



## CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organization under the Union Ministry of Human Resource Development, Govt. of India)

“Shiksha Kendra”, 2 Community Centre, Preet Vihar, Delhi-110092.

F-21(c)/AE/Maint./2015//Maint./2014/

Dt. 26/3/2015

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### **Sub:- Limited tender for SITC of LT Electric Panel.**

Sir,

The Board intends to invite limited tender for “SITC of LT “Electrical panel” at CBSE, Shiksha Kendra building” from specialized agencies having licence and registration in appropriate class and executed minimum 3 works of equivalent magnitude. An EMD of Rs 5000/- in the form of DD/BD payable to the Secretary, CBSE and experience documents be attached along with the tender. Sealed tender complete in all respect must be submitted latest by 15/04/2015 upto 2.00 PM & dropped in the tender box placed at Reception counter, Shiksha Kendra, 2 Community Centre, Preet Vihar, Delhi-110092. Sealed quotations shall be opened on same day at 3:00 PM in the presence of tenderers.

Incomplete & conditional tenders shall be summarily rejected. The Secretary CBSE reserves the right to reject any or all the quotations without assigning any reason-thereof.

Yours faithfully

(RAHUL TYAGI)  
ASSISTANT ENGINEER (CIVIL)

## I) OBJECTIVE OF THE CONTRACT:

The objective of the contract is to provide, erect, test and commission LT panels at Terrace (above 10<sup>th</sup> Floor) of CBSE Building.

## II) INFORMATION ABOUT EXISTING SYSTEM

Existing panels at Terrace is required to be dismantled and replaced with new panel. New panels are to be housed in the same room, after dismantling the old panels. The time of work to be decided by CBSE Engineer. The proposed work is to be done on time, at hence contractor has to plan his work so as to general working of the area is not affected. He has to work after during business hours & also during the night

## III) GENERAL SCOPE OF WORK

The Scope of Work under this contract includes but is not limited to the following:

- (A) Supply, erection, testing & commissioning of LT distribution panel ( ITEM NO 1 OF SCHEDULE).
- (B) Isolation of the existing old Panel by Dismantling/ Disconnection of cables, earthings, tag-weldings etc as to make them fully isolated from the existing setup.
- (C) Dismantling/ Removal of the aforesaid panel from and taking it out of room and shifting the same to a nearby location at basement.
- (D) Design, fabricate, supply, install, test, dispatch & commission, new stand-alone integrated Main Distribution Panel, comprising of 01 incomers, and 10 outgoing, as per technical specifications.
- (E) Re-routing of cables from old existing panel to the new panel through provided cable tray and termination of the cables in the new panel with necessary glands and lugs as required. End termination of cables shall mean the mechanical connection to the associated electrical equipment by means of sealing glands, gland earthing etc., and connection of cables shall mean the connection of the conductor of the cable to the current carrying portion of associated electrical equipment in the Panel to make the electrical system continuous. Glands, crimping type terminal lugs, ferrules, cable identification tags and all other consumable items, required for the connection of cables shall be part of scope of work. Handling of cables shall be required to align them with the new panel incoming/ outgoing compartments.
- (F) Earthing arrangements (external) of the New Panel Enclosure/ switchgears by earthing strip to be connected with existing old earth strip to meet the stipulation of Indian Electricity Rules and as per BIS: 3043 Code of Practice for Earthing”.

#### IV) Technical Specifications

- a) Services to the earth. Hinged doors of all cubicles shall be properly earthed through separate flexible copper conductor.
- b) Integration of the new Panel with the existing set-up, complete and in all respects, as per specifications , including, but not limited to, commissioning of the Panel and associated systems with the existing cables, Earth bonding with the existing earthing system, testing & commissioning etc. for satisfactory operations in all respects.
- c) To prepare test reports, performance reports etc. and handing over the same along with all system drawings, operation and maintenance manuals, bill of materials, warranty certificate etc. .
- d) All non-current carrying metal work (including metallic cases of instruments and other panel mounted components) shall be effectively bonded to the earth.
- e) Hinged doors of all cubicles shall be properly earthed through separate flexible copper conductor.
- f) Integration of the new Panel with the existing set-up complete and in all respects, as per specifications , including, but not limited to, commissioning of the Panel and associated systems with the existing cables, earth bonding with the existing earthing system, testing & commissioning etc. for satisfactory operations in all respects.
- g) To prepare test reports, performance reports etc. and handing over the same along with all system drawings, operation and maintenance manuals, bill of materials, warranty certificate etc. .

#### V) Others :

- a. Bidders are advised in their own interest to visit site and acquaint themselves about the operating and environment conditions.

#### VI) Scope of work, Technical Specifications and Price Bid Proforma

1. Services
  - A) Unloading and handling of equipment at site is to be done by the contractor.
  - B) Manpower and crane etc. are to be arranged by contractor for this purpose.
  - C) Transportation of men and material shall be the contractor's responsibility.
  - D) All tools, tackles, testing instruments, consumables, etc., required for execution of work shall be provided by the contractor.
  - E) Testing is to be done in the presence of Board's A.E at the works of the contractor before the panels are dispatched to the site.
  - F) The work shall be guaranteed for a period of one year from the date of successful completion of work.

- G) All the safety practices applicable shall be strictly followed by the personnel deployed by the contractor for execution of work inside the plant, while carrying out the job.
- H) Drawings, BOM etc. shall be prepared and submitted for the approval of CBSE before fabrication and assembly is taken up.

## 2. CONTRACTOR

The Contractor shall be a licensed electrical contractor, possessing a valid electrical contractor's license of any state in India, employing licensed supervisors and skilled workers having valid permits as per the Regulation of Indian Electricity Rules and Local Electrical Inspector's requirements. (In case the contractor does not have licence of that state then it should be clearly stated through which local electrical contractor they shall submit the test report & a copy of the valid licence of the contractor be enclosed along with the copy of their own licence of the state of their registration). But possession of Class I electrical contractor licence of any state is must for this job.

**The contractor must have at least 5 job completion certificates from clients issued during last 3 years for the similar nature of works.**

The contractor must have ESIC, EPF, service tax, Work contract and PA insurance of his employees.

## 3 Detailed Technical specification of panel.

3.1 The installation shall conform in all respects to Indian standard Code of Practice for Electrical Wiring Installation I.S. - 732 and 'National Electrical Code'. It shall be in conformity with the current I.E Rules and Regulations and requirements of the local Electric Supply Authority in-so-far as these become applicable to the installation. Wherever this specification calls for a higher standard of materials and/or workmanship then those required by any of the above regulations, these specifications shall take precedence over the said regulations and standards.

3.1.1 In general, the materials, equipments and workmanship not covered by the above, shall conform to the following Indian Standards (Latest Edition) unless otherwise called for:

### 3.1.2 SWITCHGEAR

- a. Requirements of A.C. Circuit Breakers. (Part-II) : IS 2516 (Part I) Sec.1,2 & 3
- b. Switches and Switch Isolators above 1000V But Not Exceeding 1.1 KV : IS 4710
- c. Markings & arrangements for switchgear bus-bars, main connection & auxilliary wiring : IS 375

- d. Specifications for normal duty air break switches & composites unit for air break switches and fuses for voltage not exceeding 1000 Volts. : IS 4064
- e. Heavy duty air-break switches and composite units of air-break switches and fuses for voltages not exceeding 1000 Volts. : IS 4047
- f. Specification for miniature circuit breakers. : IS 8828
- g. Specification for enclosed distribution, fuse boards and cut-outs for voltage not exceeding 1000 Volts : IS 2675
- h. Installation and maintenance of switchgear. : IS 3072 (Part I)
- i. HRC cartridge fuse links 650 Volts. : IS 2208

### 3.1.3 CABLES

- a. Specification for paper insulated and lead sheathed cables : IS 692
- b. Code of Practice for installation and maintenance of paper insulated power cables (upto and including 33 KV) : IS 1255
- c. Specification for PVC insulated (Heavy Duty) electric cables Part-I for Voltage upto 1100 Volts. : IS 1554
- d. Specification for PVC insulated cables (for voltage upto 1100 V) (Part-II) with Aluminium conductors. : IS 694 (Part-II)
- e. Current Transformers : IS 2705 (Part-I to III)
- f. Voltage Transformer : IS 3156 (Part-I to III)
- g. Power Transformer : IS 2026-1977 (Part-I to IV)
- h. Installation Transformer : IS 10029
- i. Shunt capacitors for Power system : IS 2834

- j. Direct acting electrical indicating instruments : IS 1246
- k. Factory assembled switchgear : IS 8623
- l. Rating for Cable : IS 3961 (Part -II)
- m. Earthing : IS 3843

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L. T. PANELS

(POWER CONTROL CENTERS & SWITCH BOARD PANELS)

4.1 GENERAL: Medium voltage power control centres (generally termed as switch board panels) shall be in sheet steel clad cubicle pattern, free floor standing type, totally enclosed, compartmentalized design. This specification shall cover the following types of panels:

- a) Air circuit breaker panels – Draw out type with single or double tier arrangement as per design shown on the drawings.
- b) Panels with one or more Air circuit breakers with Draw-out arrangement and switch-fuse units of non-draw out design.
- c) Panels with switch- fuses of non- drawout type. However, the switch-fuse units can have draw out fuse-carriage if a particular make of switch-fuse is used.

The panels shall generally be of extensible type with provision for bus extension on or both sides as desired at the time of approved of shop drawings.

4.2

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ODE/STANDARDS :

The panels shall generally conform to the requirements of following codes/ specifications:

- |                   |            |
|-------------------|------------|
| a) IS-8623        | h) IS-2705 |
| b) IS-4237        | i) IS-722  |
| c) IS-2147        | j) IS-4064 |
| d) IS-3072        | k) IS-2208 |
| e) IS-375         | l) IS-6875 |
| f) IS-1248 & 2419 | m) IS-6005 |
| g) IS-5082        |            |

The equipment shall conform to Indian Electricity Rules as amended up-to-date. The supplier shall examine the provision of these codes and confirm or indicate his comments.

4.3

CONSTRUCTION:

Power control centres/ switch board panels shall be free standing type, with sheet steel enclosure having following features :

- a) The panel shall be constructed of sheet steel of minimum 2.0 mm thickness. The internal frames shall be made of structural steel angles or made up sections (as per standard design of the manufacturer) specifications of which, shall be submitted along with offers.
- b) The panel shall be compartmentalised to accommodate one feeder in each compartment. The main bus bar chamber shall be provided at the top of panel or bottom of the panel as required. The compartments shall be arranged in section with metallic/ phenol barrier in between.

A vertical cable alley of at least 200mm width shall be provided to serve one/ two vertical section of feeders. Cable alley shall have hinged door/ doors with rubber gaskets. Suitable cable clamping arrangement with slotted steel members shall be provided in the cable alley. Similarly, vertical bus bar shall be housed in-between two feeder compartments in a separate bus chambers. The opening between bus chamber and feeder compartments shall be properly covered with Bakelite/ Hylam sheets of 3mm minimum thickness. The vertical bus chamber shall be provided with removable bolted covers on the front and back side. All the interconnecting links to the feeders shall be shrouded so as to avoid accidental contact, by means of phenol barriers.

- c) Each compartment shall have its own hinged door with concealed hinges. The doors shall have heavy duty rubber gasket fixed on the inner side of the door. The door shall have interlocking facility with the feeder unit.
- d) The Panel shall have punched openings for mounting meters, lamps, push buttons, relays, etc.
- e) The dimensions of feeder compartments, bus chambers and cable alleys shall be as shown on the relevant drawings. However, the following minimum dimensions shall be strictly adhered to :

i. ACB compartment : Drawout -600mm wide x 1000mm deep x 900mm high.

ii. SWITCH FUSE UNITS/MOULDED CASE CIRCUIT BRACKER (NON-DRAWOUT TYPE) :

Up to 63A/ 100A	:	300mm wide x 225mm high x 400mm deep
250A	:	400mm wide x 400mm high x 400mm deep
400A to 630A	:	400mm wide x 500mm high x 400mm wide.

(or vice- versa).

iii. BUS CHAMBER:

Main bus (Horizontal)	:	400mm high x 300mm deep
Vertical bus (Feeder bus)	:	300mm wide x 400mm deep

iv. Cable alley : Min. 200mm wide.

These dimensions are furnished as a guide and the clearances required in between each live bus/ link and between bus/ links to the earth (panel wall/ sheet) shall be as per relevant Indian Standard Code of practice. However, minimum clearance between neutral bus and earth shall not be less than 25mm. The panel supplier shall furnish detailed sectional drawings and also arrange to get the panel inspection done at intermediate stages of fabrication to avoid fault defective fabrication of the panels (however, the compliance of these specifications shall entirely be the suppliers' responsibility).

#### 4.4

#### BUS BARS :

- a) The bus bars shall be suitable for 3 phase, 4 wire, 415 volts 50 Hz AC supply. The bus bars shall be made of high conductivity aluminium. The bus bars shall have uniform cross-section throughout the length. The bus bars shall be designed for carrying rated-current continuously. The bus bars and links shall be designed for a maximum temperature of 75<sup>0</sup>C. The max. current density of bus bars shall be as follows:
  - i. Copper : 1.86 Ampere/ Sq.mm. of cross section area.
  - ii. Aluminium: 1.28 Ampere/ Sq.mm. of cross section area.

It may be noted that these ratings are the upper limit to which the bus could be stressed. Suitable derating factors shall be applied to arrive at the correct cross section of bus bars.

- b. Bus bars shall be supported on suitable non hygroscopic, non combustible, material such as DMC/ SMC at sufficiently close intervals to prevent bus bar sag. All bus bar joints shall be provided with high tensile steel bolts (electro plated with suitable metal such as Nickel/ Cadmium), spring washer and nuts so as to ensure good contact. Alternatively, electroplated/ tinned brass bolts shall be used. The joints shall be formed with fish-plates on either side of bus bar to provide adequate contact area. Bus supports shall be provided on either side of joints (max. unsupported distance from the joint 400mm)
- c. Power shall be distributed to feeders in dual section by a set of vertical bus bars (Phases+neutral). Individual module shall be connected to the vertical bus bars through sleeved connections.
- d. Bus bars shall be insulated with PVC sleeves (heat shrink type) with colour coding (Red/ Blue/ Yellow/ Black).
- e. The bus bars and their supports shall be able to withstand thermal and dynamic stresses due to the system short-circuits. The supplier shall furnish calculations alongwith his drawing establishing the adequacy of bus bars both for continuous duty and short - circuit rating. Short circuit withstand capacity shall be for one second. Calculations for spacing of supporting of supports shall also be furnished.

#### 4.5

**EARTHING:** The panels shall be provided with a copper earth bus running throughout the width of the switchboard. Suitable earthing eyes/bolts shall be provided on the main earthing bus to connect the same to the earth grid at the site. Sufficient number of star washers shall be provided at the joints to achieve earth continuity between the panels and the sheet metal parts.



- 4.6 MOUNTINGS: Panels incorporating switchfuse units shall have suitable compartments of standard width. Each compartment shall incorporate a heavy duty load break switchfuse and HRC fuses. Suitable cable termination arrangement shall be provided for switchfuse/ fuse-switch unit feeders. Equipment shall be provided with proper fastening arrangements to ensure vibration free operation. Proper designation as given on the respective drawings shall be provided for every equipment.

Circuit breakers shall be mounted such that they are accessible from the front of the panel. More than two circuit breakers shall not be incorporated in a vertical section. The breakers compartment shall be divided into two parts, one for the breaker and the other for incorporating associated control gear. The necessary instrumentation shall be provided on the door of the compartment.

4.7 INTERLOCKING

The panels shall be provided with the following interlocking arrangements :

- a. The door of the feeder compartments is so interlocked with the switch drive or handle that the door can be opened only if the switch is in "OFF" position. De-interlocking arrangement shall also be provided for inspection.
- b. It shall not be possible for the breakers to be withdrawn when in "ON" position.
- c. It shall not be possible for the breakers to be switched "ON" unless it is either in fully inserted position or for testing purposes it in fully isolated position.
- d. The breaker shall be capable of being racked into "testing", "isolated" and maintenance position and kept in any of these positions.
- e. A safety catch to ensure that the movement of the breaker as it is withdrawn, is checked before it is completely out of the cubicle shall be provided.

- 4.8 PROTECTION AND INSTRUMENTATION : Protection and instrumentation shall be as per standard specification.

- 4.9 WIRING: All the interconnections between the incoming, bus and the outgoings of 100A and above rating shall be done by insulated links/ strips of suitable sizes. Switch fuses and equipments below 100A rating shall be wired with PVC insulated copper conductors. The wiring for instrumentation protection and control equipment shall be carried out with PVC insulated flexible copper conductors.

The Power interconnections shall be carried out by means of bolted connections with washers. The wiring shall be terminated by using crimping sockets. Wring shall be laid out neatly in bunches which are fastened to the steel members of the panel. All the potential circuits shall be protected by fuses mounted near the tap-off point from the main connections.

4.10 TERMINALS: All the control, instrumentation and protection wiring shall be provided with printed PVC ferrules at both ends. For terminating control cables on to the equipment in the panels, suitable terminals blocks shall be provided. The terminal shall also be numbered for easy identification and maintenance.

4.11 SURFACE TREATMENT: All sheet metal accessories and components of power, control centres and switchboard panels shall be thoroughly cleaned, degreased, derusted and phosphatised before redoxide primer is applied. The panel shall be stove enameled to the required final finish. The interior surfaces of the panel shall also be painted to required shade. The supplier shall indicate in his offer, if there is any deviation from the treatment specified above.

4.12 ENCLOSURES: The panel enclosure shall be dust and vermin proof and shall be suitable for indoor installation. Enclosure design shall be in accordance with the requirements of IP 54 as per IS-2147-1962. The supplier shall confirm whether this requirement is met and a type test certificate furnished. If type test certificate for IP-54 is not available, the same shall be brought out clearly in his offer.

4.13 NAME PLATE: The panel as well as the feeders compartment doors shall be provided with name plates giving the switchboard/ feeder descriptions as indicated on the drawings.

4.14 TESTING: The power control centres shall be tested at factory after assembling of all components and completion of all interconnections and wiring. Tests shall be conducted in accordance with the requirements relevant IS Codes/ specifications.

a. INSULATION TEST

i. Insulation of the main circuit, that is, the insulation resistance of each pole to the earth and that between the poles shall be measured.

ii. Insulation resistance to earth of all secondary wiring should be tested with 1000V megger. Insulation test shall be carried out both before and after high voltage test.

b. HIGH VOLTAGE TEST :

A high voltage test with 2.5KV one minute shall be applied between the poles and earth. Test shall be carried out on each pole in turn with the remaining poles earthed. All units racked in position and the breakers closed. Original test certificate shall be submitted along with panel.

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SPECIFICATI

ON FOR MOULDED CASE CIRCUIT BREAKERS:

5.1 GENERAL : Moulded case circuit breakers or fuse free breaker shall be incorporated in the switch board wherever specified. MCCBS shall conform to BS: 3871 Part II or

JIS-C-8370 in all respects. MCCBS shall be suitable either for single phase 230V or three phase 415volts.

5.2 CONSTRUCTION : The MCCB and case shall be made of high strength heat resistant and flame retardant thermo-setting insulating material. Operating handle shall be quick make/quick break, trip-free type. The operating handle shall have suitable “ON”, “OFF” and “TRIPPED” indicators. Three phase MCCBS shall have a common operating handle for simultaneous operation and tripping of all the three phase. Suitable arc extinguishing device shall be provided for each contact. Tripping unit shall be of thermal-magnetic type provided on each pole and connected by a common trip bar such that tripping of any one pole actuates three poles to open simultaneously. Thermal magnetic/tripping device shall have IDMT characteristics for sustained over loads and short circuits. Contact tips shall be made of suitable arc resistant, sintered alloy for long electrical life. Terminals shall be of liberal design with adequate clearances.

5.3 ACCESSORIES : MCCBS shall be provided with the following accessories, if specified in schedule of quantities:

- i. Under voltage release
- ii. Shunt release
- iii. Alarm Trip alarm
- iv. Auxiliary contacts.

5.4 INTERLOCKING : Moulded case circuit breakers shall be provided with the following interlocking devices for interlocking the door of switch board:

- a. Handle interlock to prevent unnecessary manipulation of the breaker.
- b. Door interlock to prevent the door being opened when the breaker is in “ON” position.
- c. De-interlocking device to open the door even, if the breaker is in “ON” position.

5.5 RUPTURING CAPACITY: The moulded case circuit breaker shall have a returning capacity of not less than 10KA Rms at 415 volts. Wherever required, higher rupturing capacity breakers to meet the system short circuit fault shall be used. All such ratings shall be as per equipment schedule/B.O.Q.

5.6 TESTING:

- a. Original certificate of the MCCBS as per BS:3871 or JS-C-8370 shall be furnished.
- b. Pre-commissioning tests on the switch boards panel incorporating the MCCB shall be done as per specifications.

6 SPECIFICATION FOR METERING, INSTRUMENTATION AND PROTECTION:

6.1 GENERAL: The Specifications hereinafter laid down shall cover all the meters, instrumentation and protective devices required for the electrical work. The ratings, type and quantity of meters, instruments and protective devices shall be as per the schedule of quantities and drawings.

## 6.2 INSTRUMENT TRANSFORMERS

### a. Current Transformers :

Current transformers shall be in a conformity with IS:2705 (Part I, II and III) in all respects. All current transformers used for medium voltage applications shall be rated for 1 KV. Current transformers shall have rated primary current, rated burden and class of accuracy as specified in the schedule. However, the rated secondary current shall be 5A unless otherwise specified. The acceptable minimum class of various applications shall be as given below.

Measuring	:	Class 0.5 to 1
Protection	:	Class 5P10

Current transformers shall be capable of withstanding without damage, magnetic and thermal stresses due to short circuit fault of 35 MVA on medium voltage system. Terminals of the current transformers shall be paired permanently for easy identification of poles. Current transformers shall be provided with earthing terminals for earthing chassis frame work and fixed part of the metal casing (if any).

Current transformers shall be mounted such that they are easily accessible for inspection, maintenance and replacement. The wiring for CTS shall be copper conductor, PVC insulated wires with proper termination lugs and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner.

## 6.3 RELAYS:

### a. General

Protection relays shall be provided wherever required to trip and isolate the particular section under fault. All the relays shall be provided with flag type indicators to indicate the cause of tripping. The flag indicators shall remain in position until they are reset by hand reset.

Relay shall be designed to make or break the normal circuit current with which they are associated. The relay contacts shall be of silver or platinum alloy. The contacts shall be designed to withstand repeated operation without damage. The relays shall be of draw-out to facilitate testing maintenance Draw-out case shall be dust tight with a finish suitable for tropical country. The relays shall be capable of disconnecting the faulty section of the net work or fault equipment without causing interruption or disturbance to the remaining sections. The analysis of setting shall be made

considering relay errors, pick-up and overshoot errors and shall be submitted to the Engineer/Architect for approval.

- b. Over current Relay : Over current relay shall be induction type with inverse definite minimum time lag characteristics. The over circuit relays shall be provided with adjustable current and time settings. The setting for current shall be 50 to 200% in step of 25%. The IDMT over current relays shall have time lag (delay) of 0 to 3 seconds. The time setting multiplier shall be adjustable from 0.1 to unity. Over current relays shall be fitted with suitable tripping device with trip coil being suitable for operation on 5Amp.
- c. Earth Fault Relay: Earth fault relay shall have current setting of 10% to 40% in steps of 10% otherwise, the earth fault relay shall conform to specification laid down for over current relays.
- d. Under Voltage Relays : Under Voltage Relays shall be induction type and shall have inverse limit operation characteristics, with pick up voltage range of 50-90% of the rated voltage.

#### 6.4 TESTING

- 4.5.1 Instrument transformers shall be tested at factory as per IS: 2705 and IS : 3156. The test shall incorporate the following:

Routing Tests:

Original test certificates in triplicate shall be provided.

- 4.5.2 Meters shall be tested as per IS : 1248. The tests shall include routine tests. Original test certificate in triplicate shall be furnished.

- 4.5.3 Suitable injection tests shall be applied to the secondary.

- a. Circuit of every instrument to establish the correctness of calibration and working order All relays and protective devices shall be tested to establish the correctness of setting and operation by introducing a current generator and an ammeter in the circuit.

- 5.1 Approved panel manufactures;- tricolite, Advance Panel, Risha control, KayBee Electricals, Neptune

**PRICE BID**

<b><u>MAIN LT PANEL</u></b>					
S.NO	DESCRIPTION OF ITEMS	Qty	Unit	Rate	Amount
1	Supply, installation, testing & commissioning of LT Panel as per details given below.				
	Incoming.	RATING			
	MCCB 35 KA With Thermal Magnetic release for overload, short circuit, RHOM, Spreader  Approved L & T	300A FP	1	Nos	1
	Digital Volt/AMP/Frequency Meter, Vega Series  Approved make Schneidr	415/5A	1	Nos	1
	R Y B phase Indicating Lamps, on  Approved make Schneidr	200 AC	1	Sets	1
	Control MCB  Approved make Schneidr	6A	4	Nos	
	Current Transformers Tape wound 15 VA,CL-1, Metering	300/5	3	Nos	
	Aluminium bus bar TP+N 300A capacity  Approved make HIndalco	300A	1	Set	
	OUT GOING				
	MCCB 25 KA with Thermal Magnetic release for overload, short circuit	100A	8	Nos	

	Spreader	TP+N						
	Approved make L& T							
2	Dismantling of the old panel, including, opening of all existing incoming and outgoing cables of any size as per site.				1	JOB		
3	Re connection of all existing incoming cables and outgoing cables including new glands, crimping, thimbles etc to make the new panel in working condition in all respects.				1	JOB		

## TERMS & CONDITIONS

1. The work should be executed as per CPWD specifications and as per directions of Engineer-In-Charge.
2. All T & P shall be arranged by the Contractor.
3. The materials to be used must be got approved from the Engineer-in-charge before installation/use.
4. The agency shall be solely responsible for any damage/loss to the Board's property/equipments.
5. The agency shall take all precautionary measure for safety of his workers during performance of the work.
6. The work is to be completed within a period of 20 days after 7<sup>th</sup> day of the work order.
7. The work shall not be discontinued at any cost.
8. The agency shall get the samples of the material approved in advance before utilization.
9. The workmanship must be excellent. In case of poor workmanship, the Board shall be free to cancel the contract.
10. The agency shall ensure that the wages to the workmen are paid according to Minimum wages prescribed by the Govt. of N.C.T. Delhi.
11. Rates must be coated inclusive all taxes.

Accepted by me:

Signature

**Prop./Manager**  
**Tel. No.**  
**Mob.No.**