** Control and space heater supplies will be provided at one point in switchgear cubicle for each line up to switchgear. In each cubicle and running the entire length of line up of switchgear, control wiring through shall be provided to carry the interconnecting wires between cubicles and the common control and space heater buses. Also inter-cubicle wiring for interlocks and controls shall be carried out through this wiring through. These wires shall be suitable terminated and tagged between transport sections.

20. EARTHING

- 20.1** A copper / aluminium earth bus of size 50 x 6 sq.mm. Copper or 50 x 12 sq.mm. Aluminum shall be provided at the bottom extending through the entire length of switchgear. Each stationary unit of the cubicle shall be earthed directly to the earth bus through a contact bar so that the carriage is earthed at all times except when the primary disconnects are separated by a safe distance. Suitable clamp type connectors shall be provided at both ends of earth bus to suit external earthing conductor. Also hinged doors of the cubicle base plate of C/T and P/T shall be effectively earthed.
- 20.2** One set of earthing accessories shall be supplied with the switchgear for earthing of the outgoing side of a feeder or 3 phase bus bars of the switchgear either through earthing facility comprises truck to be inserted in place of circuit breakers, separate earthing trucks shall be supplied where earthing is achieved through circuit the earth device unless the circuit breaker is in open and isolated position.

21. DRAWING AND DATA

- 21.1** Within two weeks of placement of order/letter of intent, Contractor shall furnish following drawings/data in 3 sets for approval by engineer and 6 sets of final drawings for record.

- 21.2 General arrangement drawing of the switchgear showing plan, elevations, sectional views, mounting details foundation plans, cable openings for power and control cables, weights etc.
- 21.3 Single line diagram of the switchgear.
- 21.4 Internal wiring diagram including terminal wiring designations, external cable connection and inter-cubicle connections for each switchgear cubicle.
- 21.5 Protective relay curves and data for relay co-ordination and relay particulars.

22. SPECIAL TOOLS

Minimum 2 sets or special tools if any required for maintenance and service of breakers shall be supplied free of cost. e.g. Manual spring charging handle, breaker pull in/out handle, specified spanner etc.

23. SPARE PARTS

Tendered shall along with his bid, recommended set of spare parts required for period of two (2) years in continuous operation of the equipment offered. Itemized unit prices with exact quantities recommended for these spares shall be indicated in the price schedule.

24. TESTS

Tests shall be carried out on various equipment/components mounted on the switchgear as per relevant applicable Indian Standards. Switchgear with all equipment/components mounted and wired shall be subjected to following tests at the manufacturer's works in accordance with IS : 3427.

- 24.1 Power frequency voltage (dry) withstand test.
- 24.2 Mechanical operation test.
- 24.3 Tests of electrical controls, interlocks and sequential operation as per approved schematic wiring diagrams.
- 24.4 Verification of wiring as per approved wiring diagrams.
- 24.5 High voltage test on auxiliary circuits.
- 24.6 Insulation test on bus bars and auxiliary circuits before and after high voltage withstand tests.
- 24.7 Verification of interchangeability of breaker carriage of same type and rating.
- 24.8 Maintenance and service manual of breaker, relay, cubicle etc.

All tests shall be carried out in the presence of representative of the consultant/purchaser. Two copies of the test reports shall be submitted for approval by purchaser. Also type certificates for the type tests carried out as per relevant Indian standards on switchgear and its various components of identical design and rating shall be furnished. Equipment shall be packed and kept ready for dispatch only after approval of test reports by purchaser.

**DATA SHEET
 FOR
 22 kV VCB 630AMP BREAKER PANEL (Indoor)**

1. No. of Poles	:	3
2. Class	:	Indoor
3. Quantity	:	1 Set (630A as 1 incomer 630 A as 4 outgoing) (at Substation)
4. No. Of Phases	:	3
5. Rated Voltage	:	22 kV
6. Nominal System Voltage	:	24 kV
7. Normal Current at Site Conditions	:	136 Amp 550 MVA.(Fault Current 25 kA)
8. Rated Insulation Level		
a. One minute Power Frequency Voltage	:	As per IS 2516
b. Impulse withstand Voltage	:	As per IS 2516
c. Power frequency withstand voltage on auxiliary circuits of C.B.	:	2 KV (rms)
9. Rated Frequency	:	50 Hz.
10. Limit of temperature rise	:	30°C
11. Type of closing mechanism	:	Motorized Electrical.
12. Type of tripping mechanism	:	Fixed trip.
13. Tripping Closing Coil		
a) Rated voltage, Control Voltage.	:	110 V DC
b) Voltage Variation	:	85% to 110%
14. Relays	:	EF / OC relay, Master trip on Main Breaker EF / OC, Auxiliary relay master trip on each transformer feeder breaker. (as per SLD)
15. Alarm / Trip	:	All TRFO Faults with Annunciator panel & extra potential free contact in annunciator panel for fault signal. (as per SLD).
16. Alarm	:	General Faults
17. Metering	:	Voltmeter, Ammeter, KW, KVA,PF on panel (Digital type)

DATA SHEET
FOR
22KV VCB /SF6 630 AMP COMPACT BREAKER (Indoor)

1. No. of Poles	:	3
2. Class	:	Indoor
3. Quantity	:	630 A,25kA Single feeder breaker (H.T. Breaker at metering yard)
4. No. Of Phases	:	3
5. Rated Voltage	:	22 kV
6. Nominal System Voltage	:	24 kV
7. Normal Current at Site Conditions	:	136 Amp 550 MVA. (Fault current 25 kA).
8. Rated Insulation Level		
a. One minute Power Frequency Voltage	:	As per IS 2516
b. Impulse withstand Voltage	:	As per IS 2516
c. Power frequency withstand voltage on auxiliary circuits of C.B.	:	2 KV (rms)
9. Rated Frequency	:	50 Hz.
10. Limit of temperature rise	:	30°C
11. Type of closing mechanism	:	Motorized Electrical.
12. Type of tripping mechanism	:	Fixed trip.
13. Tripping Closing Coil		
c) Rated voltage, Control Voltage.	:	110 V DC
d) Voltage Variation	:	85% to 110%
14. Relays	:	EF / OC relay, Master trip on breaker. (as per SLD)
15. Alarm / Trip	:	All Faults with Annunciator panel & extra potential free contact in annunciator panel for fault signal. (as per SLD).
16. Alarm	:	General Faults
17. Metering	:	Voltmeter, Ammeter, KW, KVA,PF on panel (Digital type)
18. Dimensions	:	Maximum Dimensions shall be 1850(D) x 800(W) x 2100 (H)

DATA SHEET
FOR
BUY BACK OF EXISTING 11 KV RMU 1

1. No. of Poles	: 3
2. Class	: Indoor type
3. Quantity	: 1 Set (630A as 2 incomer & 630 A as 1 outgoing) (at Substation)
4. No. Of Phases	: 3
5. Rated Voltage	: 11 kV
6. Nominal System Voltage	: 12 kV
7. Rated Insulation Voltage	: 28 kV RMS/75 KV PEAK
8. Rated Frequency	: 50 Hz
9. Rated Short Circuit Withstand Current	: 25 kA
10. Rated Short Circuit Peak Withstand Current	: 63 kA
11. Rated Short Circuit Making Capacity	: 20 kA RMS/50KA PEAK
12. Applicable Standard	: As per IS 2516
13. Impulse withstand Voltage	: As per IS 2516
14. Additional Combination	: 630 A Load Break switches (2 No. I/C & 1 No. as O/G) + Aux Switch+ Fuse Trip(40 A) Mechanism+ Shunt Trip + Earth Switch

DATA SHEET
FOR
BUY BACK OF EXISTING 11KV VCB 630 AMP COMPACT BREAKER (Indoor)

1. No. of Poles	: 3
2. Class	: Indoor
3. Quantity	: 630 A, 25kA Single feeder breaker (H.T. Breaker at metering yard)
4. No. Of Phases	: 3
5. Rated Voltage	: 11 kV
6. Nominal System Voltage	: 12 kV
7. Rated Frequency	: 50 Hz.
8. Limit of temperature rise	: 30°C
9. Type of closing mechanism	: Motorized Electrical. 230 V AC Motor
10. Type of tripping mechanism	: Fixed trip.
11. Tripping Closing Coil	
a) Rated voltage, Control Voltage.	: 110 V DC Built In Control Supply
b) Voltage Variation	: 85% to 110%
12. Relays	: EF / OC relay, Master trip on breaker. (as per SLD)
13. Alarm / Trip	: All Faults with Annunciator panel & extra potential free contact in annunciator panel for fault signal. (as per SLD).
14. Alarm	: General Faults
15. Metering	: Voltmeter, Ammeter, KW, KVA, PF on panel (Digital type)
16. Dimensions	: 1850(D) x 800(W) x 2100 (H)

APPROVED LIST OF MATERIAL

LOAD MANGER / DIGITAL METER	:	ENERCON / HPL / SECURE / ELECTREX
CONTACTOR	:	MG - TELE / SCHNEIDER / L&T / SIEMENS
FUSES	:	MG / SCHNEIDER / L&T / SIEMENS
PILOT LAMPS (INDICATIONS) LED	:	ALTOS / TEKNIK / RASS
ANNUNCIATOR	:	MINILEC / EQUIV
TERMINALS	:	WAGO / ELMEX / CONNECTWELL
RELAYS (PROTECTIONS)	:	ALSTHOM / AVKS SEGC / L&T / ABB.
AUXILIARY RELAY	:	OEN / EQUIV
INDUSTRIAL SOCKETS	:	BCH / HANSEL / MENNEKES / ELCON
METER (ANALOG)	:	RISHAB / L&T / AE / SECURE
CU. LUGS	:	DOWELL'S / ATLAS
CU. WIRE (ZHLS)	:	RR / LAPP / L&T / ECOTEK
METERS (ANALOG)	:	RISHABH (L&T) / AE. / SECURE.
CTS'	:	AE / KAPPA / C & S
PUSH BUTTONS	:	L & T / RASS / TEKNIK
MCB	:	LEGRAND / SCHNEIDER / L&T / HAGER / ABB
CONNECTORS (COLOUR CODED)	:	WAGO CONTROL / CONNECT WELL / ELMEX
SELECTOR SWITCHES	:	KAYCEE / SULZER / TEKNIK

LIST OF IS STANDARD

		A - H. T.
1	IS :3427-1997	AC metal enclosed switchgear and controgear for rated voltages above 1 kV upto and including 52kV.
2	IS : 14659-1999	AC metal enclosed switchgear and controgear for rated voltages above 1 kV upto and including 38kV.
3	IS : 10601-1983	Dimensions of terminals of high voltage switchgear and controlgear.
4	IS : 2705-1992	Current transformer
5	IS : 3156-1992	Voltage transformers
6	IS :13118:1991	General requirements for circuit breakers for voltages above 1000V
7	IS :9920:1982	Switches and switch isolators for voltages above 1000V
8	IS : 3231-1986	Electrical relays for power system protection.

**DEVIATIONS FROM GENERAL
CONDITIONS OF SUPPLY**

All deviations from general condition of supply shall be filled in hereby the bidder.

SECTION	CLAUSE NO.	DEVIATION
----------------	-------------------	------------------

The bidder hereby certifies that the above mentioned are only deviations from general conditions of supply of enquiry.

DATE

Signature And Seal of Bidder

**DEVIATIONS FROM TECHNICAL
SPECIFICATIONS**

All deviations from specification shall be filled in hereby the bidder.

SECTION	CLAUSE NO.	DEVIATION SPEC. NO.
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The bidder hereby certifies that the above mentioned are only deviations from technical specifications of this enquiry.

DATE

Signature And Seal of Bidder

TERMS & CONDITIONS

ENQUIRY NO: **CE/HPC/HTBP/2010/01**

- 1) The Tenderers are requested to give detailed sealed tender in two Bids i.e.
Part – I Technical Bid.
Part - II Commercial Bid, both the bids addressed to the Director, Indian Institute of Tropical Meteorology, Dr. Homi Bhabha Road, NCL Post, Pashan, Pune – 411 008, INDIA.
- 2) This tender is not transferable.
- 3) If a request is made to IITM for Tender Documents a sum of Rs. **1000/-** (Rs. One Thousand only) (Non-refundable) has to be paid in the form of Demand Draft from Nationalized Bank drawn in favour of "The Director, Indian Institute of Tropical Meteorology, Pune". In case the bidders download the Tender Documents from the website of the Institute, the document fee Rs. **1000/-** (Rs. One Thousand only) in the form of Demand Draft is required to be enclosed while submitting the tender. Otherwise tender will not be considered.
- 4) Tenders addressed to the Director, Indian Institute of Tropical Meteorology, Pune 411008 are to be submitted for each item in duplicate in two separate cover, under two bids system. Superscribed with Tender No. **CE/HPC/HTBP/2010/01** for purchase of "**HT BREAKER PANELS**" – Qty 03 No. due on **28/04/2010.(1500 hrs.)**
- 5) You have to submit two separate bids in two separate envelopes and you may keep both the bid envelopes in an envelope for sending to us.

One envelope will contain only the TECHNICAL SPECIFICATIONS of the indented equipment.

Another envelope will contain only the financial bid in which price and any other information, which has financial implications, will only be given.

The main envelope, which will contain both the bids, should be super scribed with our tender enquiry No.**CE/HPC/HTBP/2010/01** due on **28/04/2010.(1500 hrs.)**
- 6) Please indicate page nos. on your quotation ex. If the quotation is containing 25 Pages, please indicate as 1/25, 2/25, 3/25 ---- 25/25.
- 7) Cost of the items should be mentioned clearly in the Commercial Offer (Part-II) only. The optional and any other essential items / accessories required for the maintenance of the equipment for the next three years should also be specified in the offer separately.
- 8) Last date for the receipt of completed tender is up to 1500 hrs. on **28/04/2010**. Tenders will be opened at 1600 hrs. on **28/04/2010** in the presence of the representatives of the vendors present.
- 9) The tender must be valid for a period of at least 90 days from the date of opening.

- 10) The purpose of certain specific conditions is to get or procure best Equipment / service etc. for IITM. The opinion of Technical Committee shall be guiding factor for Technical short listing.
- 11) Supplier shall finally warrant that all the stores, equipment and components supplied under the SUPPLY ORDER shall be new and of the first Quality according to the specifications and shall be free from all the defects (even concealed fault, deficiency in the design material and workmanship).
- 12) Tender must clearly indicate the features offered, unit price, VAT tax, transport, transit-insurance, installation charges. Institute cannot furnish any certificate for exemption or reduction in VAT tax or any other duty/tax. The vendor should mention the price of the equipment and the duties/taxes to be paid such as customs duty/excise duty/VAT taxes etc. separately.
- 13) The complete equipment including operational manuals should be supplied within stipulated period mentioned in the supply order and the vendor should install and commission the equipment within **fifteen days** after the delivery of the equipment.
- 14) i) As this Institute is exempted from payment of Custom Duty and Excise Duty, Exemption certificate will be issued on request.

ii) The Institute is exempted from payment of Octroi Duty. Necessary certificate will be issued on request, if required.
- 15) The equipment must carry comprehensive on-site warranty for **One Year** from the date of commissioning of the equipment after the acceptance tests. Warranty period will stand extended for a period of total downtime of the HT BREAKER.

Further, optional quotation should be quoted separately for extendable warranty by two more years i.e. 1+1 year.
- 16) The vendor has to furnish a Bank Guarantee to the extent of 10% of the order value from a nationalized bank in the prescribed format valid for the entire period of warranty including extension if any.
- 17) No advance will be paid.
- 18) The prices shall be quoted as per the annexure.
- 19) The payment terms shall be as follows:
 - i) 70% payment against delivery.
 - ii) 20% payment after satisfactory installation, commissioning and successful completion of acceptance tests and training.
 - iii) 10% payment after execution of Bank Guarantee from a Nationalized Bank and successful completion of acceptance test. The Bank Guarantee will remain valid until the expiry of warranty period including the extensions if any.

- 20) The prices quoted should be firm and irrevocable and not subject to any change whatsoever, even due to increase in cost of raw material components and fluctuation in the foreign exchange rates and excise duty.
- 21) Vendor should arrange appropriate training to the users free of charge.
- 22) Indicate the names of the Indian reputed Organizations where you have supplied the similar equipment and may attach the satisfactory performance report of the equipment from user Organization.
- 23)
 - a) If you have supplied identical or similar equipment to other Institutes under Ministry of Earth Sciences and Ministry of Science & Technology, the details of such supplies for the preceding three years should be given together with the prices eventually or finally paid.
 - b) Based on the above information IITM will have its option to obtain details of the equipment, their performance, after sales services etc. for evaluation of the tender, directly from the concerned Labs. /Scientists etc.
- 24) The Institute is autonomous scientific research organization under the Ministry of Earth Sciences and is a recognized center for studies leading to M.Sc. and Ph.D. of the University of Pune and various other Universities. As such, all possible concessions / discounts / rebates applicable for educational Institutions may be given.
- 25) The vendor should have appropriate facilities and trained personnel for supply, installation, commissioning and warranty-maintenance of the equipment to be supplied. Detailed information in this regard may be furnished.
- 26) Kindly attach a copy of your latest DGS&D, New Delhi registration Certificate under the compulsory Scheme of Ministry of Finance regarding the registration of Indian Agent of foreign supplier wherever it is applicable.
- 27) The Tenderer is required to furnish the Permanent Account Number (PAN) & Service Tax Number Allotted by the Income Tax Department & other concern department. If registered with the National Small Industries Corporation, the registration number, purpose of registration and the validity period of registration' etc. should also be provided in Technical Bid for Indian Agents.
- 28) Vendor should clearly mention the following:
 - **Make and model of every item quoted.**
 - Delivery period.
 - Company profile with a list of those institutes/users should be attached where vendor has supplied the equipments in question in past.
 - A letter of AUTHORISED REPRESENTATIVE from the Principal should invariably be attached with quotation
 - A copy of latest Income Tax clearance Certificate from Income Tax Department (INDIA)

- 29) Discount offered should be mentioned clearly in the commercial bid only.
- 30) The Tenderers are requested to quote for Educational Institutional Price for Equipment and Software, since we are eligible for the same.
- 31) Acceptance tests to be prescribed later will be carried out after installation and the items will be taken over only after successful completion of the acceptance tests.
- 32) The Equipments are required to be installed at **IITM, Pune** and subsequently Training is to be provided to the concerned persons of the Institute.
- 33) The item should be supplied with manuals and the manuals including technical / Electronic drawings / circuit diagrams should be complete in all respects to operate the system without any problem.
- 34) The Tenderer has to state in detail the Electrical Power is needed to house the system and to run the tests. i.e. pre-installation facilities required for installation may please be intimated in the technical bid.
- 35) Goods should not be dispatched until the Vendor receives a firm order.
- 36) The Date and Time of opening for Part-II (Commercial Bid) will be intimated only to pre-qualified and technically acceptable Tenderers for the item at a later date.
- 37) **Earnest Money Deposit:**
 - a) The Earnest Money Deposit of Rs. **1,00,000/ (One Lakh only)** must be paid / sent along with your technical bid in the form of a Demand Draft, Banker cheque or Bank Guarantee (from a Nationalized Bank only) drawn in favour of The Director, Indian Institute of Tropical Meteorology, Pune payable at Pune, otherwise your bids will not be considered. The Earnest Money of successful bidder will be returned only after installation, commissioning, satisfactory demonstration and on acceptance of the equipment by the user Scientist / HOD as per the terms of our purchase order. If the successful bidder fails to fulfill the contractual obligations before the due date, he will forfeit the EMD.
The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned within 20 days after receipt of Technical Committee recommendations.
 - b) Those who are registered with Central Purchase Organization (e.g. DGS&D), National Small Industries Corporation or the concerned Ministry / Department need not to furnish EMD along with their bids.
- 38) Part and incomplete tenders are liable to be rejected.

- 39) Conditional Offers will not be considered.
- 40) The tenders must be clearly written or typed without any cancellations / corrections or overwriting.
- 41) **Fax /E-mail /Telegraphic /Telex tenders will not be considered.**
- 42) IITM will not be responsible:
- a) For delayed / late quotations submitted / sent by Post / Courier etc.
 - b) For submission / delivery of quotations at wrong places other than the Office of Director, IITM, Pune
- 43) If the supplier fails to Supply, Install and Commission the system as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of one percent value of the Purchase Order awarded, per every week delay subject to a maximum of 10% for every week beyond the due date and such money will be deducted from any money due or which may become due to the supplier.
- 44) In case of any dispute regarding part-shipment, non-compliance of any feature etc., the Director, Indian Institute of Tropical Meteorology, Pune will be the final authority to decide the appropriate action and it will be binding on the vendor.
- 45) Last Date and Time for receipt of Tenders: **Upto 1500 hrs. on 28/04/2010.**
- 46) Date and Time of opening of Tenders:**At 1600 hrs. on 28/04/ 2010.** (Part - I Technical Bid only)
- 47) **ACCESS TO WORK :**
Owner / Engineer or their authorized representative shall have access to works being carried out at all reasonable times. No person, not authorized by owner/engineer except representatives of public authorities shall be allowed at work site at any time.
- 48) **SUB-CONTRACT :**
The complete work included in the contract shall be executed by the contractor and the contractor shall not sub-contract/sub-let work or part thereof without prior written consent from owner/engineer. However, contractor shall not be relieved from the responsibility of execution of works as per contract under any circumstances.
- 49) **COMPLETION CERTIFICATE:**

The work shall be deemed to have been completed on written certificate by Engineer that they have been virtually completed. The "Defect Liability Period" shall commence from the date of such certificate.

Contractor shall be responsible for injury to person animal or things for all damages caused to property from operations or neglect of himself or his employees / subcontractors. The contractor shall indemnify owner / Engineer and their employees and hold them harmless in respect of any and all expenses arising from such injury or damage and claims arising there of.

50) **INSURANCE & INDEMNITY**

Contractor shall have valid PF, ESI registration. All laws related to Labour, PF, ESI, Medical insurance etc, shall be adhered to by contractor. No child Labour shall employ by contractor.

51) **EXTENSION OF TIME:**

If in the opinion of owner/engineer the work is delayed (a) by force majored, (b) by reasons beyond control of contractor, extension of time for carrying out the works can be sanctioned by owner/engineer on written request from contractor with due reasoning / supporting.

Force Majored shall mean & include compliance with statutory laws & regulation, Government order or change in orders, war & war like conditions acts of civil & military authorities, fires, floods, earthquakes and other acts of God, sabotage, revolt, Strikes & lockout of more than 2 weeks. How ever contractor & owner in such case should devise means of expediting the progress for performance as per contract.

52) **TECHNICAL SCRUTINY OF FINAL BILL:**

The owner shall have right to get works and bills technically scrutinized at the time of payment of final bill. Owner shall be entitled to recover any money found to be over paid or over certified during such scrutiny.

53) **PERFORMANCE GUARANTEE:**

The contractor shall guarantee performance of plant and equipment and workmanship against fault for a period of 12 months called as "Defect Liability Period".

54) Director reserves the right to reject any or all tenders without assigning any reason

(Venkatachalam.G)
Administrative Officer
For Director
Email: venkat@tropmet.res.in
Tel: 020-25904203

ANNEXURE -'A'

BID SECURITY FORM

Whereas 1 (hereinafter called " the Bidder") has submitted its bid dated (date of submission of bid) for the supply of _____
(name and/or description of the goods)(hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE ____
(name of bank) of (name of the country), having our registered office at (address of bank)(hereinafter called "the Bank"), are bound unto (name of Purchaser)
(hereinafter called "the Purchaser") in the sum of _____ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this ___ day of 20__ THE CONDITIONS of this obligation are:

1. If the Bidder withdraws it's bid during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of it's bid by the Purchaser during the period of bid validity:
 - a) fails or refuses to execute the; Contract Form if required; or
 - b) fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders.

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

This guarantee shall remain in force up to one year after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the Bank) Name of Bidder.

Summary Sheet

CLIENT : – Indian Institute of Tropical Meteorology

PROJECT : –IITM HPC UPGRADATION

DESCRIPTION	Supply	Installation
	AMOUNT Rs. Ps.	AMOUNT Rs. Ps.
SECTION - 'I' : RS. BOQ FOR 22 kV, 630 A,VCB ,SF6 H.T .BREAKER PANEL & RMU		
SECTION - 'II' : RS. BOQ FOR BUY BACK OF 11 kV, 630 A H.T .BREAKER & RMU		
TOTAL : RS.		

Bill of Quantities

CLIENT : Indian Institute of Tropical Meteorology

PROJECT : IITM HPC UPGRADATION

ENQUIRY FOR 22 kV, 630 A, VCB / SF6 H.T .BREAKER PANEL & RMU

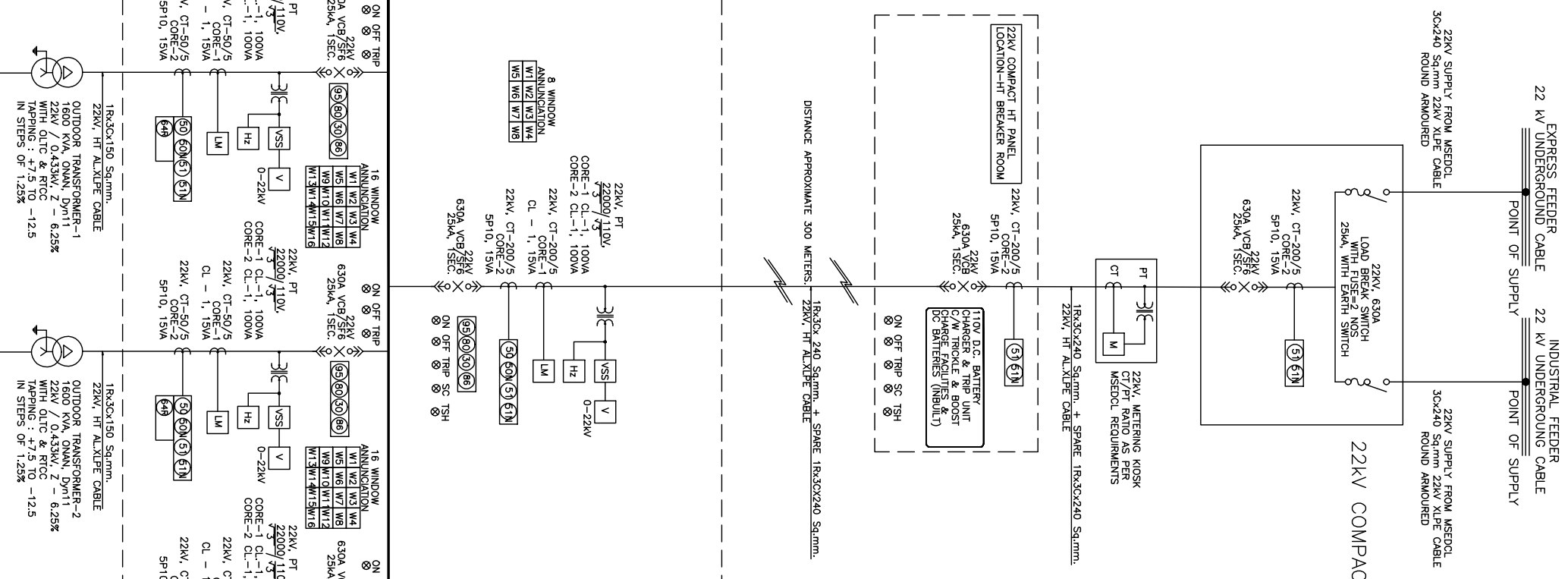
SECTION -1

Sr. No.	Description	Unit	Qty.	Supply	
				Rate	Amount
1.0	Manufacture, factory testing & Supply of 22kV indoor type Compact type RMU , 2 Nos 630 A, 25 kA Load Break switch as incomer with mechanical interlock & 1 No. 630A VCB/SF6 Compact Breaker as outgoing with Earth Switch. Panel should be suitable for termination of HT XLPE Cables of size 3C x 240 sq.mm. with necessary sleeves & boots complete as per SLD & Specification.	No.	1		
2.0	Manufacture, factory, testing & supply of 22kV, 25 kA, 630A VCB/SF6, Single feeder Compact Breaker in Indoor, floor mounting cubical type manufactured as per 22 kV switchgears requirements with built in control supply arrangement, specifications and I.S. standards connection facility for incoming 3C x 240 sq.mm. 22 kV XLPE cable & o/g 3C x 240 sq.mm. 22 kV XLPE cable complete as per set SLD & specification. (Equivalent to Make: Merlin Gerin (Schneider) RM6 24 kV)	No.	1		
3.0	Manufacture, factory testing of 22 kV, free standing dust and verminproof metal enclosed, breaker panel SF6 / VCB , necessary CT / PT units, Digital meters, indications and protection system consisting of EF & OC relays, Aux. relays, master trip relay, antipumping relay trip circuit supervision relay and any such relays, required for protection functions, window annunciation etc. as per specifications.				
3.1	1 Incomer 630 A, 25kA and 4 No.Outgoings 630 A, 25 kA transformer feeder panel as per SLD drawing No. 810A/EL/02.1	Set	1		
	Total Quoted Price				
	Taxes & Duties				
	Customs / Excise Duty.				
	VAT				
	Insurance.				
	Freight & Forwarding.				
	Octroi.				
	Final Cost				
	Delivery period				
	Payment Terms				
	Inspection				
	Validily				
	Warranty				
	Makes Considered				

CLIENT : Indian Institute of Tropical Meteorology
PROJECT : IITM HPC UPGRADATION

LOWEST COST CRITERIA

	Particulars	Rs/-
A	Basic cost of Supply of FOR 22 kV, 630 A,VCB/SF6 H.T .Breaker Panel & RMU	
B	Basic cost BUY BACK OF 11 kV, 630 A H.T .Breaker & RMU as per details	
C	Total cost for commercial comparision $C=(A - B)$	



22KV VCB/SF6 PANEL LOCATION-SUB STATION RM.

16	WINDOWS ANNUNCIATION PANEL
W1	BREAKER ON
W2	BREAKER TRIP ON FAULT
W3	RESTRICTED EARTH FAULT TRIP
W4	OC TRIP
W5	WDG TEMP. HIGH ALARM
W6	WDG TEMP. LOW TRIP
W7	OLC LEVEL LOW (MOG) ALARM
W8	BUCHHOLZ ALARM
W9	BUCHHOLZ TRIP
W10	TRIP CIRCUIT FAULTY
W11	OTI HIGH ALARM
W12	OSR ALARM
W13	OSR PR LOW
W14	PRV TRIP
W15	SPARE
W16	SPARE

8 WINDOW

8	WINDOWS ANNUNCIATION PANEL
W1	BREAKER ON
W2	GAS PR LOW
W3	OC TRIP
W4	RESTRICTED EARTH FAULT TRIP
W5	TRIP CIRCUIT FAULTY
W6	BREAKER TRIP ON FAULT
W7	SPARE
W8	SPARE

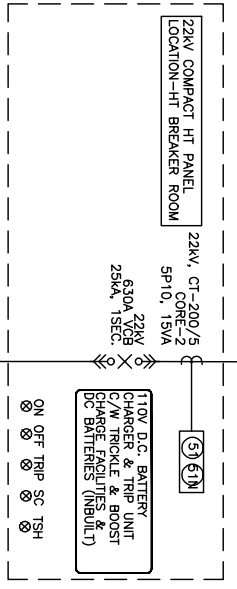
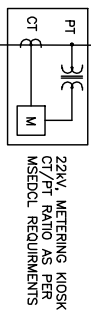
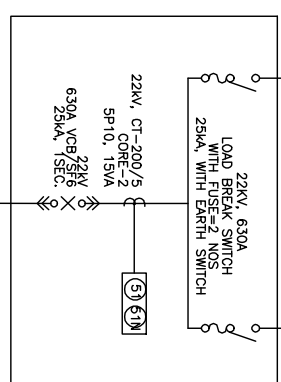
22KV VCB/SF6 PANEL LOCATION-SUB STATION RM.

8	WINDOWS ANNUNCIATION PANEL
W1	BREAKER ON
W2	GAS PR LOW
W3	OC TRIP
W4	RESTRICTED EARTH FAULT TRIP
W5	TRIP CIRCUIT FAULTY
W6	BREAKER TRIP ON FAULT
W7	SPARE
W8	SPARE

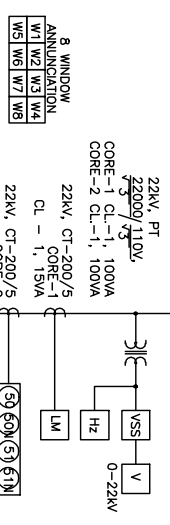
EXPRESS FEEDER 22 KV UNDERGROUND CABLE
INDUSTRIAL FEEDER 22 KV UNDERGROUND CABLE

22KV SUPPLY FROM MSEDCL 3x240 Sqmm 22KV ALPHE CABLE ROUND ANNOUNCED

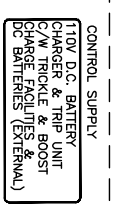
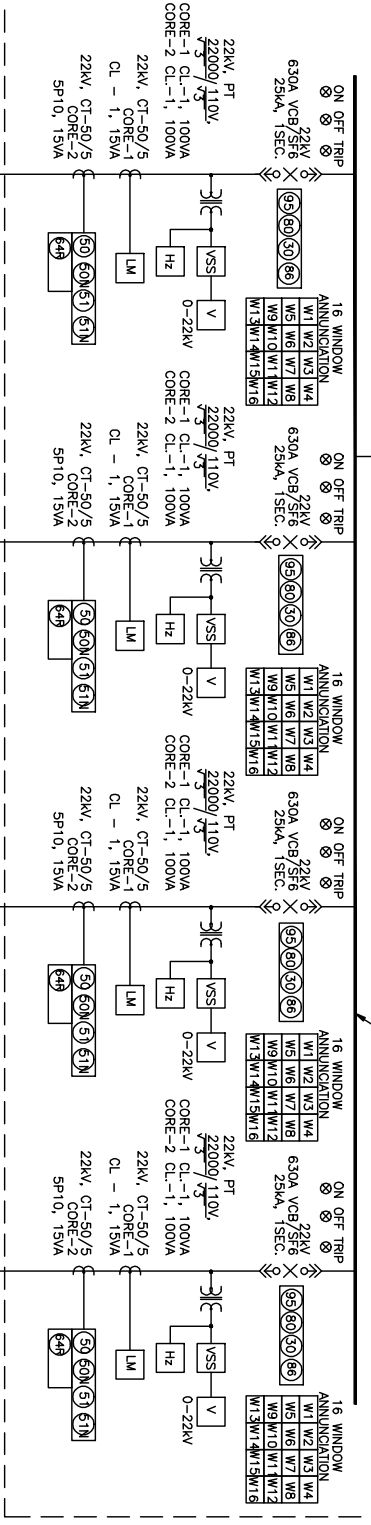
22KV COMPACT RMU



18x30x240 Sqmm. 4 SPARE 18x30x240 Sqmm. 22KV HT ALX/IFE CABLE



22KV VCB/SF6 25kV/15VA



22KV 400A, TPN BUSBAR

LEGEND

	TRANSFORMER
	VACUUM CIRCUIT BREAKER
	AIR CIRCUIT BREAKER
	MCCB/MCB
	CURRENT TRANSFORMER
	VOLTAGE TRANSFORMER
	STATUS INDICATING LAMP
	SC - TRIP SUPPLY HEALTHY
	PHASE INDICATING LAMP
	VOLTMETER SELECTOR SWITCH
	FREQUENCY METER
	VOLT METER
	LOAD MANAGER WITH RS485 PORT
	KILO WATT HOUR METER
	AMMETER SELECTOR SWITCH
	AMMETER
	MULTI FUNCTION METER
	INSTANTANEOUS O/C RELAY
	INSTANTANEOUS E/F RELAY
	IDMT O/C RELAY
	IDMT E/F RELAY
	HIGH SPEED TRIP RELAY
	TRIP LOCK SUPERVISION RELAY
	DC SUPERVISION RELAY
	AUX. RELAY
	UNDER VOLTAGE RELAY
	OVER VOLTAGE RELAY
	RESTRICTED E/F RELAY

ELECTRICAL CONSULTANTS:

abhiganta
ELECTRICAL CONSULTANTS & ENGINEERS
AN ISO 9001:2008 CERTIFIED COMPANY
Shree Swastik Kanya, Plot No. 4, Madanlal Hansing Society,
Karee Nagar, Pune - 411032. Tel: 25462173, 25410691.
www.abhiganta.com/abhigantaelectricals.com

CLIENT: INDIAN INSTITUTE OF TROPICAL METEOROLOGY,

PROJECT: IITM HPC UPGRADE

TITLE: DG SYNCHRONISING PANEL DRAWING

SCALE :	NTS	DATE :	25/03/2010	DRAWN :	INDISHI
DWG.NO.	810A/EL/02	SUFFIX :	0	CHECKED :	MUKUND
		APPROVED :	VAV		

TENDER DOCUMENTS

FOR

(PRICE BID –PART 2)

FOR

22 KV HT BREAKER PANELS

AT

**INDIAN INSTITUTE OF TROPICAL
METEOROLOGY,PASHAN,
PUNE.**

Summary Sheet

CLIENT : – Indian Institute of Tropical Meteorology

PROJECT : –IITM HPC UPGRADATION

DESCRIPTION	Supply	Installation
	AMOUNT Rs. Ps.	AMOUNT Rs. Ps.
SECTION - 'I' : RS. BOQ FOR 22 kV, 630 A,VCB ,SF6 H.T .BREAKER PANEL & RMU		
SECTION - 'II' : RS. BOQ FOR BUY BACK OF 11 kV, 630 A H.T .BREAKER & RMU		
TOTAL : RS.		

Bill of Quantities

CLIENT : Indian Institute of Tropical Meteorology

PROJECT : IITM HPC UPGRADATION

ENQUIRY FOR 22 kV, 630 A, VCB / SF6 H.T .BREAKER PANEL & RMU

SECTION -1

Sr. No.	Description	Unit	Qty.	Supply	
				Rate	Amount
1.0	Manufacture, factory testing & Supply of 22kV indoor type Compact type RMU , 2 Nos 630 A, 25 kA Load Break switch as incomer with mechanical interlock & 1 No. 630A VCB/SF6 Compact Breaker as outgoing with Earth Switch. Panel should be suitable for termination of HT XLPE Cables of size 3C x 240 sq.mm. with necessary sleeves & boots complete as per SLD & Specification.	No.	1		
2.0	Manufacture, factory, testing & supply of 22kV, 25 kA, 630A VCB/SF6, Single feeder Compact Breaker in Indoor, floor mounting cubical type manufactured as per 22 kV switchgears requirements with built in control supply arrangement, specifications and I.S. standards connection facility for incoming 3C x 240 sq.mm. 22 kV XLPE cable & o/g 3C x 240 sq.mm. 22 kV XLPE cable complete as per set SLD & specification. (Equivalent to Make: Merlin Gerin (Schneider) RM6 24 kV)	No.	1		
3.0	Manufacture, factory testing of 22 kV, free standing dust and verminproof metal enclosed, breaker panel SF6 / VCB , necessary CT / PT units, Digital meters, indications and protection system consisting of EF & OC relays, Aux. relays, master trip relay, antipumping relay trip circuit supervision relay and any such relays, required for protection functions, window annunciation etc. as per specifications.				
3.1	1 Incomer 630 A, 25kA and 4 No. Outgoings 630 A, 25 kA transformer feeder panel as per SLD drawing No. 810A/EL/02.1	Set	1		
	Total Quoted Price				
	Taxes & Duties				
	Customs / Excise Duty.				
	VAT				
	Insurance.				
	Freight & Forwarding.				
	Octroi.				
	Final Cost				
	Delivery period				
	Payment Terms				
	Inspection				
	Validily				
	Warranty				
	Makes Considered				

CLIENT : Indian Institute of Tropical Meteorology
PROJECT : IITM HPC UPGRADATION

LOWEST COST CRITERIA

	Particulars	Rs/-
A	Basic cost of Supply of FOR 22 kV, 630 A,VCB/SF6 H.T .Breaker Panel & RMU	
B	Basic cost BUY BACK OF 11 kV, 630 A H.T .Breaker & RMU as per details	
C	Total cost for commercial comparision $C=(A - B)$	

MSEDCL
NORMAL POINT OF SUPPLY

EXPRESS FEEDER
22KV CABLE UNDER GROUND ROUTE

PROPOSED GATE
FOR METERING KIOSK

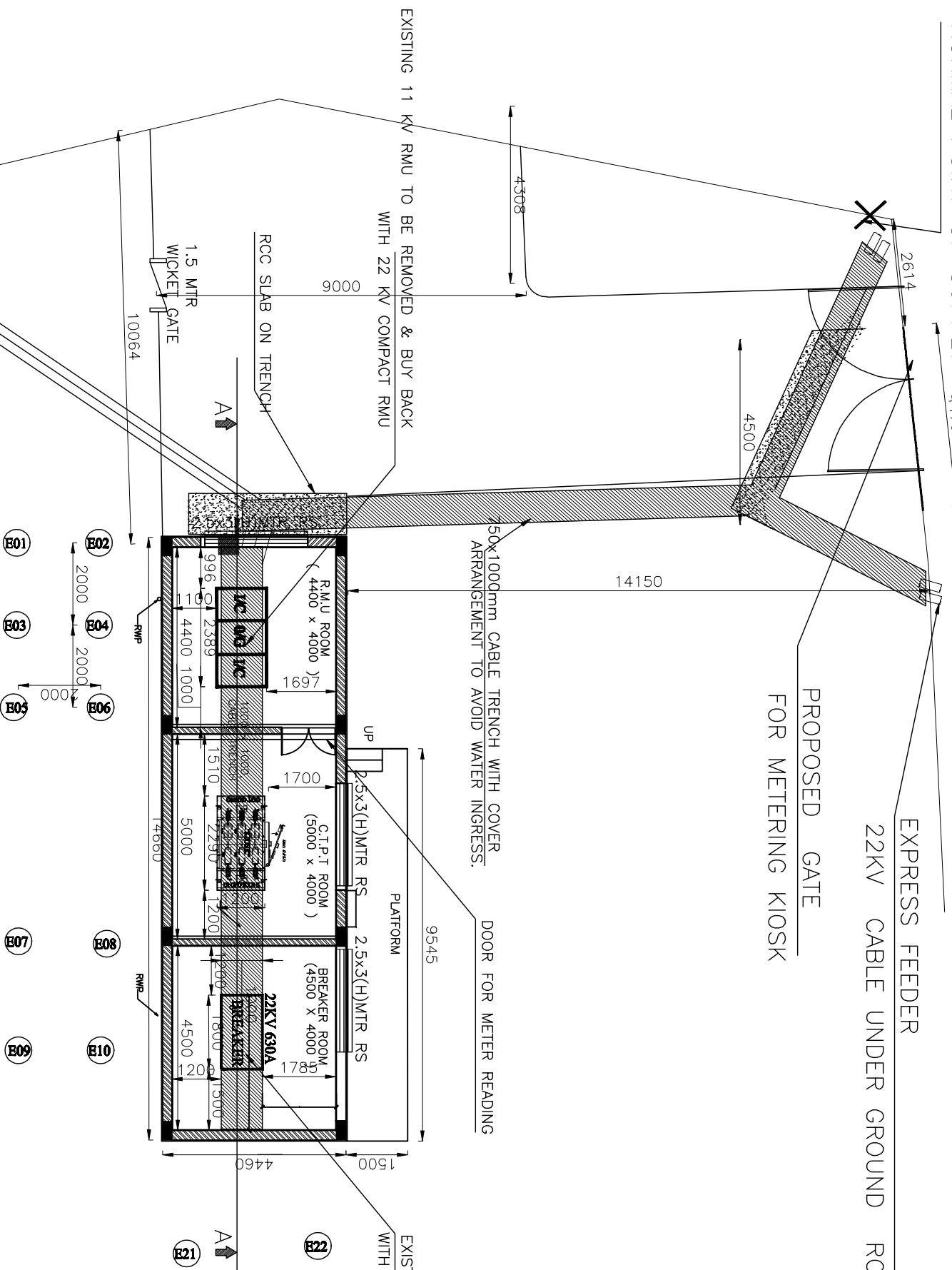
750x1000mm CABLE TRENCH WITH COVER.
ARRANGEMENT TO AVOID WATER INGRESS.

DOOR FOR METER READING

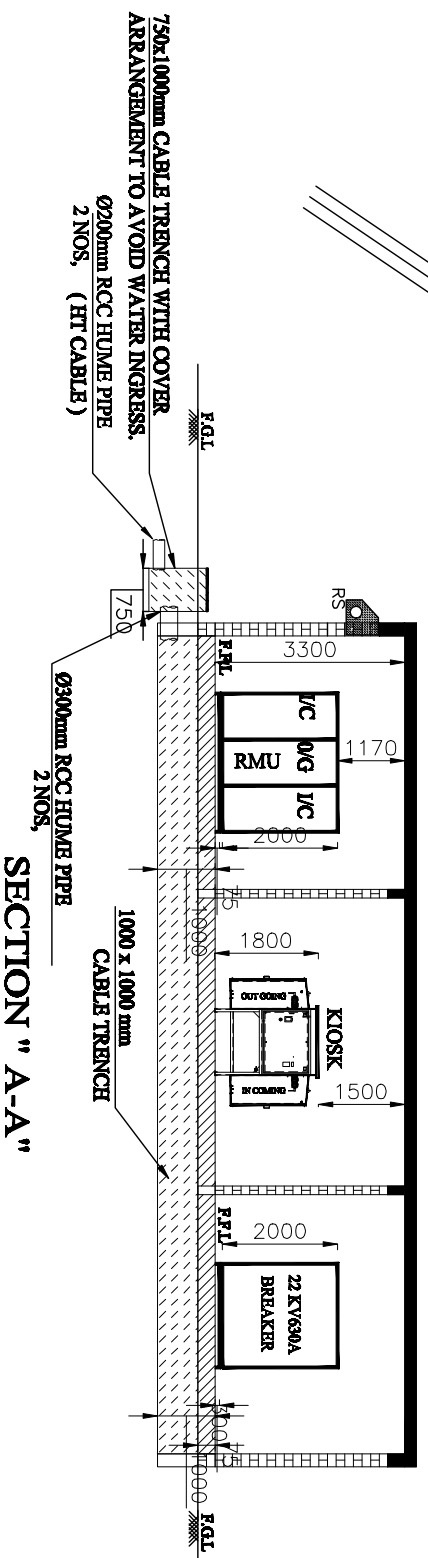
EXISTING 11 KV BREAKER TO BE REMOVED & BUY BACK
WITH 22 KV COMPACT BREAKER

HT BREAKER SHALL BE COMPACT TYPE
SIZE SHALL SUIT TO EXISTING HT ROOM CONSIDERING
REQUIRED CLEARANCES AS PER IE RULES &
FUNCTIONAL REQUIREMENTS

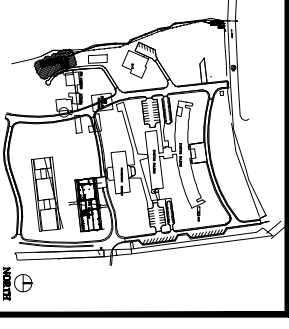
NOTE:
HT BREAKER SHALL BE COMPACT TYPE SIZE
SHALL SUIT TO EXISTING HT ROOM CONSIDERING
REQUIRED CLEARANCES AS PER IE RULES &
FUNCTIONAL REQUIREMENTS



PLAN (METERING KIOSK)



SECTION "A-A"



KEY PLAN

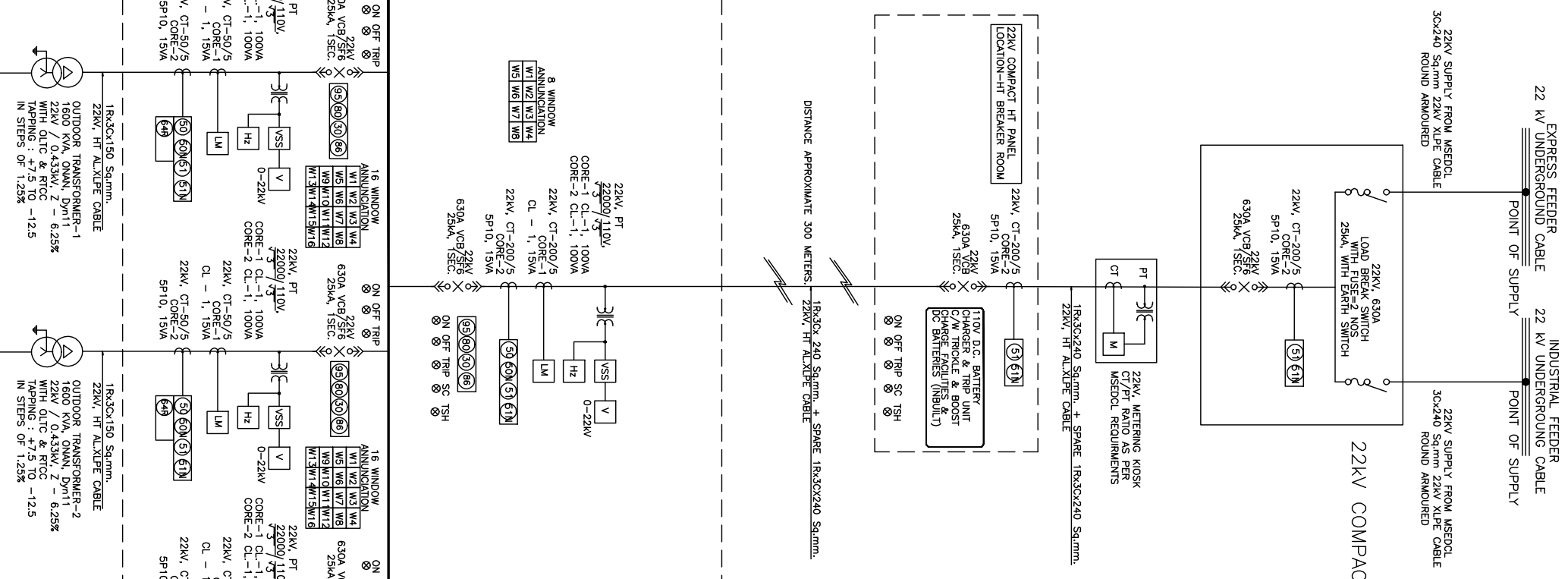
LEGEND

NO.	DESCRIPTION	STATUS
1	PROPOSED	
2	EXISTING	
3	TO BE REMOVED	
4	TO BE PURCHASED	
5	TO BE SUPPLIED	
6	TO BE MAINTAINED	
7	TO BE REPAIRED	
8	TO BE REPLACED	
9	TO BE MODIFIED	
10	TO BE ENLARGED	
11	TO BE REDUCED	
12	TO BE DELETED	
13	TO BE ADDED	
14	TO BE CHANGED	
15	TO BE CONFIRMED	
16	TO BE VERIFIED	
17	TO BE CHECKED	
18	TO BE APPROVED	
19	TO BE REJECTED	
20	TO BE WITHDRAWN	
21	TO BE RESUBMITTED	
22	TO BE REEVALUATED	
23	TO BE RECONSIDERED	
24	TO BE REAPPROVED	
25	TO BE REISSUED	
26	TO BE REVOKED	
27	TO BE ANNULLED	
28	TO BE EXPIRED	
29	TO BE REVOKED	
30	TO BE ANNULLED	
31	TO BE EXPIRED	
32	TO BE REVOKED	
33	TO BE ANNULLED	
34	TO BE EXPIRED	
35	TO BE REVOKED	
36	TO BE ANNULLED	
37	TO BE EXPIRED	
38	TO BE REVOKED	
39	TO BE ANNULLED	
40	TO BE EXPIRED	

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 10/10, 1st Floor, 1st Cross, 1st Stage, 1st Block, 1st Phase, 1st Section, 1st City, 1st District, 1st State, 1st Country.
 Phone: +91 98456 78910, Email: info@abhinav.com, Website: www.abhinav.com

DATE: 08/10/2024
 TIME: 11:00 AM
 PROJECT: PROPOSED RMC BUILDING AT PABRAN
 TITLE: 22 KV HT BREAKER ROOM LAYOUT

SCALE: 1/10
 SHEET: 01/01
 OF: 01/01
 DRAWN: [Name]
 CHECKED: [Name]
 APPROVED: [Name]



16 WINDOWS ANNUNCIATION PANEL

W1	BREAKER ON
W2	BREAKER TRIP ON FAULT
W3	RESTRICTED EARTH FAULT TRIP
W4	OC TRIP
W5	WDG TEMP. HIGH ALARM
W6	WDG TEMP. LOW TRIP
W7	OLC LEVEL LOW (NOG) ALARM
W8	BUCHHOLZ ALARM
W9	BUCHHOLZ TRIP
W10	TRIP CIRCUIT FAULTY
W11	O/I HIGH ALARM
W12	OSR ALARM
W13	OSR PR. LOW
W14	PRV TRIP
W15	SPARE
W16	SPARE

8 WINDOW ANNUNCIATION PANEL

W1	BREAKER ON
W2	OSR PR. LOW
W3	OC TRIP
W4	RESTRICTED EARTH FAULT TRIP
W5	TRIP CIRCUIT FAULTY
W6	BREAKER TRIP ON FAULT
W7	SPARE
W8	SPARE

LEGEND

	TRANSFORMER
	VACUUM CIRCUIT BREAKER
	AIR CIRCUIT BREAKER
	MCCB/MCB
	CURRENT TRANSFORMER
	VOLTAGE TRANSFORMER
	STATUS INDICATING LAMP
	SC - TRIP SUPPLY HEALTHY
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	FREQUENCY METER
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	LOAD MANAGER WITH RS485 PORT
	KILO WATT HOUR METER
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	IDMT E/F RELAY
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	UNDER VOLTAGE RELAY
	OVER VOLTAGE RELAY
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CLIENT
INDIAN INSTITUTE OF TROPICAL METEOROLOGY,

PROJECT
IITM HPC UPGRADE

TITLE
DG SYNCHRONISING PANEL DRAWING

SCALE : NTS **DATE :** 25/03/2010

DWG. NO. 810A/EL/02 **SUFFIX** 0 **DRAWN** NLSH **CHECKED** MUKUND **APPROVED** VAV

TO MAIN LT PANEL PART-1

TO MAIN LT PANEL PART-2