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OF  
SCHEDULE OF RATES FOR ELECTRICAL WORKS**

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## **GENERAL**

Good Workmanship and Approved Materials are Essential for the Compliance of these Specifications.

- 1) The installation shall be carried out in conformity with the requirement of the Indian Electricity Act 1910, the Indian Electricity Rules, 1956 as amended up to date, and the Regulations of the Electric Supply Authority concerned. A list of important clauses from the Indian Electricity Rules, 1956 are given in Appendix I.
- 2) The work shall be done according to the specifications described below and in conformity to the latest issue of the relevant Standards Code of Practice. A list of important Codes is given in Appendix 2.
- 3) Only approved material shall be used. A list of approved materials has been issued separately. For items not covered in that list, the decision of the Engineer-In charge shall be final. The 5A/6A & 15A/16A switches, sockets, ceiling roses and bell pushes etc of I.S.I. mark & approved by U.P.P.W.D. shall be used.
- 4) The work, in all cases, shall be started only after approving the samples of all materials, fitting etc. the board showing the approved samples will be displayed at the site till the completion of the work, if so desired.
- 5) The work shall be carried out under the supervision of a person holding a Certificate of competency issued by the State Government for the type of works involved. The name and other particulars of the person shall be submitted to the Engineer-In charge before the commencement of work.
- 6) After completion and erection, the portion of the building, road, land, and other properties damaged during the erection of installation shall be repaired properly to original finish and colour by the contractor.
- 7) All the tests prescribed in Chapter 12 of this schedule shall be carried out in the presence of the Assistant Engineer-In charge and test results shall be submitted in the specified proforma given in Appendix 3. Installation with test results lower than those specified shall not be accepted. In addition to above, certificate required by Electric Supply Authority shall also be given by the Contractor.
- 8) After completion of work, completion certificate shall be submitted by the contractor duly signed by the Supervisor under whose supervision the work has been carried out in the specified proforma given in Appendix-4.
- 9) The contractor shall submit complete wiring diagrams of the installation in case of internal wiring works, schematic diagram of equipments and connections for substation and switch gear works and route layout plans in cases of overhead line and underground cable works on completion of the work.

The wiring diagram shall be submitted duly shown with the T.P.N. Controls, distribution boards and the branch circuits, numbered serially indicated on the diagram.

The route layout plan shall be drawn on the site plan of the building. The marking of the underground cable shall be distinct from those of overhead lines. Different colours for different sizes of conductors shall be preferred. In case of overhead line work, the position and sizes of the poles, lengths of spans and sizes of conductors etc. shall be marked clearly on the plan. In the case of underground cable work, the number, sizes, lengths of cables, position of cable joints and kiosks shall be marked clearly on the plan.

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# CHAPTER – I

## INTERNAL ELECTRIC WIRING

- 1) These Specifications cover the requirements for internal wiring work.
- 2) **Definition of a point** -A “Point” shall include complete wiring from branch distribution board to the outlet via the switch. The outlet shall be a ceiling rose in case of ceiling and exhaust fan points, light points for fluorescent tube fitting and pendant fittings etc. excluding rod pendant and socket outlet in case of plug points. The switch for high-pressure mercury vapor lamp/ sodium vapor lamp/exhaust fan shall be 15A/16A-240 V flush type in case of conduit wiring.

- 3) **Type of wiring** : The wiring shall be carried out either on batten with PVC insulated and PVC Sheathed cable or in conduit on surface or concealed in wall with PVC insulated wire.

The wiring whether concealed or on surface, shall be easily accessible for inspection. The wiring shall be done 225 mm below the ceiling as possible and shall be straight. Open type wiring shall not be done in air-conditioned space and above the false ceiling or lofts under any circumstances.

- 4) **Layout of wiring**: The wiring shall be done on loop back system with main and branch distribution boards at convenient physical and electrical load centers and without isolated fuses.

“Power” and “Heating” sub-circuits shall be kept separate and distinct from “Lighting” and “Fan” sub circuits.

“Lights and Fans” shall be wired on separate circuits.

- 5) The balancing of circuits in three-phase installation shall be arranged before hand. Circuits of different phases of A.C. system shall be kept not less than two meters apart, or enclosed in earthed metal casing.

- 6) Medium pressure wiring and associated apparatus shall comply, in all respects, with the requirements of Rules 50, 51,61 and 61 A of Indian Electricity rule, 1956.

- 7) **Position of wiring run and points**: The position of runs of wiring and the exact positions of all points and switch boxes shall be marked on the building plan or on the building itself and approved by the Engineer-In charge.

- 8) **Voltage and Frequency of Supply**: All current consuming devices shall be suitable for the voltage and frequency of the supply to which these are to be connected.

- 9) **Cables and Flexible Cords**: The conductors of cables, except flexible cables of cords, shall be of copper or aluminium as specified. The minimum cross-sectional area of conductor for final sub-circuit and for light and fan sub-circuit shall be 1.50 sq mm Aluminium or 1 sq mm copper. The cross-sectional area of conductor for the wiring of high-pressure mercury/sodium vapor lamp and exhaust fan shall be 2.5 sq mm. aluminium or 1.5 sq. mm. coppers. The minimum cross-sectional area of conductor for power wiring shall be 4 sq. mm. aluminium or 2.5 sq. mm. coppers.

Flexible cables and cords shall have annealed tinned copper conductors. The minimum cross-sectional area of conductors of these cables shall be 0.5 sq.mm; wherever liable to be damaged these cables shall be protected properly. Single-phase appliances shall be provided with 3 core flexible cable.

**10) Rating of Lamps and Fans:** As far as possible, actual current carried by any conductor should be estimated. Unless the actual value of load is known, a light point shall be rated at 100 W in non-residential buildings and 60 W in residential buildings, table fans and ceiling fans at 60 W, 5 A socket outlet at 60 W and 15 A power outlet at 1000 W. Exhaust fans shall be rated according to their capacity.

**11) Looping Back:** The wiring shall be done in looping back system without any connector or junction box on the line. The looping back of phase or live conductor shall be done at the switch box and that of neutral at the light, fan, or socket outlet. In no case, joint shall be made bare or by twisting the conductors. In through runs of cables, if the length of final sub-circuit, sub-main or main is more than the length of standard coil and joint becomes unavoidable, such joints shall be made by means of proper connector. No junction box shall be provided. Specific difficulties should be referred to Engineer-In charge for decision.

**12) Connection to Ancillary Buildings:** Electrical connections such as wires, sub mains or final sub-circuits to ancillary buildings such as out-houses, garages, etc. at a distance of not more than 3 meters and when no roadway intervenes shall be taken in one unjointed length of earthed G.I. pipe of suitable size with exposed portion at a height of not less than 2.5 meters or by underground cables. When the distance between the buildings exceeds three meters but does not exceed 10 meters or a roadway intervenes, the exposed position of the same shall be taken in weather proof cable on G.I. 8 SWG bearer wire at a height of not less than 4 meters above the ground.

**13) Control at a Point of commencement of Supply:** A circuit breaker or a linked main switch with fuse on each live conductor shall be provided at the point of entry at an accessible place, as near as practicable to the termination of service line. There shall be no break on the neutral wire except at the switchgear. No fuse shall be provided in the earthed neutral conductor. The neutral shall be distinctly marked.

**14) Wooden Items:** All wooden items e.g. plugs, rounds blocks, etc. shall be of approved M.D.F. exterior grade board except plugs, all other items shall be painted, both inside and outside with two coats of approved varnish before erection. When there is danger of attack by white ants, the portion in contact with the wall shall be painted with suitable anti-termite paint instead of varnish.

(a) **Plugs:** Tapered wooden plugs for ordinary walls and ceiling shall be of well-seasoned teakwood not less than 50 mm long and 25 mm and 20 mm square on the ends. These shall be fixed in the wall to within 6.5 mm of surface, with the large end inside and finally finished flush with the surface instead of wooden plugs rawl plugs may also be used.

(b) **Blocks and Boards:** The blocks and boards shall have separate front and back covers of M.D.F.E.G. board and shall be fastened to frame by means of wood screws



and nailed. The frame shall have dovetail joints and not merely lapped and nailed. The thickness of the front and back covers shall not be less than 12 mm. If necessary, the thickness may have to be increased so that no portion of screws used for fastening the accessories or fittings projects in to inside of the board and damages the insulation of the conductor. The exposed end shall be rounded off chamfered or beaded as directed. The blocks and boards shall be of sizes suitable for mounting the number of accessories, regulators etc. thereon neatly. The depth of the boards and blocks shall not be less than 40 mm. The bottom of the blocks and boards shall be kept at a height of 1.25 meters from the floor level or as directed by the Engineer-In charge.

**15) Metal Boxes:** Metal Boxes made of approved make 1.0 mm thick ISI Marked G.P.sheet All 4 corners folded & spot welded for screw and holes plugged with PVC Nylon Caps . These boxes shall have not less than four screwed holes for fixing the top cover. Two or more holes for pipe entry on upper and lower sides of th box. Holes shuld be semi-shuttered type and fitted with heavy brass Earth Piller. These boxes shall be provided with a cover of phenolic laminated sheet, not less than 3 mm thick, fastened to the box with not less than four number brass screws and washers.

**16) Fixing of Fittings and Accessories:** In case of conduit wiring, all accessories like switches, sockets, call bell pushes & regulators etc. shall be of piano type. These shall be mounted on phenolic laminated cover fixed on cast iron or mild steel box of suitable size. The accessories and regulators shall be mounted in flush type pattern or as directed by Engineer-In charge.

**17) Conduit Wiring System (Rigid Steel Conduit) :** This type of wiring can be used both for low voltage and medium voltage installation. Single core P.V.C. insulated (without sheath) cable shall be used. This cable shall be drawn in heavy gauge rigid steel conduit. The conduits shall be fixed on surface, concealed (recessed) in the wall or laid in slab before concreting. All systems, other than surface conduit wiring system, shall comply with all the requirements for surface conduit wiring system described under the respective system.

**(I) Surface conduit wiring system:** Heavy gauge rigid steel conduit, solid drawn or lap-welded, with galvanized or stove enamelled surface, not less than 20 mm. in diameter, shall be used. The gage of conduits shall be not less than 1.5 mm (16 SWG) for conduit of size up to 32-mm. diameter and not less than 2 mm (14 SWG) for conduit of size above 32 mm diameter. Only threaded type conduit accessories shall be used. Pin grip or clamp type accessories shall not be used under any circumstances. The maximum number of PVC insulated 1100-volt grade aluminium/copper conductor cables that can be drawn in conduit is given in Annexure **6 A / 6 B**.

The cables of alternating current supply and direct current supply shall be bunched in separate conduits. Cables carrying direct current may be bunched in one conduit irrespective of their polarity. In case of cables carrying alternating current the outgoing and return cables shall be drawn in the same conduit.

The conduit pipe shall be joined by means of screwed sockets, couplers, or accessories only. Inspection boxes and inspection type couplers shall be provided at intervals not exceeding 6 meters. Threads on the conduits pipe shall be long enough to accommodate the pipe to full threaded portion of the couplers and accessories. No burrs or sharp edges shall be left at the curt end of the conduit pipes to avoid damages to the insulation of the conductors while pulling. The Engineer-In charge, with a view to ensuring that the above provisions have been carried out, may require that the separate lengths of conduits etc. after they have been prepared shall be submitted for inspection before being fixed.

The layout of the conduit shall be such that condensation or sweating inside the conduit, if occurs, is drained out. In order to minimize it all outlets of the conduit system shall be ventilated, keeping covers of the inspection boxes exposed but flushed in level.

Wiring in conduits exposed to weather shall be avoided. However, where permitted, outer surface of the conduit pipes and accessories including all bends, unions & junction boxes etc. forming part of the conduit system shall be adequately protected against rust with two coats of red-oxide before being fixed, or otherwise NCT flow coat electrical tubing's used. In all cases, the bare threaded portion of the conduit pipe shall be treated with anticorrosive preservative or covered with approved plastic compound.

The conduit pipe for each circuit shall be erected before any cable is drawn in. The conduit pipes shall be fixed by heavy gauge steel saddles, secured over 12 mm thick spacers of well seasoned teakwood/ approved MDFEG, at intervals not exceeding 60 cm. The spacers shall be fixed to wall plug by flat-headed wood screws. A saddle shall be fixed within 10 cm on both sides of couplers, bends or similar other fittings. The saddle shall be not less than 24 gauges thick for conduit pipe up to 25 mm diameter and not less than 20 gauges thick for conduits of larger diameter.

When conduits have to be attached to iron or steel joints or pillars, suitable girder clips at intervals of 60 cm shall be used. Conduits laid along the trusses, steel joists etc. shall be secured by means of ordinary clips or girders clips, as required. Where it is not possible to drill holes in the truss members, suitable clamps with bolts and nuts shall be used. The clips shall be not less than 20 mm wide and 0.9 mm thick for conduit pipe up to 25 mm diameter and not less than 25.4 mm wide and 12.0 mm thick for conduit pipe of higher size. For all sizes of clamping rod shall be 4.45 mm (7 SWG) diameter.

All necessary bends in the system including diversion shall be done by bending pipe, or by inserting suitable solid or inspection type normal bends, elbows or similar fittings or by fixing cast iron or sheet steel inspection boxes as directed by Engineer-In charge. Conduit fittings shall be avoided, as far as possible, on conduit system exposed to weather, where necessary, solid type fittings shall be used, radius of such bends in conduit pipes shall be not less than 7.5 cm No length of conduit shall have more than the equivalent of four quarter bends from outlet to outlet.

The conduit of each circuit or section shall be completed before conductors are drawn in. The entire conduit system shall be electrically and mechanically continuous and shall be tested for the same. The entire system shall be permanently connected to earth in general conformity to the requirement of earthing. Earth continuity wire of 8 SWG G.I./10 to 14 SWG copper (as required) size shall run along the full-length of the conduit and shall be fastened to conduit with earth clip and terminated in the M.S. box with stud. Gas or water pipes shall not be used as earthing medium. If conduit pipes are liable to mechanical damage, they shall be adequately protected. When passing through walls or floors, conduit pipes shall be continuous.

The metal box shall be efficiently earthed with the conduit by means of approved couplers. Only a portion of the box shall be sunk in the wall, the remaining portion shall project out for entry of conduit pipe into the box. The clear depth of the box shall be not less than 6 cm. where fan regulator is also to be accommodated; the depth shall be increased to accommodate the fan regulator in flush pattern. Stranded conductors shall be preferred in conduit wiring.

After completion of erection, the portion of the building damaged during the erection of the installation shall be repaired properly to meet the original finish and colour of the walls and ceiling etc.

**(II) Concealed (recessed) conduit wiring system-** This system of wiring shall comply with all the requirement described above under 'Surface Conduit System' and in addition, conform to the requirements described under.

The conduit shall be fixed in position by means of M.S. hooks not more than 60 cm apart by making a chase in the wall. The conduit shall be fixed so that its top is 6 mm below the surface of

wall. The chase shall be of ample dimension to permit the conduit to be fixed properly and shall be made neatly in the wall. The chase shall be filled up neatly after erection of conduit and finished to original finish and colour of the wall.

All curves shall be maintained by bending the conduit pipe itself with a long radius or by solid type long bends. Fixing of short bends or elbows shall be avoided. Fish steel wire of 16 SWG size shall be provided along with laying of conduit to facilitate drawing of wires in the conduit.

Suitable inspection boxes shall be mounted, flush with the wall, ceiling, at suitable intervals to facilitate drawing and removal of wires. Inspection boxes shall be of cast iron or sheet steel. Suitable ventilating holes shall be provided in the covers of the inspection boxes.

The outlet boxes shall be same as for surface conduit system and shall be mounted flush with the wall /ceiling.

After completion of installation, the portion of the building damaged during erection shall be repaired properly to the original finish and colour of the walls and ceiling etc.

**Wiring in P.V.C. conduits:** The P.V.C. conduits shall be of approved make and brand, I.S.I. marked of heavy duty minimum 2.00 mm thick. The Couplers, inspection boxes long neck, solid bends shall also be of heavy duty P.V.C.

The system of wiring shall comply with all the requirement described above in rigid steel conduit system, and in addition conform to the requirement described here under.

The earth continuity wire shall be P.V.C. insulated and shall be carried inside the conduit up to a size of 10 sq mm. If the size of earth wire is required with greater cross-section, it shall be of galvanized iron or copper and shall be taken out side the conduit, fixed in the same manner as in case of rigid steel conduit.

Fixing of bends and elbows shall be avoided. Fish steel wire of 16 SWG shall be provided in the conduits laid in slabs as and when required, to facilitate drawing of wires in the conduit.

Suitable inspection boxes shall be fixed and mounted flushed with wall, ceiling at suitable intervals to facilitate, drawing and removal of wires. The P.V.C. inspection boxes shall be of heavy-duty type and provided with brass, threaded ferrules for fixing screws for mounting covers.

**18) Selection of Size of Conductors:** The size of the conductors of circuits shall be so selected that the drop in voltage from consumer's terminals to any and every point on the installation does not exceed three percent of the supply voltage at the consumer's terminal, when the conductors are carrying the maximum current under the normal conditions. The rating of the cable shall be the current, which the circuit is designed to carry.

The current rating of the cable shall not be less than that of the fuse/breaker, which protects it.

All conductors, switches, and accessories shall be of size as to be capable of carrying, without their respective ratings being exceeded, the maximum current, which will normally flow through them.

**19) Capacity of Sub-Circuits:** Light and fans shall be wired on separate sub-circuits. Not more than a total of ten light and plug points or four to six fan points shall be provided in a sub-circuit. The load on a sub-circuit shall be restricted to 800 watts.

The power sub-circuit shall be designed according to the load requirement of the sub-circuit. In no case, more than two outlets shall be provided in a circuit.

**20) Passing Through Walls & Floors: -**

**(I)** When the conductors pass through walls, they shall be taken through one-piece heavy gauge rigid steel conduit or porcelain pipe or corrugated or solid P.V.C. pipe extending through the whole thickness of the wall. The ends shall be bushed properly. The pipe shall be of adequate size of that the wires pass through in a straight line without any twist or cross in wires.

(II) When the pipe extends outside the building, the portion exposed to weather shall be well mouthed, turned downwards and properly bushed on the open ends.

21) Where owing to irregular coursing or other reasons the plugging of the walls or ceiling with wood plugs present difficulties, the MDFEG batten, metal conduit shall be attached to the wall or ceiling in a manner approved by the Engineer-In charge.

To achieve neatness, plugging of the walls or ceiling may be done by approved types of asbestos, metallic, or fiber fixing plug having adequate strength instead of wooden plugs.

22) **Fittings and Accessories:** -

(I) **Ceiling roses and similar attachments:** A ceiling rose shall not embody fuse terminals as integral part of it. A ceiling rose or similar attachments shall not be used in low voltage installations only. Only one pendent shall be attached to a ceiling rose where multiple pendants are to be used, specially designed ceiling roses shall be used.

(II) **Socket outlet and plugs:** Every socket outlet shall be controlled by a switch, which shall be on the live side of the line and shall preferably be located immediately adjacent thereto or combined therewith. A socket outlet shall not embody fuse terminal as an integral part of it but the fuse may be embodied in plug.

In an earthed system of supply, three-pin type socket outlet, with the third pin connected to earth, shall be used. The connection from such outlet to any current consuming device shall be done by means of 3 core flexible cords, one end of the earthing core of which shall be connected to the earthing pin and the other to earthing point of the current consuming device. Every plug containing a fuse shall be non-reversible and shall be so arranged and connected that the fuse controls an outer phase conductor or the non-earthed conductor of the circuit.

Ordinary socket outlet shall be fixed at places away from danger of mechanical injury and at a height of not less than 1.25 meters from floor level. In case it is to be fixed at a lower height, which shall not be less than 23 cm from floor level, prior approval in writing of Engineer-In charge shall be necessary.

Socket outlet for call bell shall be fixed as directed by the Engineer-In charge at height of not less than 1.25 meters above floor level. To carry flexible cord from bell push to socket, concealed conduit from the outlet with a terminal box at 23 cm above floor level may be fixed in the wall.

## **CHAPTER – II**

### **Laying Of Conduit In Slab**

1) If required, conduit pipes shall be laid in slab or beam along with reinforcement before concreting. The conduit pipes shall be laid over the bottom reinforcement the slab of beam unless

required otherwise, such that the open face of the outlet box is flush with the surface of the slab or beam. The conduit pipe shall be fastened securely to the nearest reinforcement with 16 gauge steel wire. The outlet box shall be at least 63 mm to 75 mm deep, check nuts should be provided to prevent entry of cement concrete in conduit pipe during the concreting. The outlet box shall be filled with clay or hessian cloth so that the concrete does not fill in it. All bends shall be made by bending the conduit pipe. To facilitate drawing of wire in the conduit, 16 SWG fish steel wire shall be provided in the conduit during its erection.

Suitable inspection boxes shall be provided flush with the ceiling at suitable intervals to facilitate drawing and removal of wires. Inspection boxes shall be of cast iron or sheet steel, with M.S. Cover. In case of P.V.C. conduit wiring these shall be of P.V.C. heavy duty. Suitable ventilating holes shall be provided in the covers of the inspection boxes.

The outlet boxes shall be same as for surface conduit system and shall be mounted flush with the ceiling.

After completion of erection, the portion of the building damaged during erection shall be repaired properly to the original finish and colour of the walls and ceiling etc.

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### **CHAPTER – III**

***1) Main switches and switch boards -***

- (I)** All main switchgears shall be metal clad and shall be installed in dry situation, as near as practicable to the point of supply.

- (II) The main switch will have a fuse on each live conductor of supply mains. No fuse shall be provided in the earthed neutral. The neutral wire shall be continuous except at the linked switchgear.
- (III) Main switchboards shall be installed in well-ventilated rooms or cupboards or recess having locking arrangements. These boards shall not be installed in damp situations, in the vicinity of storage batteries, places exposed to chemical fumes or where inflammable or explosive dust, vapor, or gas is likely to be present.
- (IV) Switch boards shall not be erected above gas stoves, sinks, in bathrooms, lavatories, toilets, kitchens, damp situations, places exposed to weather or within 2.5 meters of a washing unit in the washing room of Industries.
- (V) Fixing of switchboards in places likely to be exposed to weather, to drip or to abnormal moist atmosphere, should be avoided. Where it is unavoidable, the outer casing on the switchboards shall be weatherproof and shall be provided with gland or bushings or adopted to receive screwed conduit according to the manner in which cables are run.
- (VI) The bottom of switchboard shall be more than 1.25 meters above the floor level unless the front of switchboard is completely enclosed by a door or the switchboard is located in a position to which only authorized persons have access.
- (VII) Equipments, which are on the front of a switchboard, shall be so arranged that inadvertent personal contact with live part be avoided during the maintenance of switchgear changing of fuse or like operations.
- (VIII) The switch shall be so arranged that fuses are not “alive” when the switch is in the “OFF” position.
- (IX) A danger notice plate shall be provided on switchboards connected to medium voltage supply and above.

2- **Main & Branch Distribution Boards: -**

- (I) The main & branch distribution fuse boards shall be of metal clad type. These shall be of weatherproof type for exposed to weather or damp situation and flam proof type for situations exposed to explosive dust, vapor, or gas.
- (II) Main distribution boards shall be controlled either by a linked switch fuse or circuit breaker. Each outgoing circuit shall be provided with a fuse/breaker on the phase or live conductor.
- (III) Branch distributions boards shall be controlled by a linked switch fuse or circuit breaker. Each outgoing circuit of the branch distribution board shall be provided with a fuse/breaker on the phase or live conductor. The earthed neutral conductor shall be connected to a common link and be capable of being disconnected individually for testing purpose. At least one spare circuit of the same capacity shall be provided on each distribution board.
- (IV) The distribution boards shall be installed as near the center of load as possible, in dry situation.
- (V) The distribution boards shall be fixed on suitable stanchions or wall and shall be accessible for replacement of fuses/ breaker.
- (VI) When two or more distribution boards are connected to different phases of medium voltage supply, these shall either be fixed 2 meters apart or interlocked or arranged so that only one can be opened at a time and the metal case is marked “DANGER” “415 Volts” or installed in a room or enclosure accessible to authorized persons only.
- (VII) Triple pole distribution fuse boards shall not be used for final circuit distribution for single-phase load.

3- **Wiring Of Distribution Boards: -**

- (I) The load coming on the distribution boards shall be divided, as far as possible, evenly between the numbers of ways of boards. One spare circuit should be left for future extension.

- (II) All connections between pieces of apparatus or between apparatus and terminals on a board shall be neatly arranged in a definite sequence, following the arrangements of the apparatus mounted thereon, avoiding unnecessary crossings.
- (III) Cable should be connected to terminals only by soldered lugs, crimped lugs, or clamped securely without cutting away the cable strands.
- (IV) All the conductors shall be rigidly fixed in such a manner that clearance of at least 25 mm is maintained between conductors of opposite polarity or phases and between the conductors and any other materials other than insulating material.
- (V) The incoming and outgoing cables shall be neatly bunched and fixed properly permitting the boards to swing back fully.
- (VI) If required, pilot lamp connected through an independent switch and fuse shall be provided.
- (VII) The current rating of a fuse shall not exceed the current rating of the fuse carrier or the current rating of the smallest cable in the circuit protected by the fuse.

**4- Boards for Mounting Switch Gear: - One of the following types of boards shall be used for mounting metal clad switchgear.**

- (I) **Hinged type Metal boards:** -These types of boards shall be used for low voltage installation for mounting metal clad switch-gear consisting of not more than one switch fuse and one single phase and neutral distribution fuse board. These boards shall consist of a box made of sheet steel not less than 3 mm thick. Alternatively, a frame of angle iron of minimum size 35 mm x 35 mm x 6 mm or channel of minimum size 35 mm x 25 mm x 6 mm for these boards shall be made and mild steel plate of 3 mm thickness mounted on the front and 1.6 mm thickness on the back. The joints shall be substantially welded. The boards shall be provided with locking arrangement and earthing stud. If so required in any work at least 6 mm thick wooden board of well seasoned polished MDF exterior grade boards shall be provided at the back. There shall be a clearance of 30 mm minimum between the front and back covers.

No apparatus shall project beyond the edge of the board. No fuse shall be mounted within 25 mm of the board edge. The boards shall be painted with synthetic enamel paint over anti-rust priming coat.

The boards shall be securely fixed to the wall by means of rag bolts or wood plugs

- (II) **Hinged Type Wooden Boards:** - These type of boards shall be used in case of wooden casing of MDFEGB batten system of wiring for mounting metal clad switch gear, for use on low voltage installation, consisting of not more than one switch fuse and one single phase and neutral distribution fuse board. These boards shall consist of two halves. Both the bottom and top halves shall consist of at least 12 mm thick well-seasoned M.D.F. exterior grade board mounted on 25 mm thick well-seasoned M.D.F. exterior grade board batten by means of wood screws. The two halves shall be jointed together by means of at least two numbers 75 mm long steel hinges on one edge and wood screws on the other, so as to make a box. The box shall be provided with an earthing stud. Both the inside and outside of the box shall be painted with two coats of approved varnish irrespective of their being painted to match the surroundings. Where there is danger of attack by white ants, the portion in contact with wall shall be painted with anti-termite paint instead of varnish. No apparatus shall project beyond the edge of the board. No fuse shall be mounted within 25 mm of the edge of the board. The board shall be securely fixed to the wall by means of rag bolts or wood plugs.
- (III) **Fixed Type Metal Boards:** - This type of board shall be used for mounting a large number of switchgears and large capacity metal clad switchgear. These shall consist of angle iron or

channel iron frame of suitable size fixed on the wall or on the floor and supported on the wall at the top, if necessary. A clear distance of at least one meter shall be provided in front of the switchboard. If there are attachments at the back of the board the space behind the switch board shall be either less than 20 cm or more than 75 cm in width measured from the farthest outstanding part of any attachment or conductor. If the space behind the switchboard exceeds 75 cm in width, there shall be a passage way from either end of the switchboard clear to a height of 1.8 meters.

The connection between the switch gear mountings and the outgoing cables up to the wall shall be enclosed in a protective pipe.

(IV) **Fixed Type Wooden Boards:** - This type of boards shall be used for small installations connected to low voltage. These shall be made of M.D.F. exterior grade board and may be used as main boards or sub-boards. The joints shall be dovetailed.

Both, the inside and outside of boards shall be painted with two coats of approved varnish. The boards shall be securely fixed to the wall by means of rage bolts or wood plugs.

For large size medium voltage installations, a drawing showing detailed dimensions, design and disposition of framework and mountings which shall be arranged neatly systematically to arrive at the overall dimensions shall be submitted for approval of the Engineer-In charge.

These boards may be fixed in recess at least 600 mm x 480 mm or 480 mm x 480 mm provided in the wall. An R.C.C. lintel of suitable size, design, and strength shall be provided above the opening to support the structure above it. The recess shall be provided with a hinged panel of 18 mm thick M.D.F. exterior grade board chaukhat and shall be provided with locking arrangement. The chaukhat shall be fixed to the wall with holdfasts of suitable sizes. The pannel and chaukhat shall be well varnished before installation irrespective of their being painted to match the surroundings.

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## **CHAPTER – IV**

1) (I) **Lighting Fittings:** - Lights, fan and socket outlets shall be so located as to provided maximum comfort to the occupant and to enable him to utilize the electricity in the most economical manner. Every lighting fitting shall be controlled by a switch, which shall be in live conductor of the circuit. Where control of the fitting at more than one point is necessary, it shall be done by as many two way and intermediate switches as there are control points.



The pendent fittings shall be suspended with twin flexible cords. The maximum permissible weight of pendent fittings suspended from twin flexible cable shall not exceed the following limits. Fittings heavier than 3.5 Kg. shall be suspended by chain or rigid steel pipe.

Size of twin cord in sq mm	No. and dia in mm	Maximum permissible Weight in Kg.
0.05	16/0.2	1.7
0.75	24/0.2	2.6
1.00	32/0.2	3.5

Fittings and shades of inflammable material or of celluloid shall not be used under any circumstances.

**(II) Fittings Wire:** - These wires shall be of copper and shall be used only for internal wiring of fittings and shall be carried up to the termination of the light point.

**(III) Fluorescent Tube Fittings:** - These fittings shall be high power factor type i.e. shall consist of necessary power factor improvement capacitor. The capacitor shall be of 4 mfd for fittings suitable for single tube and 3.15 mfd. for fittings suitable for double tubes. The fittings shall be standard models complete with necessary number of tubes and not economical models. These shall be complete with all components supplied as original components with standard models and shall be assembled and wired by the manufacturer at the factory. The fluorescent tube shall be of the same make as the fitting. In case where tubes are not manufactured by the fittings manufacturer the fluorescent tube of any approved make as directed by the Engineer-In charge shall be used.

**(IV) High Pressure Mercury/Sodium Vapor Lamps:** - These fittings shall be complete with necessary vapor lamp, lamp holder, fittings with reflector, condenser, choke and starter etc. of appropriate size and quality complete in all respects with electric connections.

**(V) Lamp Holders:** - All Lamp holders shall be bayonet cap type and shall be provided with shade carrier.

**(VI) Outdoor Fittings:** - Fittings for external use and for use on roads shall be of a design, which shall prevent the entry of moisture and insects into the fittings.

**(VII) Height of Fittings:** - Unless desired otherwise, all wall mounting and pendent fittings inside the building shall be kept at a height of 2.5 meters above the floor level. All fittings outside the building and on roads shall be fixed at the height as directed by an Engineer In charge.

**(VIII)** Wall mounting brackets shall be fixed on matching well-seasoned polished M.D.F. exterior grade board blocks or boards with brass screws.

**(IX)** Rod pendent fittings shall be suspended with heavy gauge rigid steel conduit pipe duly painted of appropriate size or electroplated steel chains of required length as directed by the Engineer-In charge.

# CHAPTER – V

## UNDERGROUND CABLES

1) **General:** - These specifications cover the requirements for the selection and installation of under ground cables for low, medium, and high voltage applications.

2) **Testing:** - The cable shall be tested for continuity and insulation between conductors and conductors and earth before and after installation. Test results shall be submitted in the proforma given in Appendix 8.

3) **Cable Conductor:** - The cable shall have either solid or stranded aluminium conductors and shall be P.V.C. insulated and P.V.C. sheathed and I.S.I. certified.

The cables may be armored or unarmored. Unarmored cables may be used only when the runs are short and the cables are laid in pipes or closed masonry trenches or protected and secured enclosures.

Single core cables armored with steel wire or tape shall not be used for alternating current supply.

4. **Selection of Cables:** - The final current carrying capacity of the cable, after allowing for derating, shall not be less than the current, it is required to carry. The current carrying capacity of P.V.C. insulated and P.V.C. sheathed cables and the derating factors are given in Appendix 8.

5. **Handling of Cables:** - The cable should be handled carefully so as to avoid formation of kinks. Any injury in conductor, insulation, sheathing, armoring etc. which may result in earth fault or discontinuity of conductor or both. Damaged cables, cables with kinks or with similar apparent defects shall not be installed.

The cable drums shall not be stored on water logged and loose surface. Both the ends should be sealed to prevent ingress or absorption of moisture by insulation. The cable drum shall be rested on flanges. The drums should either be rolled in the direction of arrow or mounted on cable drum wheels and pulled by means of ropes. The cable shall not be bent to a radius of less than 12 times the overall diameter of cable.

6. **Cable Route:** - The cable shall be run, far as possible parallel to roads, footpaths or other fixed development items. Cross-country runs to shorten the route length should be avoided.

The cable shall be laid away from drains, storm water drains, kerb lines, existing cables, and private property etc.

The cable shall not be laid in corrosive soil.

Cable of different voltage rating shall be laid in different trenches with adequate separation. Cables of higher voltage shall be laid at a lower level than the cable of lower voltage.

The alignment of the cable route should take into consideration the interest of other authorities and also future expansion like widening of roads etc

7. **Laying of Cables:** - Cables shall be laid directly in ground, in pipe, in open/closed ducts or on surface as per requirement at site.

Joints in cables shall not be provided. When the distance exceeds the standard length supplied by manufacturer, kiosks shall be provided. The location of the kiosks shall be decided before laying the cables. The kiosks shall not be provided in water logged locations, carriage ways,

pavements, proximity of telephone cables, gas and water mains, in accessible places, ducts, pipes and rocks etc.

**8. Laying direct in ground:** - This method shall be adopted where frequent excavations are not encountered and re-excavation is easily possible without affecting other services.

The cables shall be laid in reasonable straight trench such that its top is at a depth of 75 cm from the ground level.

For laying single cable the trench shall be 45 cm wide. For laying two or more cables in one trench, the width of the trench shall be increased so as to provide an interaxial distance of at least 30 cm and end clearance of 15 cm from the sidewalls.

The bottom of cable trench shall be leveled and cleared of all rubbish, stone, and hard materials etc. and covered with 7.5 cm thick layer of clean, dry sand, punned smoothly with hand throughout. The cables shall be laid on the layer of sand and covered with at least 7.5 cm thick layer of clean dry sand and covered on the sides and top with well-burnt bricks to provide protection. Precast cement concrete slabs can be laid at the top of sand instead of bricks.

In case of vertical tier formation, a sand cushion, of 30 cm shall be provided between each tier. In addition, a partition layer of brick shall be laid between layers.

Extra length of cable in the shape of open-mouthed loop shall be left at each termination and kiosk. In the case of runs of cable, loose cables may be left at suitable intervals also.

The trench shall be back filled with soft earth, rammed solidly, and dressed properly to the satisfaction of Engineer-In charge.

**9. Route Markers:** - If desired, cable route marker marked "CABLE" shall be provided along route of the cable and location of loops. The route markers may be of 100x 5mm G.I. plate welded or bolted on to 15 mm dia M.S. rod or of 600 x 600x 100mm block of 1: 2: 4 cement concrete. Plate marker should be mounted parallel to and 50 cm away from the edge of the trench. The concrete marker shall be laid flat cover the cable trench projecting over the surrounding surface.

**10. Laying In Pipes/Closed Ducts:** - In locations such as road crossings, entry to buildings, paved areas, on poles etc. the cable shall be laid in G.I., cast iron or spun reinforced concrete pipe, as specified. For a single cable, the minimum diameter of the pipe shall be 100 mm or double the overall diameter of cable whichever is more. Separate pipe for each cable shall be preferred.

Unless specified otherwise, the pipe shall be laid directly in ground without any be such that its top is at a depth of at least one meter from the ground level. The pipes on road crossing shall be laid on the skew.

The pipes shall be continuous and shall be cleared of debris or concrete before the cable is drawn.

If specified, manholes of adequate size shall be provided to facilitate drawing in of cables. The mouth of the pipe entering a building shall be sealed to avoid entry of the water and the pipe shall slope downwards outside.

**11. Laying In Open Ducts:** - In location such as sub-station, switch-room, workshops, plant rooms etc., the cables shall be drawn in open ducts of suitable dimensions, with easily removable covers of cement concrete or chequered plates. The cables shall not cross each other, unless unavoidable. The cables shall have no joints or spliced inside the duct. The cable shall fixed with clamps on the wall of the duct, taken in trough in duct, supported on racks in the duct or laid direct in trench over suitable spacers as directed at site. The duct may be filled with dry sand, covered with easily removable covers of cement concrete or chequered plates, or finally finished in cement plaster.

**12. Laying On Surface:** - The cables may be laid on surface in switching stations, factories, tunnels, rising mains, overhead bus bars etc. The cable shall be laid in trough or on bracket or fixed with mild steel clamps, such that there is no undue sag in the cable. The cable shall be laid at least 25 mm clear of the wall.

In case of unarmored cables, suitable non-corrosive packing shall be provided to prevent damage to the cable sheath.

**13. Cable Identification Tag:** - Wherever more than one cable are existing, suitable marker tags inscribed with cable identification details shall be permanently attached to all cables in the manhole, pulpits, joints, open ducts, under ground cables etc., at suitable intervals.

**14. Completion Report:** - After completion, test results on the prescribed proforma (Appendix 3) and cable route duly marked on the building site plan shall be submitted. The portion of the

building etc. damaged during erection of installation shall be repaired properly to original finish and colour of the building etc.

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## **CHAPTER – VI**

## OVERHEAD LINES & STREET LIGHTS

1) **General:** - These Specifications cover the requirements for the installation, testing and commissioning of overhead lines for medium voltage, service lines and street lights.

1) **Poles:** - Overhead lines shall be supported on steel tubular poles or steel rail poles. The steel tubular poles shall be of seamless/swaged and welded type and shall be in three-stepped section. Important information about, some poles are given in **Appendix 9**. Steel rail poles shall be as per standard specifications of Indian Railways. Normally one sixth of the length of the pole shall be embedded in the ground. This length of poles shall be coated with black bituminous paint, both internally and externally. The remaining portion of the poles shall be painted with one coat of red oxide, primer on its external surface. The pole shall be complete with a cap and base plate. Steel tubular /steel rail poles shall be fixed over 15 cm thick bed of 1: 3:6 cement concrete irrespective of the use of base plate and shall be fixed in cement concrete 1:3:6 (1 cement: 3coarse sand:6 graded stone aggregate of 40 mm normal size) foundation with not less than 20 cm thick layer cement concrete all round the foundation being continued up to 30 cm above ground level and tapered suitably into a collar. The excavated portion shall be filled back with earth and consolidated properly using water if necessary. The cement concrete foundation shall be cured properly using moist gunny bags before loading the pole.

3) **Cross Arms:** - The cross arms shall be made of M.S. angle iron of size not less than 50 mmx 50mmx 6 mm thick. The length of cross arm shall be not in 60 cm and shall have insulator pinholes so spaced as to accommodate one number insulator on either side of the pole with spacing of 45 cm between the conductors. The cross arms shall be complete with pole clamp made of M.S. flat of size not less than 50 mm x 6mm with necessary bolts nuts and washers. When guard wire is also carried on the cross arms, the length of cross arm shall be increased as that the guard wire runs not less than 30 cm beyond the outer most bare conductor. The cross arms shall be painted with red oxide primer before erection and finally painted with 2 coats of approved paint.

4) **D-Iron Clamps:** - The D-Iron Clamps shall be made of M.S. flat of size not less than 50 mmx 6 mm and shall be complete with necessary bolts, nuts and washers and insulators bolt's holes etc. The length of the clamp shall be such that the conductor is not less than 150 mm away from the pole. The clamps shall be painted with 2 coats of approved paint.

5) **Insulators:** - The conductor shall be supported on pins/shackle type of insulators. The insulators shall be fixed directly on clamp or on cross arm. The minimum size of shackle insulator shall be 90 mm dia x 75 mm high. The shackle insulators shall be complete with G.I. bolts, nuts, and washers etc. The minimum size of pin insulator shall be 65 mm dia x 100 mm high. The pin insulator shall be complete with G.I. pin, nuts, and washers etc.

6) **Stay Set:** - A stay set shall consist of stay rod, anchor plate, bow tightner or turn buckle, thimbles, stay wire and strain insulator, clamp etc. The stay rod shall be provided with stay grip in

case turnbuckle is used instead of bow tightner. The entire stay assembly shall be galvanized. The stay wire shall be 7/10 SWG G.I. wires. The anchor plate shall be of M.S.galvanized and not less than 30 cm x 30 cm x 6mm thick and the size of stay rod shall not be less than 1.8 meters (6 ft) long. A length of 46 cm. (18”) of the rod shall project above the ground level.

7) **Struts:** - A strut shall generally consists of a pole of the same section which it supports or slightly lighter. It shall be chamfered at the top so as to rest on the pole squarely and shall be secured by means of a through bolt, nut, check nut and washer. It shall be buried in the ground to a depth of not less than 1.2 meters (4 ft.) in the same manner as the pole. At the ground level, the strut shall be at a distance of not less than 1.8 meters (6 ft) from the pole.

8) **Conductors:** - Steel reinforced aluminium conductors (A.C.S.R.) shall be used for phase and neutral conductor. Important information's about some common ACSR conductors are given in Appendix 10. The minimum size of ACSR conductor shall be of code name “Squirrel” No. 8 SWG GI wire shall be used for earth conductor. The binding of the conductors with the insulators shall be done by 12 SWG soft aluminium conductors.

The guard wire shall be of G.I. and shall have required breaking strength and current capacity to ensure rendering dead the line without risk of fusing of guard wire. It shall be connected with the earth at each point at which its electrical continuity is broken. Suitable number of guard wires shall be provided.

The conductor will be stringed properly and care will be taken to see that there are no kinks in the conductors. Joints in the conductors shall be staggered. All strands of conductors must be gripped securely when pulling the conductor. While stringing, conductors of sufficient length be kept at shackle terminations for making jumpers.

The jumpers shall be so made as to prevent occurrence of fault due to wind or birds. Parallel Grove (PG) clamps may be preferred to binding of conductors at jumper location or service tops. Jumpers will normally be of the same material as the line conductor and be of adequate current carrying capacity. The binding of conductor to insulator shall be sufficiently firm and tight to ensure that no intermittent contacts develop.

**NOTE:** - Construction of overhead line includes cutting of branches of trees or clearing of other obstructions that may come in the way of overhead lines. This must be done with the approval of Engineer-In charge and with the permission of owners concerned.

9) **Lighting Arrestors:** - Horn gap type of lightning arrestors will be used wherever specified. These shall be fixed with each phase at the terminals and other places where specified and mounted on poles or cross-arms as directed by the Engineer-In charge. A short and definite air gap must be maintained between the horns. This gap shall not exceed 2 cm.

10) **Earthing:** - Earthing shall be provided as per Chapter –VII “Earthing”. All metal supports of overhead lines and metallic fittings attached there to shall be permanently and

efficiently earthed and for this purpose, a continuous earth wire shall be connected to an earth. There shall not be less than 3 connections with the earth per Kilometer spaced at equidistance as far as possible. The lead from the earth electrode shall be suitably protected by a 15 mm dia. G.I. pipe up to a height of 3 meters from the ground level and bounded to the continuous earth wire. The protective pipe and earth lead shall be suitably clamped to the support.

**11) Danger Boards:** - Danger boards fabricated from 10 SWG M.S. sheet and marked per as I.E. Rules shall be fixed, wherever specified, at a height of 3 meters from the ground.

**12) Service Brackets:** - Service brackets for providing service connection shall be of G.I. pipe of 5 cm diameter, wall/roof type, bell mouthed with two bends and sockets, duly painted with two coats of aluminium paint, complete with shackle insulators, earthing clamps, angle iron strut or G.I. stay of 7/3.14 mm size wire (7 nos. of 10 SWG), stay insulators and wall clamps etc. The stay shall be anchored to the building with one eyebolt. The bracket shall be not less than 4 meters long and fixed as directed by Engineer-In charge.

**13) Service Lines and Service Fuses:** - Service lines shall be tapped from overhead line at point of support only. Service fuse carrier shall be of approved make and of ample size to permit entry of the ends of service lines connected to them. They shall be fixed at the distribution line support from which the service line is tapped. The clearances required as per I.E. Rules shall maintain.

Clearance from building of low and medium voltage lines and service lines:

Where a low or medium voltage over head lines passes above or adjacent to or terminates on any building the following minimum clearances from any accessible point on the basis of maximum sag, shall be observed:

**(a) *For any flat roof, open balcony, verandah roof and lean to roof.***

- (i) When the line passes above the building a vertical clearance of 1.5 meter (8 ft) from the highest point.
- (ii) When the line passes adjacent to the building a horizontal clearance of 4 ft (1.2 meter) from the nearest point.

**(b) *For pitched roof.***

- (i) When the line passes above the building a vertical clearance of 8 ft immediately under the lines.
- (iii) When the line passes adjacent to the building a horizontal clearance of 4 ft (1.2 meter).

**(14) Painting of Poles:** The Painting of Poles / struts including cross arms, clamps etc., will be carried out with aluminium paint. Painting shall not be done on wet surface. First of all the surface

will be prepared, by removing all rust and scales by scrapping or by brushing with steel wire brushes. All dust and dirt shall be thoroughly wiped off. After this, the primer coat shall be applied with red oxide paint. When primer coat has dried-up and before any moisture, dirt, dust etc. settles down on the surface, aluminium paint shall be applied with brush and the paint shall be spread evenly and smoothly. The surface shall be given two or more coats as directed and shall finally present a uniform appearance.

**(15) Mode of Measurement of Overhead Conductors and Earth Wire:** The weight of overhead conductor & earth wire shall be calculated by measuring the distance from center of one pole to the center of next pole and computing the weight of conductor of that size and length by using standard tables. 3 % extra shall be allowed for wastage, sag, jointing, binding, and jumpering etc.

**16) Completion Report:** After completion, test results on the prescribed proforma (Appendix 3) and route lay out and position of poles, duly marked on the building site plan shall be submitted by the contractor. The portion of the building etc. damaged during erection of the installation shall be repaired properly to original finish and colour of the building etc.

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## **CHAPTER – VII**



# Earthing

1- **General:** - Earthing shall conform to the following specifications. For other details not covered in these specifications, relevant Indian Standards shall be referred to I.S.: 3043, 1965 (Code of practice for earthing)

Earthing shall generally be carried out in accordance with the requirements of Indian Electricity Rules, 1956 as amended from time to time and the relevant Regulations of the Electricity Supply Authority concerned. The following clauses of the Indian Electricity Rules, 1956 are particularly applicable.

32, 51, 61, 61A, 62, 67, 69, 88 (2) and 90.

All earth connections shall be visible for inspection. All medium voltage equipments shall be earthed by two separate and distinct connections with earth through an earth electrode. In case of high and extra high voltages the neutral points shall be earthed by not less than two separate and distinct connections with earth, each having its own electrode. Each electrode shall be provided at consumer premises and substations according to the requirement.

All materials and fittings etc used in earthing shall conform to the Indian Standards Specifications wherever these exist. In the case of materials for which I.S.S. do not exist, the same will be approved by the competent authority.

No earth electrode shall have an ohmic resistance greater than five ohms as measured by an approved earth testing apparatus. In rocky soils, the resistance may be up to eight ohms.

Use of plate electrode is recommended only where the current carrying capacity is prime consideration, for example, higher capacity main switches, panel boards, and sub-stations etc.

Normally, an earth electrode shall not be situated less than 1.5 m away from any building. Care shall be taken that the excavations for earth electrode may not affect the column footings or foundations of the building; in such cases electrodes may be fixed further away from the building.

The location of the earth electrode will be such where the soil has reasonable chance of remaining moist, as far as possible. Entrances, pavements and roadways, are to be definitely avoided for location of the earth electrode.

2- **Type of earth electrodes** (a) Pipe earth electrodes.  
(b) Plate earth electrodes.

G.I. pipe or G.I. plate earth electrodes shall be used except when it is unavoidable to use copper plate earth electrode due to corrosive soil conditions. For D.C. system or for large capacity sub stations, where soil contains sulphur, copper electrode shall be adequately tinned.

3- **Pipe Earth Electrodes:** - G.I. Pipe shall be of 40 mm dia 4.5 meters in length. Galvanizing of the pipe shall conform to relevant Indian Standards. The pipe shall have a clean surface, not covered by paint, enamel, or poorly conducting material. The pipe shall be of one piece. G.I. pipe electrode shall be cut tapered at the bottom and provided with holes of 12 mm dia. drilled and spaced 75 mm from each other up to 2 meters of length from bottom. The electrodes shall be buried in the ground vertically with its top not less than 20 cm below ground level. (Details shown in the drawing No. 1)

4- **Plate Earth Electrodes:** - For plate electrodes minimum dimension of the electrode shall be as under: -

- (a) G.I. plate electrodes- 60 cm x 60 cm x 6 mm thick
- (b) Copper plate electrodes-60 cm x 60 cm x 3 mm thick

The electrodes shall be buried in ground with its face vertical and top not less than 3 meters below ground level (details shown in the drawing no. 2)

**5- Watering Arrangement:** - In the case of plate earth electrode, a watering pipe of 20 mm dia of G.I. pipe shall be provided and attached to the electrode as shown in the drawing. A funnel with mesh shall be provided on the top of the pipe for watering the earth. In the case of pipe electrode a 40 mm x 20 mm reducer shall be used for fixing the funnel. The watering funnel attachment (in both the above cases) shall be housed in masonry enclosure not less than 300 mm deep. A 300 mm x 300 mm cast iron cover frame with hinged cover having locking arrangement shall suitably embedded in the masonry enclosure.

**6- Artificial Treatment of Soil:** - The electrode shall be surrounded by charcoal/ coke and salt in alternate layers not less than 150 mm thick as indicated in the drawing.

**7- Earthing Lead**

**(a) Main earthing Lead:** - The main earthing lead shall be of G.I. wire or G. I. strip in case of G.I. plate earth electrode.

For all electrical installations, except sub-stations and generating stations, the earthing lead shall be not less than one-half of cross-sectional area of the largest conductor to be protected. A conductor larger than 100 sq mm nominal cross-sectional area (2/0 SWG) in case of copper conductor and 150 sq mm in case of G.I. conductor need not be used.

The minimum size of main earthing lead shall not be less than 8 SWG copper or G.I. wire, or 12 mm x 3 mm copper or G.I. strip.

**(b) Earth Continuity Conductor:** - The nominal cross sectional area of an earth continuity conductor not contained within a cable or flexible cord shall be 14 SWG copper or 12 SWG G.I. or 4 sq. mm. aluminium wire.

In the case of G.I. plate earth electrode, the earthing lead shall be securely bolted to the plate with two G.I. bolts, nuts, check-nuts, and washers. In the case of pipe earth electrode, it shall be connected by means of through G.I. bolts, nuts, and washers and cable sockets as indicated in the drawing. All material used for connection the earth lead with electrode shall be G.I. in case of G.I. pipe and G.I. plate earth electrodes and tinned brass in case of copper plate electrode. The earthing lead shall be securely connected at the other end to the main board.

Loop earthing shall be provided for all mountings.

**8- Protection of Earthing Lead:** - The earthing lead of main board and other metal –clad switches and distribution fuse boards will not be less than 14 SWG copper or 12 SWG G.I. or 4 sq mm aluminium wire. Lead from electrode onwards shall be suitably protected from mechanical injury by a 15 dia. G.I. pipe in case of wire and by 40 mm dia G.I. pipe in case of strip. Portion of the protection pipe within ground shall be buried at least 30 cm. deep and shall be increased to 60 cm. in case of road crossing and pavements. The portion within the building shall be recessed in walls and floors to adequate depth.

**9. Completion Report:** - The completion of the installation the test results and completion report or the installation work shall be submitted in the form given in **Appendix 3.**

**Protection of Building Against Lightning:** -

**10- General:** - The protection of buildings against lightning shall generally and those of special structures like livestock in fields, structures for highly combustible materials etc. shall strictly be done in accordance with IS: 2309 –1969. For the purpose of protection of buildings against lightning both the vertical and horizontal conductors may be used as air terminations, depending upon the type of the building to be protected. Horizontal air terminations may be used in buildings with flat roof extending over large area such as R.C.C. framed structure, multistoried buildings etc. Vertical air termination may be used in buildings having towers and domes etc. A system of both vertical and horizontal conductors might be necessary for protection of bigger

buildings. The materials of lightning protective system shall be copper or galvanized steel as specified.

***Brief Specifications are described here below: -***

**11- Zone of Protection:** - The zone of protection of a lightning conductor denotes the space within which a lightning conductor provides protection against a direct lightning stroke by diverting the stroke to itself. For a single vertical conductor, this zone is described as a cone with apex at the highest point of the conductor and with an angle, called as protective angle, between the side of the cone and the conductor, normally this angle may be taken to be 45 degree.

**12- Component Parts and Their Installation:** - The principal components of a lightning protective system are:

- (i) Air Terminations
- (ii) Down Conductors
- (iii) Earth Terminations & Testing Points
- (iv) Earth Electrodes.

**13- Air Termination:** - Air termination may consist of a vertical conductor or a horizontal conductor, or a system of both horizontal & vertical conductors, depending upon the type of building as mentioned above. In case of a vertical termination, it needs not have more than one point and shall project at least 30 cm above the object on which it is fixed. Horizontal air terminations should be so inter-connected that no part of the roof is more than 9 meters away from the nearest horizontal conductor. For flat roof horizontal air-terminations along the outer perimeter of the ridge, parapet etc. shall be used. The air-terminations shall be joined with each other so as to form a closed network and should cover all salient points of the structure. The air termination should be fixed permanently so as to avoid overturning due to any reason.

**14- Down Conductors:** - The number and spacing of down conductor shall largely depend upon the size and shape of the building and upon aesthetic considerations. The minimum number of down conductors may, however, be decided on the following consideration:

(a) A structure having a base area not exceeding 100 sq m. may have one down conductor only, if the height of air termination provides sufficient protection. However, It is advisable to have at least two down conductors except for very small buildings.

(b) For structures having a base area exceeding 100 sq m. the number of down conductors required should be worked out as follows:

- (1) One for the first 100 sq m. plus one more for every additional 300 sq. m. or part thereof.
- (2) One for every 30 meters of perimeter.

The smaller of the two shall apply.

Down conductors should be described round the outside walls of the structure, preferably, along the corners and other projections. Lifts shafts shall not be used for fixing down conductors. The down conductors shall follow the most direct path between the air terminations and the earth terminations. Sharp bends, upturns, and kinks should not be provided. The down conductors should be protected against mechanical damage. Metal pipes should not be used as protection for the conductors; in buildings of cantilever construction the down conductor shall be taken straight down to ground. All metallic items extending beyond the top of the structure and running vertically through the structure should be bonded to the lightning conductor at the top and at the bottom.

The lightning protection system shall have as few joints in it as possible. Where joints in the down conductor above ground level are necessary, they shall be mechanically and electrically effective. In the down conductor below ground level, there shall be no joints. The joints may be clamped, screwed, or welded as may be necessary. External metal on or forming part of a structure

may have to discharge the full lightning current, therefore, the bond to the lightning protection system shall have a cross-sectional area of not less than that employed for the main conductors. Bonds shall be as short as possible.

Conductors shall be securely attached to the building or other objects to be protected by fasteners, which shall be substantial in construction, not subject to breakage and shall be of galvanized steel or other suitable material to avoid corrosion. The lightning conductors shall be secured at not more than 1.20 meter apart for horizontal run and 1.00 meters for vertical run.

The shape and minimum sizes of conductors for use above ground and below ground shall be as per Appendix 11.

**15- Earth Termination:** - Each down conductor shall have an independent earth termination. The interconnection of all the earth terminations is preferable. It should have combined resistance to the earth not exceeding 10 ohms before any bonding has been affected to metal in or on a structure or to surface below ground.

**16- Earth Electrodes:** - Earth electrodes shall be constructed and installed in accordance with IS 3043-1966 (Code of Practice for Earthing)

G.I. plate shall be used as earth electrode except where it is unavoidable to use copper plate earth electrode due to corrosive soil conditions. When soil contains sulphur, copper electrode shall be adequately tinned.

The earth electrode should be installed at places where best contacts with earth are obtainable. These should be spread out and not squeezed together.

The minimum dimensions of the electrode shall be as under:

- (a) G.I. plate electrode- 60 cm x 60 cm x 6 mm
- (b) Copper plate electrode- 60 cm x 60 cm x 3 mm
- (c) The electrode shall be buried in ground with its face vertical and top not less than 3 meters from ground level or not less than 60 cm below summer water level whichever is more. Medium class, G.I. pipe of 20 mm diameter, with a funnel with mesh, at the top of the pipe, shall be provided from ground to electrode for watering the earth. The watering funnel attachment shall be housed in a masonry enclosure of not less than 30 cm x 30 cm x 30 cm size.

A cast Iron frame with hinged cover having locking arrangements shall be suitably embedded in the masonry enclosures. For artificial chemical treatment of soil, the electrode shall be surrounded charcoal/coke and salt in alternative layers to a thickness of not less than 15 cm on all the sides.

The down conductor shall be securely bolted to the plate (earth electrode) with two G.I. or copper bolts, nuts, check nuts, and washers. The down conductor from the electrode onwards up to the building shall be suitably protected from mechanical injury by 40 mm diameter medium class G.I. pipe. The portion of the protective pipe within ground shall be buried at least 30 cm deep and shall be increased to 60 cm in case of road crossing and pavements.

No earth electrode shall have greater ohmic resistance than 5 ohms as measured by an approved earth testing apparatus. In rocky soils, the resistance may be up to 8 ohms.

**17- Completion Report:** - After completion of the installation, test results on the prescribed proforma (Appendix 3) and layout of the different components duly marked on the building plan shall be submitted. The portion of the building etc. damaged during erection of installation shall be repaired properly to original finish and colour of the building etc.

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## CHAPTER VIII

### **L.T. SWITCH (PANEL) BOARDS**

- (i) The L.T. Switch (Panel) Boards shall be factory fabricated and of the manufacturer whose panel has been approved by U.P.P.W.D.
- (ii) The switch board shall be fixed such that there shall be a clear space of either less than 230 mm or more than 762 mm in width behind the switch board measured from the farthest outstanding part of any attachment of conductor and more than 1000 mm in width in front of the switch board. There shall be a passage way from either end, either in front of or behind the switchboard, clear to a height of at least 1829 mm.
- (iii) No apparatus shall project beyond end edge of the panel. No switch body shall be mounted within 25 mm of any edge of the panel and no holes, either than meant for fixing the panel shall be drilled within 13 mm of the edge of the panel.
- (iv) The various live parts shall be effectively screened by barriers of non-hygroscopic, non-inflammable insulating material or shall be so spaced that an arc cannot be maintained between such parts and earth.
- (v) All items of switchgears shall be readily accessible and all connections, including those to instruments and apparatus, easily traceable.
- (vi) The switches shall be as arranged that fuses are not “alive” when the switch is in the “OFF” position.
- (vii) No fuse other than those in instruments circuit shall be fixed at back or behind a switchboard, panel, or frame.
- (viii) The switchboard shall be painted both inside and outside with one coat of antirust paint and two coats of approved synthetic enamel paint by spraying, before erection.
- (ix) When a board is connected to voltage higher than 250 V. All the terminals or leads of apparatus to be mounted on it shall be marked in the following colours to indicate the different poles or phases to which the apparatus or its different terminals may have been connected.

<b>Alternating Current -</b>	<b>Three phases -</b>	<b>Red, Yellow &amp; Blue</b>
	<b>Neutral</b>	<b>- Black</b>
<b>Direct Current</b>		
	<b>Neutral</b>	<b>- Two outer wire Red &amp; Blue</b>
		<b>- Black</b>
- (x) When there are more than one switch gear on a switch board or more than one main switch board in the building, each switch gear shall be marked permanently and clearly indicating the section of the installation controlled by it as directed by Engineer-In charge. The main switch shall be marked as such permanently.
- (xi) A Danger Notice Plate shall be provided on L.T. Switch Panel.
- (xii) There shall be a booklet having internal wiring diagram showing details of the connections to facilitate in the maintenance.
- (xiii) The grouting of the L.T. Switch Panel should be carried out as per direction of the Engineer-In charge considering the situation of the site.

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## **CHAPTER IX**

### **TECHNICAL SPECIFICATION FOR RISING MAINS.**

Totally enclosed Rising mains are with aluminium bus bars in suitable sections, which are connected to make a vertical run. Each section is provided with a number of wall straps for fixing the rising mains to the wall. The trunking consists of side channels of 14 SWG M.S. Sheet and front and rear covers of 16 SWG to form a totally enclosed metal clad construction.

The bus bars are of rectangular section of wrought aluminium with a current density not exceeding 800 Amps. Per square inch and are individually insulated with a non-deterioration insulating material such as heat shrink sleeving so as to prevent any possibility of electrical fault due to presence of vermin. The aluminium bus bars conform to I.S. 5082-1969 grade 9-1 EQP. The total run is sectionalized and each section is fitted with a thrust pad to prevent the bus bars from sliding downwards. Each section also has an expansion joint to take up expansion of that section.

Connections between each length are adequately insulated and the casing is provided with earth links between each length to provide earth continuity throughout the run of the rising mains.

Solid risers are provided wherever required for tap-off arrangements and are suitably connected to the outgoing Tap-off boxes. The top end of the Rising main is closed by a blank-end cover and it is possible to extend the mains easily at a later stage if desired.

Wherever the rising mains pass through a floor, a fireproof barrier is to be provided. The sheet steel parts used in manufacture undergo a rigorous rust proofing process and receive two coats of filler oxide primer before painting.

The Rising mains shall be subjected to a high voltage test of 2.5 KV for one minute between each phase and between each phase and neutral.

The Rising mains are suitable for 415 volts 3 phase 4 wires, 50 Hz systems and shall have been successfully tested for a 2.5 MVA short circuit capacity at C.P.R.I. Bangalore/ Bhopal.

The fixing of the rising mains will be done by fixing the suitable size of angle iron bracket of 50 mm x 50 mm x 6 mm size duly painted with synthetic enamel paint to match the colour of rising main. The grouting of the angle iron bracket will be done as to with hold the total load of the rising main and sliding of the same down ward.

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## CHAPTER X

(A) **Miniature Circuit Breakers:** -

The current limiting miniature circuit breakers shall be I.S.I. marked of category 9 /M 3 confirming International Standards of IEC, National Standard IS: 8828-1978, BS-3871 part I and VDE-0641 with Din rail mounting arrangement.

(B) **Distribution Boards:** -

Distribution boards shall be factory fabricated from C.R.C.A. sheet steel duly treated with antirust treatment and stove enameled, fitted with Din Channel, neutral link and electrolytic tin plated copper bus bars of suitable rating and capacity.

## CHAPTER XI

(A) **Fans:** -

The Fans shall be suspended from hooks or shackles by means of suspension rods. Rubber insulators (shackle) shall be provided between the hooks and suspension rods. There shall be no joint in the suspension rod. The canopy on the top of the suspension rod shall hide the suspension. The lead-in-wire from the ceiling rose shall be of 1.5 sq mm aluminium or 1 sq mm copper shall be protected from abrasion. In case, of down rods are fabricated locally they shall be fabricated from B class G.I. pipe.

The fan blades shall be kept at least 2.75 meters above the floor unless specified otherwise.

(B) **Exhaust Fans:** - The exhaust fan point shall be wired as near the place of installation as possible and shall be provided with 15 A switch. The exhaust fan shall have air displacement capacity suitable to provide the required number of air changes. If necessary, more than one exhaust fans shall be provided. The recommended air changes for various services are given in Appendix 5.

The exhaust fan shall be erected so that the dirty gas shall exhaust into the atmosphere. The exhaust fans shall be located such that the complete area is properly ventilated.

The mounting ring shall be fixed by means of rag bolts grouted in the wall. A circular hole suitable to the size of the exhaust fan shall be provided at the proper place in the wall. The hole and other items shall be neatly plastered to the original finish of the room. If desired, a suitable 1.5 mm (16 SWG) thick mild steel cylindrical drum may be grouted in the circular hole. The drum shall be painted with matching colour over a coat of red oxide primer, inner and outer surface.

The exhaust fan shall be connected to the outlet with wire of 2.5 mm aluminium or 1 sq mm copper.

### Testing of Installation

1) **General:** - The following tests, in sequence shall be carried out on completion and the defects revealed shall be made good:

- |                                |                                      |
|--------------------------------|--------------------------------------|
| 1) Polarity Test.              | (3) Earth Continuity Test            |
| 2) Insulation Resistance Test. | (4) Earth Electrode Resistance Test. |

Whenever any addition is made to the fixed wiring of an existing installation, both the addition and that part of the existing installation relating thereto should be tested.

2) **Polarity test of non-linked single pole switch:** -



(i) In a two wire low voltage installation a test shall be made to verify that all non-linked, single pole switches have been fitted in the same conductor throughout and that such conductor has been connected to an outer or phase conductor or to the non-earthed conductor of the supply.

(ii) In a three wire or four wire installation, a test shall be made to verify that non-linked, three pole switch is fitted in a conductor connected to one of the outer or phase conductor of the supply.

**3) Insulation Resistance Test: -**

(i) The insulation resistance shall be measured by applying between earth and the whole system of conductor or any section thereof with all fuses in place and all switches closed and except in earthed concentric wiring, all lamps in position or both poles of installation otherwise electrically connected together a D.C. voltage of not less than twice the working voltage provided that it does not exceed 500 volts for medium voltage circuit. Where the supply is derived from three-wire, A.C. or D.C. or poly-phase system the neutral pole of which is connected to earth direct or through added resistance, the working voltage shall be deemed to be that which is maintained between the outer or phase conductor and the neutral.

(ii) The insulation resistance in mega ohms of an installation measured as in (1) shall be not less than 50 divided by the number of points on the circuit, provided that the whole installation need not be required to have insulation resistance greater than one mega-ohm.

(iii) Control rheostats, heating and power appliances and electric signs may, it desired, be disconnected from the circuit during the test, but in that event the insulation resistance between the case of frame work and all live parts of each rheostat, appliances along with sign shall be not less than half of a mega-ohm.

(iv) The insulation resistance shall also be measured between all conductors connected to one pole or phase conductor of the supply and all the conductors connected to the middle wire or to the neutral or the other pole of phase conductors of supply. Such a test shall be made after removing all metallic connections between the two poles of the installation and in these circumstances, the insulation resistance between conductors of the installation shall be not less than specified in (ii).

(v) On completion of an electric installation (or an extension to an installation) a certificate shall be furnished by the contractor, counter signed by the certified supervisor under whose direct supervision the installation was carried out. This certificate shall be in 3 prescribed forms as required by local electric supply authority and also on form given in **Appendix -3**.

**4) Testing of Earth Continuity Path: -** The earth continuity conductor including metal conduits and metallic envelopes of cables in all cases shall be tested for electric continuity & electric resistance of the same along with the earthing lead but including any added resistance or earth leakage circuit-breaker measured from, the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

**5) Earthed Electrode Resistance Test: -** The following procedure shall be adopted when it is decided to measure the resistance of an earth electrode.

(I) Alternating current of steady value shall be passed between the earth electrode X, which shall be separated from the earthing system or carrying out the test and an auxiliary earth electrode Y, placed at such distance from X that the resistance areas of the two electrodes do not overlap.

(II) A second auxiliary earth electrode, Z, made of 13 mm mild steel and driven up to one meter into the ground shall then be inserted half-way between X and Y and the voltage drop between X and Y measured. The resistance of the earth electrode is then the voltage between X and Z divided by the current flowing between X and Y, provided there is no overlap of the resistance area.

(III) To check, the value of the resistance, two further readings shall be taken with the second auxiliary electrode, Z, moved 5 meters further from and 5 meters nearer to X respectively. If the three results are substantially in agreement, the mean of readings shall be taken as the resistance of

the earth electrode X. If there is no such agreement, the tests shall be repeated with the distance between X and Y increased.

(IV) The test shall be made with a hand driven earth tester, comprising a direct reading ohm-meter, If there is wandering of the pointer of the instrument, the speed of the generator should be increased or decreased as required.

(V) On completion of the electric installation or an extension to the installation, a certificate shall be furnished by the contractor, counter signed by the certified supervisor under whose direct supervision the installation was carried out in prescribed from *Appendix 3*. In addition to this, certificate prescribed by local electricity authorities shall also be given.

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## **COPPER WIRING**

**Introduction:** - Generally all metals are good conductor of electricity. However, copper and aluminium are the only two metals, which are commercially used as conductor material in cables. All types of cables, including house-wiring cables were being imported into India till early 1920. After independence, the Govt. of India embarked on ambitious five-year plans. One of the important infrastructures developed under these plans was, electrical power. The Govt. increased the installed generating capacities and spreaded the supply network to cover more and more towns and villages. The demand for cables and particularly house wiring cables started increasing. Several cable makers established manufacturing units in various part of India to cater to such demands.

Copper has always been natural choice for electrical wiring due to its several superior electrical properties. But a result of Chinese was in 1962, foreign exchange difficulties were faced by India during 60s and Govt. of India had to adopt policies based on the concept of import substitution and restriction on imports. Copper was one of the main targets, since indigenious production of copper was meager and thus for this the country was dependent on imports. Therefore, on 26<sup>th</sup> Dec. 1970 Govt. of India issued an order namely ‘Copper Control Order’, which prohibited the use of copper in the manufacture of house wiring cables. At this stage aluminium house wiring cables were introduce in the country.

But the field performance of aluminium house wiring cable has proved to be extremely unsatisfactory. And in view of the strongly resistance arose in the electrical wiring sector the Govt. of India decided to amend the policy. The Govt. partially modified the copper control order on 13<sup>th</sup> July, 1978 permitting only the small scale cable manufacturers to produce the copper house wiring cables and finally rescinded the “Copper Control Order” on 7<sup>th</sup> May, 1991.

**Why Copper:** - It is left to the description of consumer and concerned technical authorities to use, either aluminium or copper wiring in any building or installation. Now the question arises why copper wiring is preferred than the aluminium wiring. The answer lies in the several important properties of copper that make use of copper cable better than aluminium. The **table 1** given at the end of this chapter shows the superior properties of copper over aluminium.

Some important merites of copper over aluminium are as below:-

- (1) High Electrical Conductivity or Low Electrical Resistivity
- (2) High Thermal Conductivity.
- (3) Low Co-efficient of Expansion
- (4) High Tensile Strength
- (5) High Elastic Modulus
- (6) Low Specific Heat.

(7) High Melting Point.

(1) **Conductivity**: - Conductivity of aluminium is lower than that of copper. For this reason, for same load required aluminium conductors is larger in size as compared to copper conductor.

Though with increased area, the weight of aluminium conductor works out to approx. only 50% of copper conductor. The lower initial price of aluminium does give an advantage, especially, if conductors are in bare form. However, in case of insulated /insulated and sheathed conductors and cables, the price advantage enjoyed by aluminium over copper starts deminishing, since the cost of insulation, in case of aluminium cable, becomes higher due to higher diameter of aluminium cables.

2- **Thermal Conductivity**: - The higher thermal conductivity of copper eliminates hot spots and consequently deterioration of insulation in copper cables is lower than in aluminium cables, thus life of cable is increased.

3- **Co-efficient of linier expansion**: - On heating the PVC and conductor do not expand equally. On cooling the conductor length comes to normal. The cyclic expansion and contraction makes the insulation loose and adhesion is broken. As the expansion in copper cable is lower than aluminium cable, hence the deformation in copper cable is lower than in the aluminium cable, resulting life span increased.

4- **Tensile strength**: - Higher tensile strength allows and copper cable to withstand stretching better than aluminium, so possibility of faults due to stretching is reduced.

5- **Elastic modulus**: - Due to higher modulus of elasticity copper has much strength to resist deformation. This property of copper gives a better joint at terminations where pressure joints are used. Due to higher elasticity of copper the conductor material does not deforms easily and early, under the pressure of grab screw, which reduces the arcing risk.

7- **Specific heat**: - Specific Heat of copper is lower than aluminium. But the higher density of copper (weight of copper in cable of same rating is 2 times that of aluminium) together with the higher conductivity reduces rate of temperature rise in case of fault and over load in copper cables as compared to aluminium cables.

8- **High melting point**: - In case of short circuits fuse blows with a baug / circuit breaker operates to isolate the faulty circuit depending upon the protective gear used. Though the time is short, generally between 2.5 to 30 mili seconds, the short circuit current is many times that of full load current, of the order of 3000 amps. to 6000 amp. There is hardly any cooling of cable in that short time. If the temperature rises to melting level and if the cable melts, it may even lead to fire and disaster.

*Melting temperature* of Copper is  $1083^{\circ}\text{C}$ . and Aluminium is  $660^{\circ}\text{C}$ . The heat required to be generated in the cable in short circuit to bring a conductor of same rating to melting temperature

in copper is 416 900 joules and in Aluminium is 301500 Joules. So, Copper requires 33% more energy than aluminium before it gives way.

The higher melting point of copper is a major advantage. It gives higher short circuit capacity, better reliability, and live expectancy. The oxide formation of the surface is retarded. The fire hazard through melting of conductor and resulting in break in conductor and arcing is reduced in copper.

**Disadvantage of aluminium conductors:** - As above a good comparison is given regarding the technical characteristics of copper and aluminium, bringing out forcefully, why copper is preferred conductor material for cables.

In addition, some field experiences and technical reasons why users faced many difficulties in aluminium house wiring cables are given below.

**vi.** The diameter of aluminium cable used is comparatively, more, which makes handling less convenient.

**vii.** Aluminium requires repetitive in process annealing. If the annealing is not done properly, the wire remains weak and breaks in service. Therefore, while procuring aluminium cable one has to be cautious about this.

**viii.** Aluminium is much less flexible than copper. Thus the chances of its breaking on sharp bends & joints etc. is much higher.

**ix.** The terminations are mostly by “Grab-screw” in switches, sockets, and fittings. In aluminium cables, these joints get loosen very frequently & therefore, these are to be tightened frequently. This periodic tightening in turn accelerates deterioration of the conductor resulting in ‘burns’ or lesser life of installations.

**x.** The terminations are made of copper alloys such as brass and phosphor bronze. In aluminium wiring the junction of two dissimilar metals leads to electro-chemical corrosion” causing shortening of installation life.

**vi.** Aluminium surface forms oxide immediately when it comes in contact with air. This oxide layer is though and bad conductor of electricity. Therefore at termination the cable requires cleaning. The oxide formation in copper is much lower. Further the copper oxide is good conductor of electricity. The terminations of aluminium cables, therefore, require special precautions.

**Conclusion:** - Copper wire, have much better characteristics, which make it much better alternate to aluminium wire. These better characteristics result in less maintenance. The only disadvantage with copper is its marginally higher initial cost as compared to aluminium. This higher initial cost of copper cable, though marginally increases the initial wiring cost, but the copper wiring as a

whole is economical in the longer run, due to enhanced life of wiring, reduced probability of fire hazards & low maintenance cost etc.

**TABLE- 1**

**Superior Properties of Copper Over Aluminium .**

<b>S. No</b>	<b>Property</b>	<b>Copper (C 101)</b>	<b>Aluminum (1350)</b>	<b>Units</b>
1	Electrical Conductivity (annealed)	101	61	% IACS.
2	Electrical Resistivity (annealed)	1.7224	2.83	$\mu$ Ohm Cm.
3	Thermal Conductivity @ 20 <sup>0</sup> C	397	230	W/nk.
4	Co-efficient of expansion	$17 \times 10^{-6}$	$23 \times 10^{-6}$	$^{\circ}$ C
5	Tensile Strength (Annealed)	200- 250	50-60	N/mm sq
6	Elastic modulus	116-130	70	KN/mm sq.
7	Specific Heat	385	900	J/Kg K
8	Melting point	1083	660	$^{\circ}$ C
9	Elongation	30-50	8 (min)	%

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## APPENDIX I

### **Important Clauses of Indian Electricity Rules, 1956. Subject**

<b>Clause: No.</b>	<b>Description</b>
3	Authorization.
29	Construction, installation protection, operation, and maintenance of electric supply lines and apparatus.
31	Cutout on consumer's premises.
32	Identification of earthed and earthed neutral conductors and position of switches and cutouts therein.
33	Earthed terminal on consumer's premises.
33	Handling electric supply lines and apparatus.
41	Distinction of circuits of different voltages.
42	Accidental charge.
43	Provisions applicable to protective equipment.
44	Instructions for restoration of persons suffering from electric shock.
45	Precautions to be adopted by consumers, owners, electrical contractors, electrical work-men and suppliers.
46	Periodical inspection and testing of consumer's installation.
48	Precautions against leakage before connection.
50	Supply to consumers.
51	Provisions applicable to medium, high, or extra high voltage installations.
58	Point of commencement of supply.
59	Precautions against failures of supply, Notice of failures.
61	Connection with earth. (Low and Medium Voltage System).
64	Use of energy at high and extra high voltage.
67	Connection with earth. (High and extra high voltage system).
68	General conditions as to transformation and control of energy. Chapter VIII- Overhead Lines- All clauses.
137	Mode of Entry.
138	Penalty for breaking seal.
139	Penalty for breach of rule 45.
140	Penalty for breach of rule 82.
141	Penalty for breach of rules.

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## APPENDIX 2

### List of Important Indian Standards

#### Conductors and Power Cables

Hard-drawn standard aluminium and steel cored aluminium conductor for overhead power transmission purposes (revised)	:	398-1961
Lift Cables --- --- ---	:	4289-1967
Polyethylene insulated and P.V.C. sheathed cables up to and including 250 V (First revision)	:	1596-1970
	:	
Polyethylene insulated and P.V.C. sheathed (Heavy duty electric cables)/ part I for working voltage up to and including 1100 Volts	:	5959 (Part-I) 1970
Polyvinyl Chloride sleeving for electrical purposes	:	1951-1961
P.V.C. insulated and P.V.C. sheathed solid aluminium conductor cables of voltage rating not exceeding 1100 Volts.	:	4288-1967
	:	
<b><i>P.V.C. insulated cables (for voltage up to 1100 Volts)</i></b>		
Part I- With copper conductor (revised)	:	694 (Part-I) 1964
	:	
Part II- With aluminium conductor (revised)	:	694 (Part –II)
	:	1964.
<b><i>P.V.C. insulated (heavy duty) electric cables.</i></b>		
Part I -For working voltages up to and including 1100 V (revised)	:	1554 (Part-I) 1964
<b><i>Recommended current rating for cables</i></b>		
Part I- Paper insulated and sheathed cables.	:	3961 (Part-I) 1967
	:	
Part II- P.V.C. insulated and P.V.C. sheathed heavy duty cables	:	3961 (Part-II) 1967
Part III- Rubber insulated cables.	:	3961 (Part-III) 1963
Part IV- Polyethylene insulated cables.	:	3961 (Part-IV) 1968
Part V- P.V.C insulated light duty.	:	3961 (Part-V) 1968
Recommended short circuit ratings of high voltage P.V.C. cables	:	5819-1970
<b><i>Rubber-insulated cables</i></b>		
Part I- - With copper conductors (revised)	:	434 (Part-I) 1964

Part II- With aluminium conductors (revised)	:	434 (Part-II) 1964
<b><i>Thermoplastic insulated weather proof cables-</i></b>		
Part I- P.V.C. insulated and P.V.C. sheathed	:	3035 (Part-I) 1965
Part II- Polyethylene insulated, tapped or untapped, braided and compounded.	:	and 3035 (Part II) 1967
Part III- Polyethylene insulated & Polyethylene sheathed <b>Electrical Installation, Codes of Practice.</b>	:	3035 (Part III) 1967
Danger Notice Plate ..... ..	:	2551-1963
<b><i>Design. Installation &amp; Maintenance of overhead power lines.</i></b>		
Part I –Lines up to and including 11 KV, Section Design	:	5613 (Part I/Sec.1970)
Part II –Lines up to and including 11 KV, Section 2 Installation and maintenance	:	5613 (Part I/Sec. 2) 1971
Earthing ... ..	:	3043- 1966
Electrical wiring installations in hospitals	:	7733-1975
Electrical wiring installations (system voltage exceeding 650 V)	:	274-1963
Electrical wiring installations (system voltage exceeding 650 V) (Revised)	:	732-1963
Guide for electrical lay out in residential buildings	:	4648-1968
Guide for making of insulated conductors	:	5578-1970
Guide for short circuit calculations	:	5228-1970
Guide for safety procedures and practice in electrical work	:	5216-1969
Hospital lighting.....	:	4347-1967
Installation and maintenance of induction motors (revised)	:	900-1965
Installation and maintenance of switch gear (first revision)	:	3072-1975
Installation and maintenance of transformers (first revision)	:	1886-1977
Insulating oil, maintenance of	:	1866-1961

Protection of buildings & allied structures against lightning	: 2309-1969
Industrial lighting	: 6665-1972
Selection, installation & maintenance of fuses (Voltage not exceeding 650 Volts)	: 3106-1966
Selection of A.C. induction motor starters (Voltage not exceeding 1000 Volts)	: 3914-1967
Selection of switches (Voltage not exceeding 1000 Volts)	: 5987-1970
Electrical lighting fittings, general & safety requirements for (First revision)	: 1913—1969
<b><i>Flame proof electric lighting fittings</i></b>	
Part I- Well glass and bulkhead type	: 2206-(Part –I) 1962
Flood lights	: 1947-1961
Industrial lighting fittings, with metal reflectors	: 1777-1961
<b><i>Interior Illumination</i></b>	
Part I- Principles for good lighting and aspects of design, code of practice for	: 3646-(Part-I) - 1966
Part II- Schedule of values of Illumination and glare index code of practice for	: 3646-(Part-II) - 1965
Part III- Calculations of co-efficient of utilization by the BZ, method, code of practice for	: 3646-(Part-III) – 1968
Library lighting, code of practice for	2672-1966
Lighting of Public thorough fares, code of practice for (First revision)	: 1944 (Part I & II) 1970.
Luminaires for street lighting (First revision)	: 2149-1970
Waterproof electric lighting fittings	: 3553-1966
<b><i>Lifts and Escalators</i></b>	

Electric Lifts, outline dimensions for (First revision)	: 3534-1966
Electric passenger and goods lifts.	: 4666-1968
Electric service lifts	: 6383-1971
Installation and maintenance of escalators, code of practice for	: 4591-1968
Installation, operation and maintenance of electric passenger and goods lifts, code of practice for	: 1860-1968
Lifts door locking devices and contacts	: 7759-1975
<b><i>Switchgear and control gear</i></b>	:
Air break isolators for voltages not exceeding 1000 Volts (First revision)	: 2607-1967
Carriers and bases used in rewirable type electric fuses up to 650 volts (revised)	: 2086-1963
<b><i>Circuit breakers, AC-</i></b>	
Part I- Requirements section 1 voltage not exceeding 1000 volts	: 2516 (Part I/Sec. I) 1965
Part II- Tests, Section I voltage not exceeding 1000 volts	: 2516 (Part II/Sec. I) 1966
Contractors for voltages not exceeding 1000 V ac or 1200 V dc (First revision)	: 2959-1975
Distribution pillars for voltage not exceeding 1000 V	: 5039-1969
Enclosed distribution fuse boards and cutouts for voltage not exceeding 1000 V (First revision)	: 2675-1966
General requirements for switch gear and control gear voltage not exceeding 1000 V	: 4237-1967
Heavy duty air break switches and composite units of air break switches and fuses for voltage not exceeding 1000 V	: 4047-1967

HRC cartridge fuse links up to 650 V	: 2208-1962
Metal enclosed switchgear and control gear for voltages above 1000 V but not exceeding 1000 V	: 3427-1969
Motor starters, ac of voltages not exceeding 1000 V (First revision)	: 1822-1967
Normal duty air break switches and composite units of air break switches and fuses for voltage not exceeding 1000 V	: 4064-1967
Switchgear bus bars, main connections and auxiliary wiring, marking and arrangement for (revised)	: 375-1963

### ***Wiring Accessories***

Boxes for enclosures of electrical accessories:	:
Part I- Steel and Cast iron boxes	: 5133 (Part –I) 1969
Part II- Boxes made of insulating materials	: 5133 (Part –II) 1969
Ceiling roses (First revision)	: 371-1966
Fittings for rigid steel conduits for electrical wiring (First revision)	: 2667-1976
Flexible steel conduits for electrical wiring	: 3480-1966
Link clips for electrical wiring (First revision)	: 2412-1975
Rigid steel conduits for electrical wiring, accessories for (First revision)	: 3837-1976
Rigid steel conduits for electrical wiring (Second revision)	: 1653-1972
Switch socket outlets (non-interlocking type)	: 4615-1968

### ***Poles***

Tubular poles of overhead power and telecommunication line	: 2713-1964-1980 (Part II)
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### ***General***

Galvanized stay strands	: 2141-1968
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### ***Refrigeration and Air-Conditioning***

Air-Conditioning, safety code for (revised)	: 659-1964
Data for outside design conditions for Air-Conditioning for summer months	: 7896-1975
Evaporated Air coolers (desert coolers) (First revision)	: 3315-1974
Thermal insulation of cold storages, code of practice for (Second revision)	: 661-1974
Metal air ducts (revised)	: 655-1963
Packaged air conditioner	: 8148-1976

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**APPENDIX 3**

**FORM OF COMPLETION CERTIFICATE  
(REFER CLAUSES 107, 314 & 416)**

**Name of Work :**.....

**C.B./W.O. No :**.....**Date:**.....

I/We certify that the installation detailed below has been installed by me/us and tested and that to the best of my/our knowledge and belief, it complies with Indian Electricity Rules, 1956, as well as the U.P.P.W.D.

Specifications for Electrical Works.

Electrical Installation at .....

Voltage and system of supply.....

**I. Particulars of works.**

**A. Internal Electrical Installation.**

	No.	Total Load	Type of System of Wiring
(i) Light Point			
(ii) Fan Point			
(iii) Plug Point			
(a) 3 pin 5 Amp			
(b) 3 pin 15 Amp			

**B. Others:**

	Description	H.P./K.W.	Type of Starting
(a) Motors	(i)		
	(ii)		
	(iii)		

(b) Other Plants:

**C. If the work involves installation of overhead lines and/ or under ground Cables:**

**(a) Overhead lines:**

- (i) Type description of overhead lines
- (ii) Total length and No of spans.
- (iii) No. of streetlights and its description.

**(b) Underground Cables:**

- (i) Total length of under-ground cable and its size
- (ii) No of joints.
  - (b) End Joint.
  - (c) Tee joints:
  - (d) Straight through joints:

**II. Earthing:**

- (i) Description of earthing electrode.
- (ii) No. of earth electrode

(iii) Size of main earth lead.

**III. Test Results:**

**(a) Insulation resistance:**

- (i) Insulation resistance of the whole system of conductors to earth ...Mega ohms
- (ii) Insulation resistance between the phase conductor and neutral
  - between the phase R and neutral ----- Mega ohms
  - between the phase Y and neutral ----- Mega ohms
  - between the phase B and neutral ----- Mega ohms
- (iii) Insulation resistance between the phase conductors in the case of polyphase supply
  - between the phase R and phase Y ----- Mega ohms
  - between the phase Y and phase B ----- Mega ohms
  - between the phase B and phase R ----- Mega ohms

**(b) Polarity Test:**

Polarity of non-linked single pole branch switches

**(c) Earth Continuity test: -**

Maximum resistance between any point in earth continuity conductor including metal conduits and main earthing lead .....Ohm.

**(d) Earth Electrode Resistance:**

Resistance of each electrode

- (i) .....Ohms
- (ii) .....Ohms
- (iii) .....Ohms
- (iv) .....Ohms

**(e) Lightning protective system:**

Resistance of the whole of lightning protective system to earth before any bonding effected with earth electrode and metal in/ on the structure.....

**Signature of Supervisor  
Name and Address**

**Signature of Contractor**

\*\*\*\*\*



**COMPLETION CERTIFICATE**  
**(Refer Clauses -108)**

**Name of Work** :.....  
**C.B./W.O. No:**.....**Date** :.....

I/We certify that the installation detailed below has been installed by me/us and to the best of my/our knowledge and belief, it complies with Indian Electricity Rules, 1956, as well as the U.P.P.W.D specifications for Electrical Works.  
Electrical Installation at .....  
Voltage and system of supply.....  
Test results in the prescribed proforma enclosed ..... Yes/No

Signature of Supervisor  
Name and Address

Signature of Contractor

\*\*\*\*\*

**APPENDIX 5**  
**Recommended Air Changes for Ventilation Per Hour**  
**(Refer Clause 225)**

Assembly Halls	...	...	...	...	...	8-12
Banks	...	...	...	...	...	4-8
Boilers Houses	...	...	...	...	...	40-60
Canteen/Restaurants	...	...	...	...	...	12-20
Cinema /Theaters	...	...	...	...	...	20-30
Factories / Workshop	...	...	...	...	...	12-20
Foundaries	...	...	...	...	...	40-60
Hospitals	...	...	...	...	...	8-12
Kitchens	...	...	...	...	...	20-30
Laboratories	...	...	...	...	...	8-12
Lavatories	...	...	...	...	...	10-15
Photographic dark rooms	...	...	...	...	...	20-30

Twice the Number of air changes must be allowed where smoke occurs.

$$\text{No. of exhaust fans} = \frac{\text{Volume of space} \times \text{Air changes per hour}}{\text{Air delivery of fan per hour}}$$

For better air movement, distribute fans uniformly.

\*\*\*\*\*

**APPENDIX 6 (A)**

Recommended maximum permissible number of 250 V grade single core insulated cables that can be drawn into rigid steel conduits.

**(Clause 6.10 I.)**

Size of Cable		Size of Conduit (mm)											
Nominal cross sectional area mm. <sup>2</sup>	Number and diameter (in mm) of wires	16		20		25		32		40		50	
		(Number of Cables, Max)											
		S	B	S	B	S	B	S	B	S	B	S	B
1.0	1/1.12*	5	4	7	5	13	10	20	14	-	-	-	-
1.5	1/1.40	4	3	7	5	12	10	20	14	-	-	-	-
2.5	1/1.80	3	2	7	5	10	8	18	12	-	-	-	-
	3/1.06*												
4	1/2.24	3	2	4	3	7	8	12	10	-	-	-	-
	7/0.85*												
6	1/2.80	2	-	3	2	6	5	10	8	-	-	-	-
	7/1.06*												
10	1/3.55☼	-	-	2	-	5	4	8	7	-	-	-	-
	7/1.40	-	-	2	-	4	3	6	5	8	6	-	-
16	7/1.70	-	-	-	-	2	-	4	3	7	6	-	-
25	7/2.24	-	-	-	-	-	-	3	2	5	4	8	6

**Note: (1):** -The table shows the maximum capacity of conduits for the simultaneously drawing of cables. The columns headed **S** apply to runs of conduit which have distance not exceeding 4.25 Mt. between draw-in boxes, and which do not deflect from the straight by an angle of more than 15<sup>0</sup>. The column headed **B** apply to runs of conduit, which deflect, from the straight by an angle of more than 15<sup>0</sup>.

**Note: (2) :-**In case of an inspection of type draw-in-box has been provided and if the cable is first drawn through one straight conduit, than through the draw-in-box and then through the second straight conduit, such systems may be considered as that of a straight conduit even if the conduit deflects through the straight by more than 15<sup>0</sup>.

\* *For Copper conductors only.*

☼ *For Aluminium conductors only.*

\*\*\*\*\*

**APPENDIX 6 (B)**

Recommended maximum permissible number of 250 V in grade single core insulated cable that may be drawn into rigid non-metallic conduits.

(Refer Clause 6.10.3 I.)

Size of Cable		Size of Conduit (mm)					
Nominal cross sectional area mm. <sup>2</sup>	Number and diameter (in mm) of wires	16	20	25	32	40	50
		(Number of Cables, Max)					
1.0	1/1.12*	5	7	13	20	-	-
1.5	1/1.40	4	6	10	14	-	-
2.5	1/1.80 3/1.06*	3	5	10	14	-	-
4	1/2.24 7/0.85*	2	3	6	10	14	-
6	1/2.80 7/1.40*	-	2	5	9	11	-
10	1/3.55☼ 7/1.40*	-	-	4	7	9	-
16	7/1.70	-	-	2	4	5	12
25	7/2.24	-	-	-	2	2	6

\* For Copper conductors only.

☼ For Aluminium conductors only.

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**APPENDIX 7**

Cable Test Results (H T and MV /LT to be shown separately)

**Refer Clause 302**

Date of test .....

Voltage of megger used ..... V

Sl No	From	To	Size in sq mm	Voltage Grading	Total length	Results of megger Testing Insulation Resistance in Mega ohms					
						At the time of issue			During laying and Before covering		
						Between Phase conductors	Between Phase conductors and neutral	Between Phase conductors neutral and earth	Between Phase conductors	Between Phase conductors & neutral	Between Phase conductors neutral and earth

**Signature of Supervisor**

**Signature of Contractor**

**APPENDIX 8**

Recommended current ratings as per I.S. 3961 (Part II 1967)

**Aluminium Conductor P.V.C. Insulated P.V.C. Sheathed Armored or Unarmored cable**  
(Refer Clause 301)

Conductor Area	Laid in Ground			In Single way Duct			In Air		
	Single Core (3 Nos)	Twin Single	3 ½ or 4 core single	Single Core (3 Nos)	Twin Single	3 ½ or 4 core single	Single Core (3 Nos)	Twin Single	3 ½ or 4 core single
mm	amp.	amp.	amp.	amp.	amp.	amp.	amp.	amp.	amp.
1.5	17	18	16	17	16	14	15	16	13
2.5	24	25	21	24	21	18	21	21	18
4	31	32	28	30	27	23	27	27	23
6	39	40	35	37	34	30	35	35	30
10	51	55	46	51	45	39	47	47	40
16	66	70	60	65	58	50	64	59	51
25	86	90	76	84	76	63	84	78	70
35	100	110	92	100	92	77	105	99	86
50	120	135	110	115	115	95	130	120	105
70	140	160	135	135	140	115	155	150	130
95	175	190	165	155	170	140	190	185	155
120	195	210	185	170	190	155	220	210	180
150	220	240	210	190	210	175	250	240	205
185	240	275	235	210	240	200	290	275	240
225	260	305	260	220	260	220	320	305	265
240	270	320	275	225	275	235	335	325	280
300	295	355	305	245	305	260	380	365	315
400	325	385	335	275	345	290	435	420	375
500	345	...	365	295	...	315	480	...	420
625	390	...	395	320	...	340	550	..	480

The above current ratings are based on the following assumptions:

- Ground Temperature - 30 C
- Ambient Temperature - 40 C
- Maximum Conductor Temperature - 70 C
- Soil Thermal Resistivity - 150 C cm/W
- Depth of Laying - 75 Cm

\*\*\*\*\*

**Rating Factors**

Cable insulated with thermo-plastic material for example (P.V.C.) may sustain serious damage when subjected, even for relatively short periods, to temperatures, which are appreciably higher than those permissible for continuous operation. Therefore, a precise, evaluation of current rating of the cable should be made.

The current ratings given in Appendix 8 above are for a single cable under defined conditions. The current rating of the cable is affected when laid under conditions different from those defined above. The following rating factors will apply.

**Rating factors for variation in ground temperature**

Ground Temperature 0 C	12	20	25	30	35	40	45	50	55
Rating Factor	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.70	0.60

**Rating factors for variation in ambient temperature**

Ambient Temperature 0 C	25	30	35	40	45	50	55
Rating Factor	1.25	1.16	1.09	1.00	0.90	0.80	0.69

**Rating factors for variation in depth of laying**

Depth of laying	Cables up to 25 sq. mm	Cables above 25 sq mm up to 300 sq mm	Cables above 300 sq. mm
750 mm	1.00	1.00	1.00
900 mm	0.99	0.98	0.97
1050 mm	0.98	0.97	0.96
1200 mm	0.97	0.96	0.95

\*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*

**Aluminium Conductor Steel Reinforced (ACSR) Conductor**

Code word	Standard nominal conductor area	No. of strands /dia. in mm.		Approx. total weight per km.	Approx. Tensile strength of conductor	Standard resistance per km. at 20 <sup>0</sup> C	Current Rating
		Aluminium	Steel				
	sq. mm.	mm.	mm.	Kg	Kg	Ohms	Amp.
Squirrel	13	6/2.11	1/2.11	85	771	1.374	76
Gopher	16	6/2.36	1/2.36	106	952	1.098	85
Weasel	20	6/2.59	1/2.59	128	1136	0.9116	95
Ferret	25	6/3.00	1/3.00	171	1503	0.6795	115
Rabbit	30	6/3.35	1/3.35	214	1860	0.5449	135
Mink	40	6/3.66	1/3.66	255	2207	0.4565	165
Beaver	45	6/3.99	1/3.99	303	2613	0.3841	176
Recon	48	6/4.09	1/4.09	318	2746	0.3656	180
Otter	50	6/4.22	1/4.22	339	2923	0.3434	185
Cat	55	6/4.50	1/4.50	385	3324	0.3020	195
Dog	65	6/4.72	7/1.57	394	3299	0.2745	205

The current ratings are based on the following operating conditions:

Ambient Temperature --- 35<sup>0</sup>C  
 Intensity of Solar Radiation --- 0.089 w/cm<sup>2</sup>  
 Maxi. Conductor Temp. --- 75<sup>0</sup>C  
 Surface Condition --- Black (weathered)

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**APPENDIX 11**  
(Refer Clause 605)

**TABLE- 1**

*Shapes and minimum sizes of conductors for use above ground*

S.No.	Material and Shape	Minimum Size
1	Round Copper Wire	6 mm diameter
2	Stranded Copper Wire	50 sq. mm (or 7/3.00 mm diameter)
3	Copper Strip	20 mm x 3 mm
4	Round Galvanized Iron Wire	8 mm diameter
5	Galvanized Iron Strip	20 mm x 3 mm

\*\*\*\*\*

**TABLE - 2**

*Shapes and minimum sizes of conductors for use below ground*

S.No.	Material and Shape	Minimum Size
1	Round Copper Wire	8 mm diameter
2	Copper Strip	32 mm x 6 mm
3	Round Galvanized Iron Wire	10mm diameter
4	Galvanized Iron Strip	32 mm x 6 mm

**Testing of Galvanizing of steel conductors.**

Take a solution of two parts of copper sulphate and five part of water. Dip the test piece seven times, each time for duration of one minute. Rinse the test piece with water carefully after each dipping and inspect. There should not be formed any continuous coating of copper. The coating of zinc should not crack when the test piece is wound on a cylinder of 50 mm diameter.

\* \* \* \* \*  
\* \* \* \*  
\* \* \* \* \* \*

**APPENDIX 12**



**Recommended Current Rating of Aluminium /Copper Conductor P.V.C. Insulated Cable.**

Size of cable in sq. mm.	Aluminium Conductor Cable Bunched in Conduit Trunking		Copper Conductor Cable Bunched in Conduit Trunking	
	Rated Current in Amp.	Maxi. Permissible current in Amp.	Rated Current in Amp.	Maxi. Permissible current in Amp.
1	-	-	11	8
1.5	11	8	13	10
2.5	15	11	18	13
4	19	14	24	18
6	24	18	31	23
10	33	25	42	31
16	46	35	56	42
25	58	44	74	55

The above current ratings are based on the following assumptions:-

- (a) Ambient Temperature --- 40<sup>0</sup> C
- (b) Maxi. Conductor Temp. --- 70<sup>0</sup> C
- (c) Thermal Resistivity of P.V.C. --- 650<sup>0</sup> C cm/w

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**APPENDIX 13**

**Maxi. Resistance of Aluminium & Copper Conductor Cable at 20<sup>0</sup> C**

Nominal Cross Sectional Area sq. mm.	Maxi. Resistance of Conductor at 20 <sup>0</sup> C (Ohms/Km.)		
	Aluminium Conductor		Copper Conductor
	Single Core	Multi Core	Single Core
1.0	34.8	35.4	20.8
1.5	22.2	22.7	13.3
2.5	12.1	12.4	7.27
4	7.55	7.7	4.52
6	4.99	5.09	3.02
10	2.96	3.02	1.79
16	1.87	1.91	1.13
25	1.18	1.20	0.712
35	-	0.868	-
50	-	0.641	-
70	-	0.443	-
95	-	0.320	-
120	-	0.253	-
150	-	0.206	-
185	-	0.164	-
240	-	0.125	-
300	-	0.100	-
400	-	0.0778	-

1- For calculating voltage drop following formula shall be used: -

(a) For single phase load voltage drop  $V = 2 I R L$

(b) For 3 phase load voltage drop  $V = \sqrt{3} I R L$

Where I = Load current in Amps. , R= Resistance of Cable/ Conductor  
in Ohms/ Mtr. and L= Route Length in Mtr.

2- Load on cable/conductor should be restricted to the limit of maximum permissible current, which should be worked out on the basis of tables of appendix 8, 10 and 12 respectively.

\*\*\*

## CHAPTER 1

## WIRING POINTS

Schedule	Description of Item	Unit	Complete	Labour
Item No.			Rate	Rate
<b>1- Wiring Points in Surface Conduit with PVC insulated 1100 V grade cable.</b>				
121	Wiring point for light with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire , GP Box , piano type switch and ceiling rose/angle/ batten holder on 3 mm. thick phenolic laminated bakelite-sheet etc. complete in all respect, as directed.		Deleted	
121(A)	Same as in item 121 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.		Deleted	
121(B)	Wiring point for light with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 14 SWG copper earth continuity wire,GP Box ,piano type switch and ceiling rose/angle/ batten holder on 3 mm. thick phenolic laminated bakelite sheet etc. complete in all respect, as directed .	each	750.00	134.00
121 (C)	Same as in item 121 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	571.00	112.00
122	Wiring points for two ways light with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire 2 nos. 2 way piano type switches & ceiling rose/angle/ batten holder on 3mm. thick phenolic laminated bakelite sheet etc. complete in all respect, as directed.		Deleted	
122 (A)	Same as in item 122 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.		Deleted	
122(B)	Wiring points for two ways light with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 14 SWG copper earth continuity wire, GP Box , two ways 2 nos. piano type switches & ceiling rose/ angle/ batten holder on 3mm. thick phenolic laminated bakelite sheet etc., complete in all respect, as directed.	each	943.00	138.00
122 (C)	Same as in item 122 B but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	750.00	92.00
123	Wiring point for fan /fresh air fan (light duty exhaust fan) with 1.5 sq. mm PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire,GP Box , piano type switch & ceiling rose on 3 mm. thick phenolic laminated bakelite sheet etc, complete in all respect.		Deleted	

123(A)	Same as in item 123 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
123 (B)	Wiring point for fan /fresh air fan (light duty exhaust fan) with 1.5 sq.mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface complete with 14 SWG copper earth continuity wire, piano type switch & ceiling rose on 3 mm. thick phenolic laminated bakelite sheet etc, complete in all respect.	each	852.00	149.00
123 (C)	Same as in item 123 (B)but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	622.00	121.00
124	Wiring Point for plug with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire ,GP Box , GP Box and piano type switch and socket etc. complete in all respect.	Deleted		
124(A)	Same as in item 124 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
124(B)	Wiring Point for plug with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface,complete with 14 SWG copper earth continuity wire , GP Box and piano type switch and socket etc. complete in all respect.	each	392.00	67.00
124 (C)	Same as in item 124 (B)but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	304.00	56.00
125	Wiring Point for call bell with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire and piano type bell push or 2 pin socket etc. complete in all respect.	Deleted		
125(A)	Same as in item 125 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit	Deleted		
125 (B)	Wiring point for call bell with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 14 SWG copper earth continuity wire ,GP Box , and piano type bell push or 2 pin socket etc. complete in all respect.	each	723.00	134.00
125 (C)	Same as in item 125 (B)but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	544.00	112.00

126	Wiring point for H.P.M.V./ Sodium Vapour lamp with 2.5 sq.mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface, complete with 8 SWG GI earth continuity wire, GP Box , and 15 A piano type switch etc. complete in all respect.	Deleted		
126 (A)	Same as in item 126 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
126 (B)	Wiring point for H.P.M.V./ Sodium Vapour lamp with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface complete with 14 SWG copper earth continuity wire,GP Box , and 15 A piano type switch etc. complete in all respect.	each	1205.00	224.00
126 (C)	As in item 126 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	906.00	192.00
127	Wiring point for exhaust fan with 2.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe on surface complete with 8 SWG GI earth continuity wire,GP Box , 15 A piano type switch & ceiling rose on 3 mm thick phenolic laminated bakelite sheet etc, complete in all respect.	Deleted		
127(A)	Same as in item 127 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
127(B)	Wiring point for exhaust fan with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe on surface complete with 14 SWG copper earth continuity wire, 15 A piano type switch & ceiling rose on 3 mm.thick phenolic laminated bakelite sheet etc, complete in all respect.	each	1006.00	224.00
127(C)	Same as in item 127 (B) but in PVC conduit with 1.5 sq. mm. FRLSH. PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	766.00	192.00
<b>2- Wiring Point in concealed conduit in wall</b>				
131	Wiring point for light with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 8 SWG GI earth continuity wire,GP Box , piano type switch & ceiling rose/angle/batten holder on 3 mm. thick phenolic laminated bakelite sheet etc., complete in all respects, as directed including matching colour wash.	Deleted		
131(A)	Same as in item 131 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		

131(B)	Wiring point for light with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 14 SWG copper earth continuity wire,GP Box , piano type switch & ceiling rose/ angle/batten holder on 3 mm thick phenolic laminated bakelite sheet etc., complete in all respect, as directed including matching colour wash.	each	829.00	262.00
131 (C)	Same as in item 131 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	643.00	219.00
132	Wiring Point for two ways light with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 8 SWG GI earth continuity wire, GP Box ,& two numbers two ways piano type switches & ceiling rose/angle/ batten holder on 3 mm thick phenolic laminated bakelite sheet etc., complete in all respect, as directed, .including matching colour wash.	Deleted		
132(A)	Same as in item 132 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
132(B)	Wiring point for two ways light with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 14 SWG copper earth continuity wire and two numbers two ways piano type switches & ceiling rose/angle/batten holder on 3 mm thick phenolic laminated bakelite sheet etc, complete in all respect, as directed, including matching colour wash.	each	1012.00	267.00
132(C)	Same as in item 132 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	801.00	219.00
133	Wiring point for fan / fresh air fan (light duty exhaust fan) with 1.5 sqmm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel concealed in the wall, complete with 8 SWG GI earth continuity wire,GP Box , piano type switch & ceiling rose on 3 mm thick phenolic laminated bakelite sheet etc complete in all respect, including, matching colour wash.	Deleted		
133 (A)	Same as in item 133 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
133(B)	Wiring point for fan / fesh air fan (light duty exhaust fan) with 1.5 sq.mm. FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 14 SWG copper earth continuity wire,GP Box , piano type switch & ceiling rose on 3 mm thick phenolic laminated bakelite sheet etc complete in all respect, including matching colour wash.	each	947.00	262.00

133 (C)	Same as in item 133 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	708.00	219.00
134	Wiring point for plug with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 8 SWG GI earth continuity wire, piano type switch and socket etc. complete in all respect including matching colour wash.	Deleted		
134(A)	Same as in item 134 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
134(B)	Wiring point for plug with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 14 SWG copper earth continuity wire,GP Box , piano type switch and socket etc. complete in all respect including matching colour wash.	each	441.00	131.00
134 (C)	Same as in item 134 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	335.00	91.00
135	Wiring point for call bell with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 8 SWG GI earth continuity wire GP Box , and piano type bell push or 2 pin socket etc. complete in all respect including matching colour wash.	Deleted		
135(A)	Same as in item 135 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
135 (B)	Wiring point for call bell with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe concealed in the wall, complete with 14 SWG copper earth continuity wire and piano type bell push or 2 pin socket etc., complete in all respect including matching colour wash.	each	805.00	262.00
135 (C)	Same as in item 135(B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated copper conductor cable as earthwire drawn inside the conduit.	each	585.00	219.00
136	Wiring point for HPMV./Sodium vapour lamp with 2.5 sq.mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 8 SWG GI earth continuity wire GP Box , and 15 A piano type switch etc. complete in all respect including matching colour wash.	Deleted		
136(A)	Same as in item 136 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		

136 (B)	Wiring point for H.P.M.V./ Sodium Vapour lamp with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 14 SWG copper earth continuity wire and 15 A piano type switch etc. complete in all respect including matching colour wash.	each	1397.00	412.00
136 (C)	Same as in item 136 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	997.00	332.00
137	Wiring point for exhaust fan with 2.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 8 SWG GI earth continuity wire GP Box , and 15 A piano type switch & ceiling rose on 3 mm thick phenolic laminated sheet etc complete in all respects including matching colour wash.	Deleted		
137 (A)	Same as in item 137 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
137 (B)	Wiring point for exhaust fan with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit concealed in the wall, complete with 14 SWG copper earth continuity wire, GP Box , 15 A piano type switch and ceiling rose on 3 mm thick phenolic laminated backelite sheet etc. complete in all respect including mathcing colour wash.	each	1194.00	412.00
137 (C)	Same as in item 137 (B)but in PVC conduit with 1.5 sq. mm. F.R. insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	900.00	332.00
<b>3- Wiring Points in Conduit Partly Laid in slab and partly Concealed in Wall.</b>				
138	Wiring point for light with 1.5 sq.mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe partly concealed in the wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire,GP Box , piano type switch & ceiling rose/angle/batten holder on 3 mm thick phenolic laminated backelite sheet etc. complete in all respect, as directed, including matching colour wash.	Deleted		
138(A)	Same as in item 138 but in PVC conduit with 1.5 sq mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		



138 (B)	Wiring point for light with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe partly concealed in the wall and partly laid in slab alongwith the reinforcement before concreting, complete with 14 SWG copper earth continuity wire,GP Box, piano type switch & ceiling rose/angle/batten holder on 3mm thick phenolic paminated backelite sheet etc complete in all respect as directed including matching colour wash.	each	810.00	227.00
138 (C)	Same as in item 138 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside.	each	610.00	184.00
139	Wiring point for two ways light with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit pipe partly concealed in the wall and partly laid in slab along with the reinforcement before concreting complete with 8 SWG GI earth continuity wire GP Box , and two number two way piano type switches & ceiling rose /angle / batten holder on 3 mm thick phenolic laminated backelite sheet etc. complete in all respect, as directed, including matching colour wash.	Deleted		
139(A)	Same as in item 139 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside.	Deleted		
139 (B)	Wiring point for two ways light with 1.5 sq. mm. F.R. PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit pipe partly concealed in the wall and partly laid in slab alongwith the reinforcement before concreting, complete with 14 SWG copper earth continuity wire , GP Box and two number two way piano type switches & ceiling rose / angle / batten holder on 3 mm thick phanolic laminated backelite sheet etc., complete in all respect, as directed, including matching colour wash.	each	986.00	232.00
139 (C)	Same as in item 139(B)but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	791.00	189.00
140	Wiring point for fan / fresh air fan (light duty exhaust fan) with 1.5 sqmm PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire, piano type switch and ceiling rose on 3 mm. thick phenolic laminated backelite sheet etc, complete in all respect including matching colour wash.	Deleted		
140(A)	Same as in item 140 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		

140 (B)	Wiring point for fan / fresh air fan (light duty exhaust fan) with 1.5 sq.mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 14 SWG copper earth continuity wire,GP Box , piano type switch & ceiling rose on 3 mm. thick backelite sheet etc., complete in all respect including matching colour wash.	each	904.000	227.00
140 (C)	Same as in item 140 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	671.000	184.00
141	Wiring Point for plug with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire, GP Box & piano type switch and socket etc, complete in all respect including matching colour wash.	Deleted		
141 (A)	Same as in item 141 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
141 (B)	Wiring point for plug with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with14 SWG copper earth continuity wire and piano type switch and socket etc., complete in all respect including matching colour wash.	each	422.000	113.00
141 (C)	Same as in item 141(B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	327.000	92.00
142	Wiring Point for call bell with 1.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire GP Box ,and piano type bell push or 2 pin socket etc., complete in all respect including matching colour wash.	Deleted		
142(A)	Same as in item 142 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
142 (B)	Wiring point for call bell with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting complete with 14 SWG copper earth continuity wire GP Box and piano type bell push or 2 pin socket etc, complete in all respect including matching colour wash.	each	785.000	227.00

142 (C)	Same as in item 142 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	572.000	184.00
143	Wiring point for H.P.M.V./ Sodium Vapour lamp with 2.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire,GP Box and 15 A piano type switch etc., complete in all respect including matching colour wash.	Deleted		
143(A)	Same as in item 143 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
143 (B)	Wiring point for H.P.M.V./ Sodium Vapour lamp with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 14 SWG copper earth continuity wire and 15 A piano type switch etc.,complete in all respect including matching colour wash.	each	1310.000	342.00
143 (C)	Same as in item 143 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	925.000	262.00
144	Wiring point for exhaust fan with 2.5 sq. mm. PVC insulated single core aluminium conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 8 SWG GI earth continuity wire,GP Box , 15A piano type switch & ceiling rose on 3 mm thick phenolic laminated backelite sheet etc, complete in all respect including matching colour wash.	Deleted		
144(A)	Same as in item 144 but in PVC conduit with 1.5 sq. mm.PVC insulated aluminium conductor cable as earthwire drawn inside the conduit.	Deleted		
144 (B)	Wiring point for exhaust fan with 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable in heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith the reinforcement before concreting, complete with 14 SWG copper earth continuity wire,GP Box , 15A piano type switch & ceiling rose on 3 mm thick phenolic laminated backelite sheet etc., complete in all respect including matching colour wash.	each	1118.00	342.00
144 (C)	Same as in item 144 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earthwire drawn inside the conduit.	each	893.00	262.00
<b>(4) Conduiting and Wiring separately</b>				
<b>(A) For Vertical Drops of Light, Fan and Plug Points</b>				
145	<b>Deleted</b>			

146	<b>Deleted</b>			
147	<b>Deleted</b>			
<b>(B) Laying of conduit pipes in wall for total concealed light fan, plug points and for concealed sub mains</b>				
148	Supply and fixing and concealing of 20 mm dia. 16 SWG (1.5 mm.) thick rigid steel conduit pipe in the wall including cutting of brick work, laying of conduit and fixing it with M.S. hooks and then plastering with cement, sand mortar finished to the level, with matching colour wash including cost of proper threading of the conduit & providing necessary socket, bends and chuck nuts and as directed by the Engineer in charge with the supply of all material labour and T&P required for proper completion of work.	Metre	133.00	30.00
148 (A)	Supply and fixing and concealing of 20 mm dia. 2mm thick PVC conduit pipe with ISI mark embossed and with PVC accessories confirming to IS No. 3419 for drawing wires duly sealed at joints with original resin / adhesive to make the complete piping rigid, plastering with cement sand mortar finished to the level with matching colour wash including cost of all material labour and T&P etc required for proper completion of the work as per directions and to the satisfaction of Engineer in charge.	Metre	62.00	28.00
149	Same as in item 148, but 25mm dia 16 SWG (1.5 mm) thick rigid steel conduit.	Metre	156.00	30.00
149(A)	Same as in item 148 (A) but 25 mm dia 2 mm thick PVC conduit.	Metre	72.00	28.00
150	Same as in item 148, but 32 mm dia 16 SWG (1.5 mm) thick rigid steel conduit.	Metre	218.00	32.00
150(A)	Same as in item 148 (A) but 32 mm dia. PVC conduit.	Metre	87.00	29.00
151	Same as in item 148, but 40 mm dia 14 SWG (2.0 mm) thick rigid steel conduit.	Metre	336.00	36.00
151(A)	Same as in item 148 A, but 40 mm dia (2.0 mm) thick P V C conduit.	Metre	114.00	32.00
152	Same as in item 148, but 50 mm dia 14 SWG (2.0 mm) thick rigid steel conduit.	Metre	466.00	41.00
152(A)	Same as in item 148 A, but 50 mm dia (2.0 mm) thick P V C conduit.	Metre	159.00	36.00
153	Supply and fixing of 8 SWG GI wire along with steel conduit pipe duly bound with earth clops as directed by the Enginner in charge with supply of all material labour and T&P required for proper completion of work.	Metre	15.00	7.00
153 (A)	Supply+ and fixing of 14 SWG copper wire along with conduit pipe duly bound with earthclops as directed at site by Engineer in charge with supply of all the material labour and T&P etc required for proper completion of work.	Metre	26.00	7.00
153 (B)	Same as in itme 153(A) But 10 SWG Copper Wire.	Metre	63.00	7.00

154	Supply and fixing of 2/3/4 ways round Steel junction box confirming to ISS for 20mm dia 16 gauge conduit concealed in wall, keeping its level upto plaster duly provided with proper size cover, screwed as directed at site by the Engineer I/C with supply of all material labour and T&P required for proper completion of work.	each	31.00	7.00
154 (A)	Supply and fixing of 2/3/4 ways round PVC junction box confirming to ISS for 20mm dia PVC conduit concealed in wall, keeping its level upto plaster duly provided with proper size cover, screwed as directed at site by the Engineer I/C with supply of all the material, labour and T&P required for proper completion of work.	each	25.00	3.00
155	Same as in item 154, but for 25 mm dia 16 gauge (1.5 mm) thick rigid steel conduit.	each	40.00	8.00
155(A)	Same as in item 154 (A) but for 25 mm dia. PVC conduit.	each	27.00	3.00
156	Same as in item 154, but for 32 mm dia 16 gauge(1.5 mm) thick rigid steel conduit.	each	67.00	10.00
156(A)	Same as in item 154 (A) but for 32 mm dia. PVC conduit.	each	36.00	3.00
157	Same as in item 154 but for 40 mm dia 14 gauge (2.0 mm) thick rigid steel conduit.	each	105.00	11.00
157 (A)	Same as in item 154 but for 40 mm dia 2.0 mm thick P V C conduit.	each	47.00	4.00
158	Same as in item 154 but for 50 mm dia 14 gauge (2.0 mm) thick rigid steel conduit.	each	155.00	13.00
158(A)	Same as in item 154 but for 50 mm dia 2.0 mm thick P V C conduit.	each	58.00	5.00
<b>(C) G.P. Switch Boxes</b>				
159	Supply and fixing of switch box 100 x 100 x 50 mm size of approved make made up of 1.0 mm thick ISI Marked G.P.sheet All 4 corners folded & spot welded for screw and holes plugged with PVC Nylon Caps . Two or more holes for pipe entry of 25.4 mm on upper and lower sides of the box. Holes shuld be semi-shuttered type and fitted with heavy brass Earth Piller duly screwed & brand name should be embossed. Box flushed in wall including cutting of brick work, fixing it to the level with cement sand mortar, including matching colour wash with s/o all materials, labour and T&P required for proper completion of work as directed at site by the Engineer in charge.	each	98.00	29.00
160	Same as in item No 159 but of 150 x 150 x 65 mm size	each	130.00	32.00
161	Same as in item No 159 but of but size 175 x 100 x 65 mm size	each	156.00	36.00
162	Same as in item No 159 but of but size 200 x 250 x 65 mm size	each	172.00	42.00
163	Same as in item No 159 but of but size 250 x 250 x 65 mm size	each	244.00	44.00
164	Same as in item No 159 but of but size 250 x 300 x 65 mm size	each	236.00	65.00

165	Same as in item No 159 but of but size 300 x 375 x 65 mm size	each	313.00	91.00
166	Same as in item No 159 but of but size 300 x 450 x 65 mm size	each	391.00	124.00
<b>(D) Concealed points using Existing Concealed Conduit and M.S. Boxes for Switch Boards</b>				
174	Wiring point for light in 1.5 sq. mm. PVC insulated single core aluminium conductor cable (drawn through existing concealed steel conduit) and 5 Amp. flush type switch & ceiling rose/angle/batten holder fixed with 3mm thick phenolic laminated bakelite sheet with brass machine screws and cup washers mounted over existing M.S. switch board box/junction box with supply of all material, labour and T&P etc. required for proper completion of the work as directed at site by the Engineer in charge.	Deleted		
174 (A)	Same as in item 174 but in PVC conduit with 1.5 sq mm PVC insulated aluminium conductor cable as earth wire drawn inside conduit.	Deleted		
174(B)	Wiring point for light in 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable (drawn through existing concealed steel conduit) and 5 Amp.flush type switch & ceiling rose/angle/batten holder fixed with 3mm thick phenolic laminated bakelite sheet with brass machine screws and cup washers mounted over existing M.S. switch board box/ junction box with supply of all material, labour & T&P etc. required for proper completion of the work as directed at site by the Engineer in charge.	each	350.00	69.00
174(C)	Same as in item 174 (B) but in PVC conduit with 1.5 sq.mm.FRLSH PVC insulated multistrand copper conductor cable as earth wire drawn inside conduit.	each	390.00	69.00
175	Same as in item 174 but for call bell.	Deleted		
175(A)	Same as in item 174 (A) but for call bell.	Deleted		
175(B)	Same as in item 174 (B) but for call bell	each	313.00	69.00
175(C)	Same as in item 174 (C) but for call bell	each	377.00	69.00
176	Same as in item 174 but for two ways light point with two no.2 way flush type switches.	Deleted		
176(A)	Same as in item 176 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earth wire drawn inside conduit.	Deleted		
176(B)	Same as in item 174 (B) but for two ways light point with two no. 2 way flush type switches.	each	475.00	79.00
176(C)	Same as in item 176 (B) but in PVC conduit with 1.5 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth wire drawn inside conduit.	each	519.00	79.00
177	Same as in item no.174 but for ceiling fan.	Deleted		
177(A)	Same as in item no.174 (A) but for ceiling fan.	Deleted		

177(B)	Same as in item no.174 (B) but for ceiling fan.	each	379.00	69.00
177(C)	Same as in item no.174 (C) but for ceiling fan.	each	428.00	69.00
178	Same as in item 174 but for plug point with 5 Amp flush type switch and 3 pin socket and earth continuity wire of 1.5 sq. mm. PVC insulated aluminium conductor cable.	Deleted		
178(A)	Same as in item 178 but in PVC conduit.	Deleted		
178(B)	Same as in item 174(B) but for plug point with 5 Amp flush type switch and 3 pin socket and earth continuity wire of 1.5 sq.mm. FRLSH PVC insulated multi strand copper conductor cable.	each	188.00	34.00
178(C)	Same as in item 178 (B)but in PVC conduit .	each	214.00	34.00
179	Wiring point for exhaust fan in 2.5 sq. mm. PVC insulated single core aluminium conductor cable (drawn through existing concealed steel conduit) and 15 Amp flush type switch & ceiling rose fixed with 3 mm thick phenolic laminated bakalite sheet with brass machine screws and cup washers mounted over the existing M.S. box / junction box required for proper completion of the work, as directed at site by the Engineer in charge.	Deleted		
179(A)	Same as in item 179 but in PVC conduit with 1.5 sq.mm. PVC insulated aluminium conductor cable as earth wire drawn inside conduit.	Deleted		
179(B)	Wiring point for exhaust fan in 1.5 sq. mm.FRLSH PVC insulated multistrand single core copper conductor cable (drawn through existing concealed conduit) and 15 Amp flush type switch & ceiling rose fixed with 3 mm thick phenolic laminated bakalite sheet with brass machine screws and cup washers mounted over the existing M.S. box/ Junction box required for proper completion of the work as directed at site by the Engineer in charge.	each	468.00	75.00
179(C)	Same as in item 179 (B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth wire drawn inside conduit.	each	505.00	75.00
180	Same as in item no. 179 but for H.P.M.V./ S.V. lamp with 15A piano type switch.	Deleted		
180(A)	Same as in item 180 but in PVC conduit with 1.5 sq. mm. PVC insulated aluminium conductor cable as earth wire drawn inside conduit.	Deleted		
180(B)	Same as in item no. 179 (B) but for H.P.M.V./S.V. lamp with 15A piano type switch.	each	493.00	75.00
180(C)	Same as in item 180(B) but in PVC conduit with 1.5 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth wire drawn inside conduit.	each	550.00	75.00

<b>(5) Miscellaneous items.</b>				
183 (A)	Add for extra high of the ceiling above 4.2 metre in rate of S.I. of wiring point for light, fan and exhaust fan for each 1m successive height or part there of, for wiring on surface with aluminium cable in steel conduit.	Deleted		
183 (B)	Same as above but partly laid in slab & partly concealed in wall wiring with aluminium cable in steel conduit.	Deleted		
183 (C)	Same as above but wiring on surface with aluminium cable in PVC conduit.	Deleted		
183(D)	Same as above but partly laid in slab & partly concealed in wall wiring with aluminium cable in PVC conduit.	Deleted		
183 (E)	Same as above but wiring on surface with copper cable in steel conduit.	RM	97.00	19.00
183 (F)	Same as above but partly laid in slab & partly concealed in wall wiring with copper cable in steel conduit.	RM	109.00	36.00
183 (G)	Same as above wiring on surface with copper cable in PVC conduit.	RM	66.00	17.00
183(H)	Same as above but partly laid in slab & partly concealed in wall wiring with copper cable in PVC conduit.	RM	77.00	33.00
184	Supply and fixing of asbestos cement sheet 5mm thick on existing box with steel screws including all the labour, material and T&P etc. required for proper completion of work.	Deleted		
185(I)	Supply and fixing of PVC corrugated conduits of 16 mm outer dia mtr. on surface as sleeving including all labour, T&P etc. required for proper completion of work as per direction and satisfaction of Engineer in charge.	RM	18.00	13.00
185 (II)	Same as above but conduit of 20mm outer diameter.	RM	20.00	13.00
185(III)	Same as above but conduit of 25mm outer diameter.	RM	24.00	13.00
185(IV)	Same as above but conduit of 32mm outer diameter.	RM	31.00	15.00
185 (V)	Same as above but conduit of 40mm outer diameter.	RM	35.00	15.00
185(VI)	Same as above but conduit of 50mm outer diameter.	RM	46.00	17.00
186 (A)	Deduct for concealed wirings run on surface, for steel conduit .	RM	-10.00	-14.00
186 (B)	Deduct for concealed wirings run on surface, for PVC conduit.	RM	-10.00	-15.00
<b>Addition when modular type switches etc. are used in place of piano type switches etc. in various wiring points.</b>				
187 (A)	Add for light / fan points with modular type switch in place of piano type switch.	each	44.00	-
187 (B)	Add for 2 way light point with modular switches in place of piano type switches.	each	165.00	-
187 (C)	Add for plug point with modular switch & socket in place of piano type switch & socket.	each	83.00	-



187 (D)	Add for HPMV/Exhaust fan point with modular type switch in place of piano type switch.	each	47.00	-
187 (E)	Add for Call bell point with modular type bell push in place of piano type bell push.	each	80.00	-
<b><i>Deduction when PVC casing capping used in place of PVC conduit on surface wiring.</i></b>				
188 (A)	For light / 2 way / call bell point.	each	4.00	-
188 (B)	For Fan /fresh air fan point.	each	4.00	-
188 (C)	For Plug point.	each	2.00	-
188 (D)	For HPMV/ Sodium vapour light point.	each	8.00	-
188 (E)	For Exhaust fan point.	each	5.00	-
189	Add for Invertor Wiring in wiring Point for light/ Fan/ Plug with 1.5 mm AI Wire	Deleted		
189 (A)	Add for Invertor Wiring in wiring Point for light/ Fan/ Plug with 1.5 mm Cu Wire	each	132.00	25.00

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Bd1nkj yK1M1k bR; kn l ffe1yr g1

## CHAPTER 2

### SUB MAINS

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
<i>1- Submain in conduit on surface( 2 wire 1100 V Grade)</i>				
211	Supply and wiring of submain with two number 4 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire, etc. complete in all respect.	Metre	Deleted	
211(A)	As in item no. 211, but in 20mm dia heavy duty (2mm thick) PVC conduit with one number 2.5 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Metre	Deleted	
211(B)	Supply and wiring of submain with two number 4 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit on surface, with one number 14 SWG copper earth continuity wire, complete in all respect.	Metre	224.00	28.00
211(C)	As in item no. 211 (B) but in 20mm dia heavy duty (2mm thick) PVC conduit with one number 2.5 sq. mm. multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	153.00	23.00
212	Supply and wiring of submain with two number 6 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire, etc complete in all respect.	Deleted		
212 (A)	As in item no. 212 but in 25 mm dia heavy duty (2mm thick) PVC conduit with one number 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
212(B)	Supply and wiring of submain with two number 6 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit on surface, with one number 14 SWG copper earth continuity wire etc., complete in all respect.	Metre	262.00	28.00
212(C)	As in item no. 212 (B) but in 25mm dia heavy duty (2mm thick) PVC conduit with one number 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	210.00	23.00

213	Supply and wiring of submain with two number 10 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25mm dia heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire etc.complete in all respect.	Deleted		
213(A)	As in item no.213 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one number 6 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
213(B)	Supply and wiring of submain with two number 10 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25mm dia heavy guage rigid steel conduit on surface, with one number 10 SWG copper earth continuity wire etc. complete in all respect.	Metre	374.00	31.00
213(C)	As in item no. 213 (B) but in 25 mm dia heavy duty (2 mm thick ) PVC conduit with one number 6 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	274.00	25.00
214	Supply and wiring of submain with two number 16 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25mm dia heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire etc. complete in all respect.	Deleted		
214(A)	As in item no.214 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one number 10 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
214(B)	Supply and wiring of submain with two number 16sq.mm.FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25mm dia heavy guage rigid steel conduit on surface, with one number 10 SWG copper earth continuity wire etc. complete in all respect.	Metre	456.00	31.00
214(C)	As in item no. 214(B) but in 32 mm dia heavy duty (2 mm thick ) PVC conduit with one number 10 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	393.00	25.00
215	Supply and wiring of submain with two number 25 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire etc.complete in all respect.	Deleted		
215(A)	As in item no.215 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one number 16 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		

215 (B)	Supply and wiring of combine of submain with two no. 25 sqmm. FRLSH PVC insulated 1100V grade multistandard single core copper conductor cable in 32 mm. dia heavy guage rigid steel conduit on surface, with one no. 10 SWG copper earth continuity wire etc. complete in all respect.	Metre	669.00	47.00
215 (C)	As in item no. 215(B) but in 32 mm dia heavy duty (2 mm thick ) PVC conduit with one number 16 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	519.00	33.00
<b>(2) Submain in conduit concealed in wall (2 wire 1100 V Grade)</b>				
216	Supply and wiring of submain with two number 4 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
216(A)	As in item no.216 but in 20 mm dia heavy duty (2 mm thick) PVC conduit with one No. 2.5 sq.mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
216(B)	Supply and wiring of submain with two number 4 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 14 SWG copper earth continuity wire including matching colour wash etc., complete in all respect.	Metre	231.00	39.00
216(C)	As in item no. 216 (B) but in 20 mm dia heavy duty (2 mm thick) PVC conduit with one No. 2.5 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	158.00	31.00
217	Supply and wiring of submain with two number 6 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
217(A)	As in item no. 217 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one No. 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
217(B)	Supply and wiring of submain with two number 6 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 14 SWG copper earth continuity wire etc. complete in all respect.	Metre	263.00	39.00

217(C)	As in item no. 217(B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one No.4 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	215.00	32.00
218	Supply and wiring of submain with two number 10 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 8 SWG GI earth continuity wire etc. complete in all respect.	Deleted		
218(A)	As in item no.218 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one No.6 sq.mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
218(B)	Supply and wiring of submain with two number 10 sq.mm.FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 10 SWG copper earth continuity wire etc. complete in all respect.	Metre	380.00	42.00
218(C)	As in item no. 218 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one No.6 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	277.00	32.00
219	Supply and wiring of submain with two number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 8 SWG GI earth continuity wire etc. complete in all respect.	Deleted		
219 (A)	As in item no.219 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no. 10 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
219(B)	Supply and wiring of submain with two number 16sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 10 SWG copper earth continuity wire etc.including matching colour wash complete in all respect.	Metre	461.00	42.00
219(C)	As in item no. 217 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one number 10 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	399.00	36.00
220	Supply and wiring of submain with two number 25 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		

220(A)	As in item no.220 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no. 16 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
220 (B)	Supply and wiring of submain with two nos. 25 sq.mm. FRLSH PVC insulated 1100 V grade multi strand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit concealed in wall, complete with one number 10 SWG copper earth continuity wire including matching with colour wash etc complete in all respect.	Metre	671.00	55.00
220 (C)	As in item no. 220 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one number 16 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	573.00	39.00
<b>(3) Submain in conduit (partly laid in slab and partly concealed in wall ( 2 Wire 1100 V Grade)</b>				
221	Supply and wiring of submain with two number 4 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
221(A)	As in item no. 221 but in 20 mm dia (2 mm thick) PVC conduit with one number 2.5 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
221(B)	Supply and wiring of submain with two number 4 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with one number 14 SWG copper earth continuity wire including matching colour wash etc. complete in all respect.	Metre	221.00	35.00
221(C)	As in item no. 221(B) but in 20 mm dia heavy duty (2 mm thick) PVC conduit with one no. 2.5 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	149.00	27.00
222	Supply and wiring of submain with two number 6 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
222(A)	As in item no. 222 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one number 4 sq. mm.PVC insulated aluminium conductor cable as earth contuinity wire drawn in conduit.	Deleted		

222(B)	Supply and wiring of submain with two number 6 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core aluminium conductor cable in 20 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with one number 14 SWG copper earth continuity wire including matching colour wash etc. complete in all respect.	Metre	256.00	35.00
222(C)	As in item no. 222 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one number 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	204.00	27.00
223	Supply and wiring of submain with two number 10 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
223(A)	As in item no. 223 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one number 6 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
223(B)	Supply and wiring of submain with two number 10sq.mm.FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia heavy gauge rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with one number 10 SWG copper earth continuity wire including matching colour wash etc. complete in all respect.	Metre	376.00	42.00
223(C)	As in item no. 223 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with one No.6 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	272.00	32.00
224	Supply and wiring of submain with 2 nos 16 sq mm PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with one number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
224(A)	As in item no. 224 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no.10 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		

224(B)	Supply and wiring of submain with two number 16sq.mm.FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab along with partly concealed in wall and partly laid in slab along with reinforcement before concreting, with one number 10 SWG copper earth continuity wire including matching colour wash etc. complete in all respect.	Metre	459.00	42.00
224(C)	As in item no. 224 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no.10 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	395.00	35.00
225	Supply and wiring of submain with two number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with one number 8 SWG GI earth continuity wire including matching colour wash etc complete in all respect.	Deleted		
225(A)	As in item no. 225 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no.16 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
225(B)	Supply and wiring of submain with 2 nos 25 sq mm FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit party concealed in wall and partly laid inslab along with reinforcement before concreting, with one no 10 SWG copper earth continuity wire, including matching colour wash etc., complete in all respect.	Metre	666.00	52.00
225 (C)	As in item no. 225 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with one no.16 sq. mm.FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	463.00	41.00
<b>(4) Submain in conduit on surface (3 Wire 1100 V Grade)</b>				
231	Supply and wiring of 3 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit on surface with two number 8 SWG GI earth continuity wire etc complete in all respect.	Deleted		
231(A)	As in item no.231 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		



231(B)	Supply and wiring of 3 numbers 4 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number 14 SWG copper earth continuity wire etc., complete in all respect.	Metre	302.00	31.00
231(C)	As in item no.231(B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	224.00	25.00
232	Supply and wiring of 3 number 6 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit on surface with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
232(A)	As in item no.232 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
232(B)	Supply and wiring of 3 number 6 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number 14 SWG copper earth continuity wire etc, complete in all respect.	Metre	353.00	31.00
232(C)	As in item no.232 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	292.00	25.00
233	Supply and wiring of 3 number 10 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit on surface with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
233(A)	As in item no.232 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
233(B)	Supply and wiring of 3 number 10 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with two number 10 SWG copper earth continuity wire etc, complete in all respect.	Metre	574.00	38.00
233(C)	As in item no. 232 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	416.00	29.00
234	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 40 mm dia heavy guage rigid steel conduit on surface with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		

234(A)	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 40 mm dia heavy guage PVC conduit on surface with two number 10mm PVC insulated single core aluminium conductor cable as earth continuity wire drawn in conduit etc, complete in all respect.	Deleted		
234(B)	Supply and wiring of 3 number 16 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 40mm dia heavy guage rigid steel conduit on surface, with two number 10 SWG copper earth continuity wire etc, complete in all respect	Metre	813.00	38.00
234(C)	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core copper conductor cable in 40 mm dia heavy guage PVC conduit on surface with two number 10mm PVC insulated single core Copper conductor cable as earth continuity wire drawn in conduit etc, complete in all respect.	Metre	607.00	29.00
235	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
235 (A)	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia PVC conduit on surface, with two number 16mm Single core aluminium conductor calbe as earth continuity wire drawn in conduit.	Deleted		
235 (B)	Supply and wiring of 3 nos 25 sq mm FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 50 mm dia heavy guage rgid steel conduit on surface, with two nos. 10 SWG copper earth continuity wire etc.complete in all respect.	Metre	1141.00	47.00
236 (C)	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core Copper conductor cable in 50 mm dia PVC conduit on surface, with two number 16mm Single core Copper conductor cable as earth continuity wire drawn in conduit.	Metre	931.00	33.00
<b>(5) Submain in conduit concealed in wall (3 Wire 1100 V Grade)</b>				
256	Supply and wiring of 3 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall with two number 8 SWG GI earth continuity wire, including matching colour wash etc., complete in all respect.	Deleted		
256(A)	As in item no.256 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq. mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		

256(B)	Supply and wiring of 3 number 4 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall with two number 14 SWG copper earth continuity wire, including matching colour wash etc, complete in all respect.	Metre	308.00	40.00
256(C)	As in item no. 256 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	229.00	35.00
257	Supply and wiring of 3 number 6 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall with two number 8 SWG GI earth continuity wire, including matching colour wash etc, complete in all respect.	Deleted		
257 (A)	Same as in item no 257 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq mm PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit including matching colour wash etc. complete in all respect.	Deleted		
257(B)	Supply and wiring of 3 number 6 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall with two number 14 SWG copper earth continuity wire, including matching colour wash etc, complete in all respect.	Metre	362.00	40.00
257(C)	As in item no. 257 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect.	Metre	299.00	35.00
258	Supply and wiring of 3 number 10 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit concealed in wall with two number 8 SWG GI earth continuity wire, including matching colour wash etc., complete in all respect.	Deleted		
258(A)	As in item no.258 but in 32mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
258(B)	Supply and wiring of 3 number 10 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit concealed in wall with two number 10 SWG copper earth continuity wire etc, complete in all respect.	Metre	578.00	49.00
258(C)	As in item no. 258 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	422.00	40.00

259	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 40 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
259(A)	As in item no.259 but in heavy duty (2 mm thick) PVC conduit with 2 nos 10 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
259(B)	Supply and wiring of 3 number 16 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 40 mm dia heavy guage rigid steel conduit concealed in wall, with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	818.00	49.00
259(C)	As in item no.259 (B) but in heavy duty (2 mm thick) PVC conduit with 2 nos 10 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Metre	613.00	40.00
260	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
260(A)	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia PVC conduit concealed in wall, with two number 16mm Single core aluminium conductor cable in earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect.	Deleted		
260 (B)	Supply and wiring of 3 number 25 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 50 mm dia heavy guage rigid steel conduit concealed in wall with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect	Metre	1140.00	53.00
260 (C)	Supply and wiring of 3 number 25 sq. mm. PVC insulated 1100V grade single core Copper conductor cable in 50 mm dia PVC conduit concealed in wall, with two number 16mm Single core Copper conductor cable in earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect	Metre	932.00	40.00

<b>(6) Submain in conduit partly laid in slab and partly concealed in wall (3 wire 1100 V grade)</b>				
261	Supply and wiring of 3 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect	Deleted		
261(A)	As in item no.261 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
261(B)	Supply and wiring of 3 number 4 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with two number 14 SWG copper earth continuity wire including matching colour wash etc, complete in all respect	Metre	297.00	35.00
261(C)	As in item no. 261 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	217.00	30.00
262	Supply and wiring of 3 number 6 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect	Deleted		
262(A)	As in item no.262 but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
262(B)	Supply and wiring of 3 number 6 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 14 SWG copper earth continuity wire, including matching colour wash etc, complete in all respect.	Metre	344.00	35.00
262(C)	As in item no. 262 (B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	290.00	30.00

263	Supply and wiring of 3 number 10 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy gauge rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
263(A)	As in item no.263 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
263(B)	Supply and wiring of 3 nos. 10 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 32 mm dia heavy gauge rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	508.00	42.00
263(C)	As in item no. 263 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	413.00	35.00
264	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 40 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
264(A)	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 40 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting,with two number 10mm single core aluminium conductor cable as earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect.	Deleted		
264(B)	Supply and wiring of 3 number 16sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 40 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	695.00	42.00
264(C)	Supply and wiring of 3 number 16 sq. mm. PVC insulated 1100V grade single core copper conductor cable in 40 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10mm single core copper conductor cable as earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect.	Metre	571.00	35.00

265	Supply and wiring of 3 number 25 sq.mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
265(A)	Supply and wiring of 3 number 25 sq.mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with two number 16sq mm single core aluminium conductor calbe as earth continuity wire drawn in conduit including matching colour wash etc, complete in all respect.	Deleted		
265 (B)	Supply and wiring of 3 numbers 25 sq. mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 50 mm dia heavy guage rigid steel conduit partly concealed in wall & partly laid in slab alongwith reinforcement before concreting, with two nos 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	1136.00	52.00
266 (C)	Supply and wiring of 3 number 25 sq.mm. PVC insulated 1100V grade single core Copper conductor cable in 50 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab along with reinforcement before concreting, with two number 16sq mm single core Copper conductor calbe as earth continuity wire drawn in coudit including matching colour wash etc, complete in all respect.	Metre	824.00	46.00
<b>(7) Submain in conduit on Surface (4 Wire 1100 V Grade)</b>				
266	Supply and wiring of 4 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
266(A)	As in item no.266 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
266(B)	Supply and wiring of 4 number 4 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number14 SWG copper earth continuity wire etc, complete in all respect.	Metre	343.00	36.00
266(C)	As in item no. 266 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	273.00	28.00

267	Supply and wiring of 4 number 6 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit on surface with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
267(A)	As in item no.267 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
267(B)	Supply and wiring of 4 number 6 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number14 SWG copper earth continuity wire etc, complete in all respect.	Metre	413.00	36.00
267(C)	As in item no. 267 (B) but in 32 mm dia heavy duty (2 mm thick) FRLSH PVC conduit with 2 nos 4 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	361.00	28.00
268	Supply and wiring of 4 number 10 sq. mm. FRLSH PVC insulated 1100 V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
268(A)	Supply and wiring of 4 number 10 sq. mm.FRLSH PVC insulated 1100 V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with two number 6 sq mm single core aluminium conductor cable as earth continuity wire drawn in coudit, complete in all respect.	Deleted		
268(B)	Supply and wiring of 4 number 10sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with two number 10 SWG copper continuity wire etc, complete in all respect..	Metre	650.00	43.00
268(C)	Supply and wiring of 4 number 10 sq. mm. FRLSH PVC insulated 1100 V grade single core Copper conductor cable in 32 mm dia heavy guage rigid steel conduit on surface, with two number 6 sq mm single core Copper conductor cable as earth continuity wire drawn in coudit , complete in all respect.	Metre	488.00	31.00
269	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		



269(A)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia PVC conduit on surface, with two number 10sq mm single core aluminium conductor cable as earth continuity wire drawn in conduit. complete in all respect.	Deleted		
269(B)	Supply and wiring of 4 number 16 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 40 mm dia heavy gauge rigid steel conduit on surface, with two number 10 SWG copper earth continuity wire etc, complete in all respect.	Metre	930.00	43.00
269(C)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core Copper conductor cable in 40 mm dia PVC conduit on surface, with two number 10sq mm single core Copper conductor cable as earth continuity wire drawn in conduit , complete in all respect.	Metre	721.00	31.00
270	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 50mm dia heavy gauge rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc, complete in all respect.	Deleted		
270 (A)	Supply and wiring of 4 number 25 sq. mm. FRLSH PVC insulated 1100 V grade single core aluminium conductor cable in 50mm dia PVC conduit on surface, with two number 16sqmm single core aluminium conductor cable as earth continuity wire drawn in conduit.complete in all respect.	Deleted		
270 (B)	Supply and wiring of 4 numbers, 25 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 50 mm dia heavy gauge rigid steel conduit on surface, with 2 nos 10 SWG copper earth continuity wire etc, complete in all respect.	Metre	1335.00	63.00
270 (C)	Supply and wiring of 4 number 25 sq. mm.FRLSH PVC insulated 1100 V grade single core Copper conductor cable in 50mm dia PVC conduit on surface, with two number 16sqmm single core Copper conductor cable as earth continuity wire drawn in conduit.complete in all respect.	Metre	1117.00	38.00
<b><i>(8) Submain in conduit concealed in wall (4 Wire 1100 V Grade)</i></b>				
271	Supply and wiring of 4 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy gauge rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
271(A)	As in item no.271 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq. mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		

271(B)	Supply and wiring of 4 number 4 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25mm dia heavy guage rigid steel conduit concealed in wall,with two number 14 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	347.00	47.00
271(C)	As in item no. 271 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	279.00	37.00
272	Supply and wiring of 4 number 6 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
272(A)	As in item no.272 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
272(B)	Supply and wiring of 4 number 6 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25mm dia heavy guage rigid steel conduit concealed in wall, with two number 14 SWG copper earth continuity wire including matching colour wash etc.complete in all respect.	Metre	416.00	47.00
272(C)	As in item no. 272 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq.mm. FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	367.00	37.00
273	Supply and wiring of 4 number 10 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 32 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete complete in all respect.	Deleted		
273(A)	As in item no. 273 but in heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
273(B)	Supply and wiring of 4 number 10 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 32mm dia dia heavy guage rigid steel conduit concealed in wall, with two number10 SWG copper earth continuity wire including matching colour matching colour wash etc, complete in all respect.	Metre	660.00	59.00

273(C)	As in item no. 273(B) but in heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated copper conductor cable as earth continuity wire drawn in conduit.	Metre	497.00	42.00
274	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire including matching colour wash etc., complete in all respect.	Deleted		
274(A)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia PVC conduit concealed in wall, with two number 10 sqmm single core aluminium conductor cable as earth continuity wire drawn in couduit including matching colour wash etc., complete in all respect.	Deleted		
274(B)	Supply and wiring of 4 number 16 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 40mm dia heavy guage rigid steel conduit concealed in wall, with two number 10 SWG copper earth continuity wire including matching colour wash etc. complete in all respect.	Metre	945.00	63.00
274(C)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core Copper conductor cable in 40 mm dia PVC conduit concealed in wall, with two number 10 sqmm single core Copper conductor cable as earth continuity wire drawn in couduit including matching colour wash etc., complete in all respect.	Metre	730.00	42.00
275	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit concealed in wall, with two number 8 SWG GI earth continuity wire drawn in couduit including matching colour wash etc. complete in all respect.	Deleted		
275(A)	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 50 mm dia PVC conduit concealed in wall, with two number 16sq mm single core aluminium conductor cable as earth continuity wire drawn in couduit including matching colour wash etc. complete in all respect.	Deleted		
275 (B)	Supply and wiring of 4 number 25 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 50 mm dia heavy guage rigid steel conduit concealed in wall, with 2 nos 10 SWG copper earth continuity wire, including matching colour wash etc, complete in all respect.	Metre	1336.00	69.00
276 (C)	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100V grade single core copper conductor cable in 50 mm dia PVC conduit concealed in wall, with two number 16sq mm single core copper conductor cable as earth continuity wire drawn in couduit including matching colour wash etc. complete in all respect.	Metre	1125.00	49.00

<b>(9) Submain in conduit partly laid in slab and partly concealed in wall (4 Wire 1100 V Grade)</b>				
276	Supply and wiring of 4 number 4 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc.complete in all respect.	Deleted		
276(A)	As in item no. 276 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq.mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
276(B)	Supply and wiring of 4 number 4 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 14 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	334.00	39.00
276(C)	As in item no. 276(B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 2.5 sq. mm. FRLSH PVC insulated multistrand copper conductor cable earth continuity wire drawn in conduit.	Metre	272.00	35.00
277	Supply and wiring of 4 number 6 sq. mm. PVC insulated 1100V grade single core aluminium conductor cable in 25 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting with two number 8 SWG GI earth continuity wire including matching colour wash etc. complete in all respect.	Deleted		
277(A)	As in item no.277 but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq. mm. PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.	Deleted		
277(B)	Supply and wiring of 4 number 6 sq.mm. FRLSH PVC insulated 1100V grade multistrand single core copper conductor cable in 25 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 14 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	410.00	42.00
277(C)	As in item no. 277 (B) but in 32 mm dia heavy duty (2 mm thick) PVC conduit with 2 nos 4 sq.mm.FRLSH PVC insulated multistrand copper conductor cable as earth continuity wire drawn in conduit.	Metre	360.00	35.00
278	Supply and wiring of 4 number 10 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 32 mm dia heavy gauge rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting with two number 8 SWG GI earth continuity wire including matching colour	Deleted		

	wash etc, complete in all respect.				
278(A)	As in item no. 278 but in heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm.PVC insulated aluminium conductor cable as earth continuity wire drawn in conduit.		Deleted		
278(B)	Supply and wiring of 4 number 10 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 32 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	637.00	46.00	
278(C)	As in item no. 278 (B) but in heavy duty (2 mm thick) PVC conduit with 2 nos 6 sq.mm. FRLSH PVC insulated copper conductor cable as earth continuity wire drawn in conduit.	Metre	505.00	42.00	
279	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.		Deleted		
279(A)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 40 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10 sq mm single core aluminium conductor cable as earth continuity wire drawn in couduit including matching colour wash etc, complete in all respect.		Deleted		
279(B)	Supply and wiring of 4 number 16 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 40 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	924.00	46.00	
279(C)	Supply and wiring of 4 number 16 sq. mm. PVC insulated 1100 V grade single core Copper conductor cable in 40 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting, with two number 10 sq mm single core Copper conductor cable as earth continuity wiredrawn in couduit including matching colour wash etc, complete in all respect.	Metre	723.00	42.00	

280	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 50 mm dia heavy guage rigid steel conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting with two number 8 SWG GI earth continuity wire including matching colour wash etc, complete in all respect.	Deleted		
280(A)	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in 50 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting with two number 16sq mm single core aluminium conductor cable as earth continuity wire drawn in couduit including matching colour wash etc, complete in all respect.	Deleted		
280 (B)	Supply and wiring of 4 numbers, 25 sq. mm. FRLSH PVC insulated 1100 V grade multi strand single core copper conductor cable in 50mm dia heavy guage rigid steel conduit partly concealed in wall & partly laid in slab along with reinforcement before concreting, with 2 nos 10 SWG copper earth continuity wire including matching colour wash etc, complete in all respect.	Metre	1325.00	62.00
280 (C)	Supply and wiring of 4 number 25 sq. mm. PVC insulated 1100 V grade single core copper conductor cable in 50 mm dia PVC conduit partly concealed in wall and partly laid in slab alongwith reinforcement before concreting with two number 16sq mm single core copper conductor cable as earth continuity wire drawn in couduit including matching colour wash etc, complete in all respect.	Metre	1118.00	46.00
<b>(10) Laying of conduit in slab</b>				
281	Supply and laying of 20 mm dia heavy guage 16 SWG (1.5 mm thick) rigid steel conduit complete with bends and other accessories as required and 14 SWG fish steel wire etc. in slab alongwith reinforcement, before concreting and plastering etc.complete in all respect.	Metre	104.00	17.00
281(A)	As in item no. 281 but heavy duty (2 mm thick) PVC conduit of 20mm dia. .	Metre	39.00	16.00
282	Supply and laying of 25 mm dia heavy guage 16 SWG (1.5 mm thick) rigid steel conduit complete with bends and other accessories as required and 14 SWG fish steel wire etc in slab alongwith reinforcement before concreting and plastering etc, complete in all respect.	Metre	116.00	17.00
282(A)	As in item no. 282 but heavy duty (2 mm thick) PVC conduit of 25 mm dia.	Metre	50.00	16.00
283	Supply and laying of 32 mm dia heavy guage 16 SWG (1.5 mm thick) rigid steel conduit complete with bend and other accessories as required and 14 SWG fish steel wire etc. in slab alongwith reinforcement before concreting, and plastering etc, complete in all respect.	Metre	178.00	21.00
283(A)	As in item no. 283 but heavy duty PVC (2 mm thick) conduit of 32 mm dia.	Metre	66.00	19.00

284	Supply and laying of 40 mm dia heavy guage 14 SWG (2 mm thick) rigid steel conduit complete with bend and other accessories as required and 14 SWG fish steel wire etc. in slab alongwith reinforcement before concreting, and plastering etc, complete in all respect.	Metre	288.00	22.00
284(A)	As in item no. 284 but heavy duty PVC (2 mm thick) conduit of 40 mm dia.	Metre	85.00	19.00
285	Supply and laying of 50mm dia heavy guage 14 SWG (2 mm thick) rigid steel conduit complete with bend and other accessories as required and 14 SWG fish steel wire etc. in slab alongwith reinforcement before concreting, and plastering etc,complete in all respect.	Metre	420.00	27.00
285(A)	As in item no. 285 but heavy duty PVC (2 mm thick) conduit of 50 mm dia.	Metre	127.00	20.00
286	Add in item no. 281 to 285 for 8 SWG GI wire duly bound with the conduit with binding wire etc.	Metre	13.00	3.00
286(A)	Add in item no. 281 to 285 for 14 SWG copper wire duly bound with the conduit with binding wire etc.	Metre	23.00	3.00
286(B)	Add in item no. 281 to 285 for 10 SWG copper wire duly bound with the conduit with binding wire etc.	Metre	59.00	3.00
287	Supply and fixing of 76/63 mm deep M.S. junction box for the conduit laid in slab alongwith reinforcement before concreting and plastering complete in all respect.	Metre	53.00	3.00
287(A)	Same as in item no. 287 but 63 deep PVC heavy duty long neck type junction box.	Metre	38.00	5.00
<b>(11) Wiring of Submains with Aluminium cable using existing steel conduit.</b>				
288	Supply and Wiring of submains with two nos. of 2.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in existing steel conduit complete with supply of all material labour & T&P required for proper completion of the work as directed at site by Engineer in charge.		Deleted	
288(A)	Same as in item no. 288 but with 2 nos. 4 sq. mm.PVC insulated cable.		Deleted	
288(B)	Same as in item no. 288 but with 3 nos. 4 sq. mm. PVC insulated cable.		Deleted	
288(C)	Same as in item no. 288 but with 4 nos. 4 sq. mm. PVC insulated cable.		Deleted	
288(D)	Same as in item no. 288 but with 2 nos. 6 sq. mm. PVC insulated cable.		Deleted	
288(E)	Same as in item no. 288 but with 3 nos. 6 sq. mm. PVC insulated cable.		Deleted	
288(F)	Same as in itme no. 288 but with 4 nos. 6 sq. mm. PVC insulated cable.		Deleted	
288(G)	Same as in itme no. 288 but with 2 nos. 10 sq. mm. PVC insulated cable.		Deleted	
288(H)	Same as in itme no. 288 but with 3 nos. 10 sq. mm. PVC insulated cable.		Deleted	
288(I)	Same as in item no. 288 but with 4 nos. 10 sq. mm.		Deleted	

	PVC insulated cable			
288(J)	Same as in itme no. 288 but with 2 nos. 16 sq. mm. PVC insulated cable		Deleted	
288(K)	Same as in itme no. 288 but with 3 nos. 16 sq. mm. PVC insulated cable.		Deleted	
288(L)	Same as in itme no. 288 but with 4 nos. 16 sq. mm. PVC insulated cable.		Deleted	
288(M)	Same as in itme no. 288 but with 2 nos. 25 sq. mm. PVC insulated cable.		Deleted	
288(N)	Same as in itme no. 288 but with 3 nos. 25 sq. mm. PVC insulated cable.		Deleted	
288(O)	Same as in itme no. 288 but with 4 nos. 25 sq. mm. PVC insulated cable.		Deleted	
288 (P)	Same as in itme no. 288 but with 3 nos. 2.5 sq. mm. PVC insulated cable.		Deleted	
288 (Q)	Same as in itme no. 288 but with 4 nos. 2.5 sq. mm. PVC insulated cable.		Deleted	
<b>(12)</b>	<b>Wiring of Submains with copper cable using existing steel conduit .</b>			
289	Supply and Wiring of submains with two nos. of 2.5 sq. mm.FRLSH PVC insulated 1100 V grade single core multistrand copper conductor cable in existing conduit complete with supply of all material labour and T&P required for proper completion of the work as directed at site by Engineer in charge.	Metre	55.00	6.00
289(A)	Same as in itme no. 289 but with 2 nos. 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	78.00	6.00
289(B)	Same as in itme no. 289 but with 3 nos. 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	114.00	7.00
289(C)	Same as in itme no. 289 but with 4 nos. 4 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	151.00	7.00
289(D)	Same as in itme no. 289 but with 2 nos. 6 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	114.00	6.00
289(E)	Same as in itme no. 289 but with 3 nos. 6 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	169.00	7.00
289(F)	Same as in itme no. 289 but with 4 nos. 6 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	224.00	7.00
289(G)	Same as in itme no. 289 but with 2 nos. 10 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	169.00	7.00
289(H)	Same as in itme no. 289 but with 3 nos. 10 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	252.00	8.00
289(I)	Same as in item no. 289 but with 4 nos. 10 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	334.00	9.00



289(J)	Same as in item no. 289 but with 2 nos. 16 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	262.00	8.00
289(K)	Same as in item no. 289 but with 3 nos. 16 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	390.00	9.00
289(L)	Same as in item no. 289 but with 4 nos. 16 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	518.00	10.00
289(M)	Same as in item no. 289 but with 2 nos. 25 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	412.00	9.00
289(N)	Same as in item no. 289 but with 3 nos 25 sq mm FRLSH PVC insulated multistrand copper conductor cable.	Metre	615.00	10.00
289(O)	Same as in item no. 289 but with 4 nos. 25 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	818.00	12.00
289(P)	Same as in item no. 289 but with 3 nos. 2.5 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	80.00	7.00
289(Q)	Same as in item no. 289 but with 4 nos. 2.5 sq. mm. FRLSH PVC insulated multistrand copper conductor cable.	Metre	105.00	7.00
<b>(13) Wiring of Submains with aluminium cable using existing PVC conduit</b>				
290	Supply and wiring of submains with two nos. of 2.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable in existing conduit with one no 1.5 sq. mm. 1100 V grade single core aluminium conductor cable as earth wire drawn inside conduit, complete with supply of all material, labour and T & P etc. required for proper completion of the work as directed by Engineer in charge.		Deleted	
290(A)	Same as in item 290 but with 2 nos. 4 sq. mm. and 1 no. 2.5 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(B)	Same as in item 290 but with 3 nos. 4 sq. mm. and 2 nos 2.5 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(C)	Same as in item 290 but with 4 nos. 4 sq. mm. and 2 nos 2.5 sq. mm PVC insulated aluminium conductor cable.		Deleted	
290(D)	Same as in item 290 but with 2 nos. 6 sq. mm. and 1 no. 4 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(E)	Same as in item 290 but with 3 nos. 6 sq. mm. and 2 nos 4 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(F)	Same as in item 290 but with 4 nos. 6 sq. mm. and 2 nos. 4 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(G)	Same as in item 290 but with 2 nos. 10 sq. mm. and 1 no 6 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(H)	Same as in item 290 but with 3 nos. 10 sq. mm. and 2 nos. 6 sq. mm. PVC insulated aluminium conductor		Deleted	

	cable.			
290(I)	Same as in item 290 but with 4 nos. 10 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(J)	Same as in item 290 but with 2 nos.16 sq. mm. & 1 no.10 sq. mm. PVC insulated alluminium conductor cable.		Deleted	
290(K)	Same as in item 290 but with 3 nos. 16 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(L)	Same as in item 290 but with 4 nos. 16 sq. mm. PVC insulated alluminium conductor cable.		Deleted	
290(M)	Same as in item 290 but with 2 nos. 25 sq. mm.& 1 no. 16 sq mm PVC insulated alluminium conductor cable.		Deleted	
290(N)	Same as in item 290 but with 3 nos. 25 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(O)	Same as in item 290 but with 4 nos. 25 sq. mm. PVC insulated aluminium conductor cable.		Deleted	
290(P)	Same as in item 290 but with 3 nos. 2.5 sq. mm.& 2 nos. 1.5 sq mm PVC insulated aluminium conductor cable.		Deleted	
290(Q)	Same as in item 290 but with 4 nos. 2.5 sq. mm.& 2 nos. 1.5 sq mm PVC insulated aluminium conductor cable.		Deleted	
<b>14)</b>	<b>Wiring of Submains with copper cable using existing PVC conduit</b>			
291	Supply and wiring of submains with 2 nos. 2.5 sq mm & with 1 no earth wire of 1.5 sq mm FRLSH PVC insulated 1100 V grade single core multistrand copper conductor cable in existing PVC conduit complete, including supply of all material, labour and T & P etc. required for proper completion of the work as directed by Engineer in charge.	Metre	70.00	7.00
291 (A)	Same as in item 291 but with 2 nos. 4 sq mm and 1 no 2.5 sq mm FRLSH PVC insulated copper conductor cable.	Metre	103.00	7.00
291 (B)	Same as in item 291 but with 3 nos. 4 sq mm and 2 nos. 2.5 sq mm FRLSH PVC insulated copper conductor cable.	Metre	165.00	7.00
291 (C)	Same as in item 291 but with 4 nos. 4 sq mm and 2 nos. 2.5 sq mm FRLSH PVC insulated copper conductor cable.	Metre	201.00	8.00
291 (D)	Same as in item 291 but with 2 nos. 6 sq mm and 1 no 4 sq mm FRLSH PVC insulated copper conductor cable.	Metre	151.00	7.00
291 (E)	Same as in item 291 but with 3 nos. 6 sq mm and 2 nos. 4 sq mm FRLSH PVC insulated copper conductor cable.	Metre	243.00	7.00
291 (F)	Same as in item 291 but with 4 nos. 6 sq mm and 2 nos. 4 sq mm FRLSH PVC insulated copper conductor cable.	Metre	297.00	8.00
291 (G)	Same as in item 291 but with 2 nos. 10 sq mm and 1 no 6 sq mm FRLSH PVC insulated copper conductor cable.	Metre	226.00	8.00

291 (H)	Same as in item 291 but with 3 nos. 10 sq mm and 2 nos. 6 sq mm FRLSH PVC insulated copper conductor cable.	Metre	364.00	9.00
291 (I)	Same as in item 291 but with 4 nos. 10 sq mm FRLSH PVC insulated copper conductor cable.	Metre	335.00	10.00
291 (J)	Same as in item 291 but with 2 nos. 16 sq mm and 1 no 10 sq mm FRLSH PVC insulated copper conductor cable	Metre	344.00	9.00
291 (K)	Same as in item 291 but with 3 nos. 16 sq.mm. FRLSH PVC insulated copper conductor cable	Metre	390.00	9.00
291 (L)	Same as in item 291 but with 4 nos. 16 sq.mm. FRLSH PVC insulated copper conductor cable.	Metre	518.00	10.00
291 (M)	Same as in item 291 but with 2 nos. 25 sq mm & 1 no 16 sqmm, FRLSH PVC insulated copper conductor cable.	Metre	413.00	10.00
291 (N)	Same as in item 291 but with 3 nos. 25 sq mm FRLSH PVC insulated copper conductor cable.	Metre	616.00	12.00
291 (O)	Same as in item 291 but with 4 nos. 25 sq mm FRLSH PVC insulated copper conductor cable.	Metre	820.00	14.00
291 (P)	Same as in item 291 but with 3 nos. 2.5 sq mm and 2 nos. 1.5 sq mm FRLSH PVC insulated copper conductor cable.	Metre	112.00	7.00
291 (Q)	Same as in item 291 but with 4 nos. 2.5 sq mm and 2 nos 1.5 sq mm FRLSH PVC insulated copper conductor cable	Metre	138.00	8.00

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Bdnkj yWak bR; kn l fefyr gA**

## CHAPTER 3

# SWITCHES AND DISTRIBUTION BOARDS

Schedule Item No.	Description of Item	Unit	Complete	Labour
			Rate	Rate
<b>(1) Rewireable Type Switches (SPN &amp; DP)</b>				
301	S&F of 16 Amp. 240 V SPN metal clad rewireable type switch fuse unit on M.D.F.E.G. / Teak wood board complete in all respect.			
	<b>Cat. B</b>	each	676.00	196.00
	<b>Cat. B-II</b>	-	-	-
302	S&F of 32 Amp. 240 V SPN metal clad rewireable type switch fuse unit on M.D.F.E.G. / Teak wood board complete in all respects.			
	<b>Cat. B</b>	each	1370.00	194.00
	<b>Cat. B-II</b>	-	-	-
303	<b>Deleted</b>			
304	S&F of 16 Amp. 240 V DP metal clad rewireable type switch fuse unit on M.D.F.E.G. / Teak wood board complete in all respect.			
	<b>Cat. B</b>	each	730.00	194.00
	<b>Cat. B-II</b>	-	-	-
305	S&F of 32 Amp. 240 V DP metal clad rewireable type switch fuse unit on M.D.F.E.G. / Teak wood board complete in all respect.			
	<b>Cat. B</b>	each	1440.00	194.00
	<b>Cat. B-II</b>	-	-	-
<b>(2) Rewireable Type Switches (T.P. and T.P.N.)</b>				
311	S&F of 16 Amp. 415 V metal clad T.P. rewireable type switch fuse unit on angle iron bracket complete in all respect.			
	<b>Cat. B</b>	each	1550.00	217.00
	<b>Cat. B-II</b>	-	-	-
312	S&F of 32 Amp. 415 V metal clad T.P. rewireable type switch fuse unit on angle iron bracket complete in all respect.			
	<b>Cat. B</b>	each	1970.00	217.00
	<b>Cat. B-II</b>	-	-	-
313	S&F of 63 Amp. 415 V metal clad T.P. rewireable type switch fuse unit on angle iron bracket complete in all respect.			
	<b>Cat. B</b>	each	3840.00	232.00
	<b>Cat. B-II</b>	-	-	-
314	S&F of 16 Amp. 415 V metal clad T.P.N. rewireable type switch fuse unit on angle iron bracket complete in all respect.			
	<b>Cat. B</b>	each	1700.00	217.00
	<b>Cat. B-II</b>	-	-	-
315	S&F of 32 Amp. 415 V metal clad T.P.N. rewireable type switch fuse unit on angle iron bracket complete in all respect.			

		<b>Cat. B</b>	each	2120.00	217.00
		<b>Cat. B-II</b>	-	-	-
316	S&F of 63 Amp. 415 V metal clad T.P.N. rewireable type switch fuse unit on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	3990.00	232.00
		<b>Cat. B-II</b>	-	-	-
<b>(3) H.R.C. Cum-Rewireable Type Switches (T.P. and T.P.N.)</b>					
321	S&F of 16 Amp. 415 V metal clad TP HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	1650.00	217.00
		<b>Cat. B-II</b>	-	-	-
322	S&F of 32 Amp. 415 V metal clad TP HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	2080.00	217.00
		<b>Cat. B-II</b>	-	-	-
323	S&F of 63 Amp. 415 V metal clad TP HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	4170.00	232.00
		<b>Cat. B-II</b>	-	-	-
324	S&F of 100 Amp. 415 V metal clad TP HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	7590.00	232.00
		<b>Cat. B-II</b>	-	-	-
325	S&F of 16 Amp. 415 V metal clad TPN HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	1780.00	217.00
		<b>Cat. B-II</b>	-	-	-
326	S&F of 32 Amp. 415 V metal clad TPN HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	2210.00	217.00
		<b>Cat. B-II</b>	-	-	-
327	S&F of 63 Amp. 415 V metal clad TPN HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	4330.00	232.00
		<b>Cat. B-II</b>	-	-	-
328	S&F of 100 Amp. 415 V metal clad TPN HRC type switch fuse unit complete with HRC fuse on angle iron bracket complete in all respect.				
		<b>Cat. B</b>	each	7750.00	232.00
		<b>Cat. B-II</b>	-	-	-
<b>(4) Heavy Duty Double Break HBC Fuse Type TPN</b>					

345	S&F of 63 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	6110.00	232.00
346	S&F of 100 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	8290.00	232.00
347	S&F of 200 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	13340.00	288.00
348	S&F of 320 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	15010.00	288.00
349	S&F of 400 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	21850.00	388.00
350	S&F of 500 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	30430.00	388.00
351	S&F of 800 A. 415 V Heavy Duty Double Break HRC fuse type metal clad TPN complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. A</b>	each	37320.00	565.00
<b>(5) Combination fuse switches HRC Type (T.P.N.)</b>				
352	S&F of 63 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. B</b>	each	4050.00	232.00
353	S&F of 100 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. B</b>	each	5780.00	232.00
354	S&F of 200 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. B</b>	each	8950.00	288.00
355	S&F of 320 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. B</b>	each	12360.00	288.00
356	S&F of 400 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.			
	<b>Cat. B</b>	each	16130.00	388.00

357	S&F of 500 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.	<b>Deleted</b>		
358	S&F of 800 A. 415 V Metal clad TPN CFS complete with HRC fuse etc. on angle iron frame complete in all respect.	<b>Deleted</b>		
<b>(6) Rewireable Type Single Phase with Neutral Distribution fuse Boards</b>				
361	S&F of 2 way 16 A SPN metal clad rewireable type distribution fuse board complete with 16A/240V SPN metal clad rewireable type switch fuse on M.D.F.E.G. / Teak wood board complete in all respect.			
		<b>Cat. B</b>	<b>Deleted</b>	
		<b>Cat. B-II</b>		
362	S&F of 3 way 16 A SPN metal clad rewireable type distribution fuse board complete with 16A/240V SPN metal clad rewireable type switch fuse on M.D.F.E.G./ Teak wood board complete in all respect.			
		<b>Cat. B</b>	<b>Deleted</b>	
		<b>Cat. B-II</b>		
363	S&F of 4 way 16 A SPN metal clad rewireable type distribution fuse board complete with 16A/240V SPN metal clad rewireable type switch fuse on M.D.F.E.G. / Teak wood board complete in all respect.			
		<b>Cat. B</b>	<b>Deleted</b>	
		<b>Cat. B-II</b>		
364	S&F of 6 ways 16 A SPN metal clad rewireable type distribution fuse board complete with 32A/240V SPN metal clad rewireable type switch fuse on M.D.F.E.G. / Teak wood board complete in all respect.			
		<b>Cat. B</b>	<b>Deleted</b>	
		<b>Cat. B-II</b>		
366	S&F of 2 way 32A/240V SPN metal clad rewireable type distribution fuse board complete with 32A/240V metal clad rewireable type switch for domestic power on polished M.D.F.E.G. / Teak wood board complete in all respect.			
		<b>Cat. B</b>	<b>Deleted</b>	
		<b>Cat. B-II</b>		
367	S&F of 4 ways 32A/240V SPN metal clad rewireable type distribution fuse board complete with 63A/240V metal clad rewireable type switch for domestic power on polished M.D.F.E.G. / Teak wood board complete in all respect.	<b>Deleted</b>		
<b>(7) Change Over Switches</b>				
374	S&F of 32 Amp. double pole change over switch on 25mm x 25mm x 3mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	1590.00	207.00

375	S&F of 16 Amp. four pole change over switch on 25mm x 25mm x 3mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	2240.00	207.00
376	S&F of 32 Amp. four pole change over switch on 25mm x 25mm x 3mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	2530.00	207.00
377	S&F of 63 Amp. four pole change over switch on 40mm x 40mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	4760.00	251.00
378	S&F of 100 Amp. four pole change over switch on 40mm x 40mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	8750.00	299.00
378(A)	S&F of 100 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	8100.00	171.00
379	S&F of 200 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	14040.00	299.00
379(A)	S&F of 200 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	10440.00	176.00
380	S&F of 320 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	17100.00	299.00
380(A)	S&F of 320 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	15440.00	171.00
381	S&F of 400 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	23420.00	573.00
381(A)	S&F of 400 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	22600.00	341.00



382	S&F of 500 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge. 500 Amp. four pole on 50mm x 50mm x 6mm angle iron frame	Deleted		
383	S&F of 630 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge. 630 Amp. four pole on 50mm x 50mm x 6mm angle iron frame	each	32790.00	573.00
383(A)	S&F of 630 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	25860.00	341.00
384	S&F of 800 Amp. four pole change over switch on 50mm x 50mm x 6mm angle iron frame, including the cost of labour, T&P, painting and other material required for proper completion of the work as per direction and satisfaction of Engineer in charge. 800 Amp. four pole on 50mm x 50mm x 6mm angle iron frame	each	42950.00	573.00
384(A)	S&F of 800 AMP four pole Moulded case type on load change over switch with enclosure including the cost of labour, T & P and material required for proper completion of the work as per direction and satisfaction of Engineer in charge.	each	38500.00	341.00
<b>(8) Earth Leakage Circuit Breaker (Din Rail Mounting)</b>				
391	S&F and making connection of 16A 2 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	each	2270.00	114.00
392	S&F and making connection of 25A 2 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	each	2270.00	114.00
393	S&F and making connection of 40A 2 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	each	2280.00	114.00
394	S&F and making connection of 63A 2 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	each	2950.00	114.00
395	S&F and making connection of 16 Amp. 4 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	Deleted		
396	S&F and making connection of 25 Amp. 4 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.	each	2800.00	114.00

397	S&F and making connection of 40 Amp. 4 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.			
		each	2820.00	114.00
398	S&F and making connection of 63 Amp. 4 pole 30mA ELCB/RCCB of Din Rail Mounting complete in all respect as per direction and satisfaction to the Engineer in charge.			
		each	2960.00	114.00
399-A	S&F and making connection of OZR Electric shock guard on MDFEG / Teak wood board with load breaking relay of 15A.,Single Phase 240 Volt A.C. complete in all respect as per direction of Engineer in charge.	<b>Deleted</b>		
399-B	As P.S. No. 399A but of 20 Amp. Single Phase 240V. A.C.	<b>Deleted</b>		
399-C	As in 399 A but of 30 A Single Phase, 240V A.C.			

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## CHAPTER 4

### LUMINAIRES

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
<i>(I) Fitting for incandecent lamps</i>				
401	Supply and fixing L-type wall bracket comprising of 60 mm dia metre round aluminium base and 136 mm long rectangular/ trapezoidal bracket, approved lamp holder, glass shade etc. complete in all respect.		Deleted	
402	Supply and fixing of pendant fitting complete with round twin PVC insulated flexible cord, approved holder and 230 mm E.I. coolican shade etc. complete in all respect.		Deleted	
403	Supply and fixing of pendant fitting complete with round twin PVC insulated flexible cord approved holder and coloured glass shade complete in all respect.		Deleted	
404	Supply and fixing of rod pendant complete with approved holder 254 mm E.I. Conical shade coupling etc. complete in all respect.		Deleted	
405	Supply and fixing of batten / angle holder complete in all respect.	each	60.00	27.00
406	Supply and fixing of half oval glass shade, celiling fitting with holder CFL 11 watt complete in all respect.		Deleted	
407	Supply and fixing of water tight, round bulk head fitting complete with holder, ribbed glass rubber gasket, G.I. guard etc. complete in all respect.		Deleted	
408	Supply and fixing of water tight oblong bulkhead fitting of approved make complete with prismatic glass holder, rubber gasket, G.I. Guard etc. complete in all respect.		Deleted	
409	Supply and fixing of single unit LED aviation obstruction light complete with transformer and LED spiral etc complete in all respect..  <b>CAT AAA</b> <b>CAT A</b>	each -	3945.00	82.00
410	Supply and fixing of twin unit aviation obstruction light (GEC-ZH 752) / Bajaj BJAOL-2 with red glass, B.C. holders etc. complete in all respects, at the top of the building complete in all respect.		Deleted	
411	Supply and fixing of single light, wall bracket made of brass fixed on matching M.D.F.E.G. Board base etc. complete in all respect.		Deleted	

412	Supply and fixing of single light wall bracket on matching M.D.F.E.G. Board base etc. complete in all respect.				
		<b>Cat AAA</b>	each	1650.00	82.00
		<b>Cat AA</b>	each	-	-
413	Supply and fixing of double wall light bracket made of brass on matching M.D.F.E.G. board base, including connection with existing outlet, complete in all respect.				
		<b>Cat AA</b>		Deleted	
		<b>Cat A</b>		Deleted	
414	Supply and fixing of double light, wall bracket fixed on matching M.D.F.E.G. board base etc. complete in all respect.				
		<b>Cat AA</b>	each	2800.00	82.00
		<b>Cat A</b>	each	-	-
415(A)	Supply and fixing of ceiling fitting fixed on matching M.D.F.E.G. board base including connection with existing outlet. The base of ceiling fitting shall be fabricated from 22 gauge CRCA sheet in square shape finished with black matt surface complete with 3mm thick export quality acrylic moulded cover & heavy duty brass holder of approved make complete in all respect.				
				Deleted	
				Deleted	
416	Supply and fixing of ceiling fitting made of brass fixed on matching M.D.F.E.G. board base etc. complete in all respect.				
		<b>Cat AA</b>		Deleted	
		<b>Cat A</b>		Deleted	
417	Supply and fixing of Semi-recessed/fully recessed ceiling fitting, including G.I. Flexible pipe with couplings, cutting of hole in the false ceiling etc. complete in all respect of the satisfaction of Engineer-in-charge.				
		<b>a- Semi-recessed</b>		Deleted	
		<b>b- Fully -recessed</b>		Deleted	
418	Supply and fixing of wall light with Prismatic diffuser suitable for and with 9/11 watt PLC lamp complete in all respect				
		<b>Cat AA</b>		Deleted	
		<b>Cat A</b>		Deleted	
<b>(II) Energy saver T-5 / FTL Luminaires</b>					
419(I)	Supply and fixing of factory wired, Box/Channel type T-5 energy saver with bright anodized aluminium reflector and end covers suitable for 1no. 28 watt T-5 lamp with 1x28 watt T-5 lamp complete in all respect.				
		<b>Cat AA</b> <b>Cat A</b>		Deleted	

419(II)	Supply and fixing of factory wired, Box/Channel type T-5 energy saver without reflector & without end covers for 1 no. 28 watt T-5 lamp with 1x28 watt T-5 lamp complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	Deleted
419(III)	Supply and fixing of factory wired, Box/Channel type T-5 energy saver same as in item no. 419(II) but for & with 2 nos. 28 watt T-5 lamp complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
419(IV)	Supply and fixing of factory wired, Box/Channel type T-5 energy saver with powder coated reflector & with end cover for 1no. 28 watt T-5 lamp with 1x28 watt T-5 lamp complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
420(I)	Supply and fixing of factory wired, industrial type tube light fitting of extruded aluminium channel & aluminium reflector with decorative plastic end covers and mounting brackets suitable for and with 1 no. 28 watt ,T-5 lamp complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
420(II)	Same as in item no. 420 (I) but suitable for and with 2 nos. 28 watt T-5 lamp complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
421(I)	Supply and fixing of factory wired, recess mounting Cat-II mirror optic fittings and perforated sheets for separating the lamp compartments suitable for 2No. T-5 lamps with 2x28 watt T-5 lamps complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
421(II)	Supply and fixing of factory wired, recess mounting dark lighter low glare / Cat-II mirror optics for 2No. T-5 luminaire with 2x28 watt T-5 lamps complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	
422(I)	Supply and fixing of factory wired, recess mounting mirror optics fittings perforated sheet for separating the lamp compartments with 3 nos. 14 watt, T-5 lamp complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
422(II)	Supply and fixing of factory wired, recess mounting low glare mirror optics fittings with 4No.14 watt T-5 lamp		

	complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
422(III)	Supply and fixing of factory wired Surface mounting 4 x 14 wall mirror optics made out of pre-anodized aluminium section with specially designed louvers suitable for 4 Nos.14 watt T-5 with lamps and separate electronic ballast for each lamp complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
423(II)	Supply and fixing of factory wired, surface/pendent mounting extruded aluminium mirror optic fitting with electronic ballast & bright anodized aluminium reflector designed for 2 No 28 Watt T-5 lamps & with 2 nos T-5 28 watt lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
423(II)	Supply and fixing of factory wired, surface/pendent mounting extruded aluminium mirror optic fitting same as item No. 423(I) but for 2 No. 14 watt T-5 lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(I)	Supply and fixing of factory wired, recess mounting mirror optics with batwing louvers and christmas free profile anodised partition louvers suitable for 2x18 watt PLC lamp with lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(II)	Supply and fixing of factory wired, recess mounting mirror optics luminaire with Diamond-lite small cell parabolic pre-anodised high grade punty aluminium sheet louvers for low glare performance as L4 louvers configuration suitable for 2x18 watt PLL lamp with lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(III)	Supply and fixing of factory wired, surface mounting mirror optics with batwing louvers and christmas tree profile anodised partition louvers suitable for 2x18 watt PLC lamp with lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(IV)	Supply and fixing of factory wired, surface mounting mirror optics made out of pre-anodised aluminium sections with specially designed louvers suitable for 2x18 watt PLL lamp with lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted

424(V)	Supply and fixing of factory wired, recess mounting mirror optics luminaire with Diamond-lite small cell parabolic pre anodized high grade purity aluminium sheet louvers for low glare performance as L4 louvers configuration suitable for and with 2x40 watt FTL lamp with electronic ballast & lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(VI)	Supply and fixing of factory wired recess mounting mirror optics luminaire with pre-anodized high grade purity aluminium sheet louvers suitable for and with 2x40 watt FTL lamp with electronic ballast complete in all respect		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(VII)	Supply and fixing of factory wired, surface mounting 2x 40 watt mirror optics luminaire with pre-anodized high grade purity aluminium sheet louvers suitable for and with 2 Nos 40 watt FTL lamp with electronic ballast complete in all respect		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(VIII)	Supply and fixing of factory wired, surface mounting mirror optic made out of pre-anodized aluminium sections with specially designed louvers suitable for and with 2x40 watt FTL lamp with electronic ballast complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
424(IX)	Supply and fixing of factory wired, recess mounting 2x 28 watt mirror optics made out of pre-anodized aluminium sections with specially designed louvers suitable for and with 2x28 watt T-5 lamp and electronic ballast with separate ballast for each lamp complete in all respect		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
425(I)	Supply and fixing of factory wired, recess mounting mirror optic fitting for 2x36 watt CFL with electronic ballast & bright anodized aluminium reflector & P5 paralite louvers with 2 nos 36 watt CFL lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
425(II)	Supply and fixing of factory wired, recess mounting mirror optic fitting same to item No. 425(I) but with 3 nos36 watt CFL lamps complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted

425(III)	Supply and fixing of factory wired, recess mounting 2x36 watt mirror optics luminaire with Diamond-lite small cell parabolic pre-anodized, high grade purity aluminium sheet louvers for low glare performance as L4 louvers configuration with PLL lamp and electronic ballast complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	- Deleted
425(IV)	Supply and fixing of factory wired, recess mounting 2x36 watt mirror optic luminaire with Diamond-lite small cell parabolic pre-anodized high grade purity aluminium sheet louvers for low glare performance as L4 louvers configuration suitable for 2 nos 18 watt PLC lamp with lamps and electronic ballast suitable for armstrong ceiling complete in all respect..		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	- Deleted
425(V)	Supply and fixing of factory wired, recess mounting 3x36 watt mirror optics luminaire with Diamond-lite small cell parabolic pre-anodized, high grade purity aluminium sheet louvers for low glare performance as L4 louvers configuration with PLL lamp and electronic ballast complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
425(VI)	Supply and fixing of factory wired, recess mounting 3x36 watt mirror optic luminaire with Diamond-lite small cell parabolic pre-anodized high grade purity aluminium sheet louvers for low glare performance as L4 louvers configuration suitable for 2 nos 18 watt PLC lamp with lamps and electronic ballast suitable for armstrong ceiling complete in all respect..		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
426(I)	Supply and fixing of factory wired, surface type aerodynamically designed wing shaped aluminium low glare luminaire mirror optic fittings suitable for & with 2x36 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
426(II)	Supply and fixing of factory wired, surface type mirror optic fitting made of pre anodized aluminium section with louvers suitable for&with one lamp of 36 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted



426(III)	Supply and fixing of factory wired, surface type mirror optic fitting made of pre anodized aluminium section with P2 / P5 louvers suitable for & with 2No. 36 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
426(IV)	Supply and fixing of factory wired, surface type mirror optic fitting made of pre anodized aluminium section with louvers suitable for&with 3No. lamp of 36 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
426(V)	Supply and fixing of factory wired, surface mounting 2x36 watt mirror optics luminaire with Diamond-lite small cell parabolic pre-anodized high grade purity aluminium sheet lubers for low glare performance as L4 louvers configuration suitable for 2 nos 36 watt PLL lamp with lamps with lamps and electronic ballast complete in all respect..		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
<b>(III) Energy Saver - Post Top Lanterns</b>			
427(I)	Supply and fixing of factory wired, post top lantern integral type with clear acrylic covering for & with single 11 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
427(II)	Supply and fixing of factory wired, post top lantern same to item no. 427(I) but for & with single 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
428(I)	Supply and fixing of factory wired, post top lantern integral type with opal acrylic for & with single 11 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
428(II)	Supply and fixing of factory wired, post top lantern same to item no. 428(I) but for 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
429(I)	Supply and fixing of factory wired, post top lantern Fedora Hat type integral clear acrylic for&with single 11 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted

429(II)	Supply and fixing of factory wired, post top lantern same to item no. 429(I) but for & with single 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
430(I)	Supply and fixing of factory wired, post top lantern Fedora Hat type integral opal acrylic for and with single 11 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
430(II)	Supply and fixing of factory wired, post top lantern same to item no. 430(I) but for & with single 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
431(I)	Supply and fixing of factory wired, cylindrical shaped integral decorative bollard with clear/opal acrylic for & with single 11 watt CFL with mounting assembly complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
431(II)	Supply and fixing of factory wired, bollard same to item no. 431(I) but with single 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
432(I)	Supply and fixing of factory wired, slim vision integral decorative bollard with clear acrylic covering for & with single 11 watt CFL with mounting assembly complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
432(II)	Supply and fixing of factory wired, bollard same to item no. 432(I) but with single 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
433(I)	Supply and fixing of factory wired, post top lantern in inverted U/J blooming flower shape, integral decorative with clear acrylic covering, suitable for & with 2No. 11 watt CFL but excluding mounting assembly, complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
433(II)	Supply and fixing of factory wired, post top lantern same to item no. 433(I) but with 18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted

434	Supply and fixing of factory wired, Eco friendly outdoor decorative type integral energy saver fitting J/U shaped, having 2 globes, each having 2 nos. holders for 11 watt CFL complete with total 4 nos. 11 watt CFL, but excluding mounting assembly, complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
435(I)	Supply and fixing of factory wired, post top lantern with 250 mm prismatic clear globe without ballast but with P.C. base and B-22 d lamp holder with 18 watt CFL complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
435(II)	Supply and fixing of factory wired, post top lantern with 300 mm prismatic clear globe without ballast but with P.C. base and B-22 d lamp holder with 26 watt CFL complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
435(III)	Supply and fixing of factory wired, post top lantern with 400mm prismatic clear globe without ballast but with P.C. base and B-22 d lamp holder with 55 watt P.L.T. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
436	Supply and fixing of factory wired, post top lantern with 400 mm clear globe with control gear of cast aluminium consisting louvers stack, P.C. base duly wired with ballast, capacitor suitable for 36 watt P.L.C. lamp with cost of lamp complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
437	Supply and fixing of factory wired, post top lantern with clear diffuser and spun aluminium casted body & control gear of cast aluminium consisting louvers stack, P.C. base duly wired with ballast capacitor, suitable for 36 watt P.L.C. with 1no. 36 watt P.L.C. lamp, complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
438(I)	Supply and fixing of factory wired, bollard with clear/opal diffuser louvers stack extruded aluminium casted pole, base shall be factory painted polyester paint duly pre wired with ballast, ignitor, capacitor, suitable for 70 watt H.P.S.V. lamp including lamp complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted

438(II)	Supply and fixing of factory wired, bollard same as item no.438(I) but with 70 watt M.H. lamp complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
439(I)	Supply and fixing of factory wired, post top ornamental luminaires with 2 meter long casted aluminium pole with base & with 1No. large pumpkin / hexagonal lantern duly pre wired with B-22 d /E-27 lamp holder with 26 watt CFL complete in all respect excluding cost of plinth.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
439(II)	Supply and fixing of factory wired, post top lantern same as item no. 439(I) but with 3meter long aluminium pole complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
<b>(IV) Flood light luminaires</b>			
440(I)	Supply and fixing of factory wired assymetrical beamed integral flood light luminaires with die cast aluminium housing & Al. reflector having built in control gear unit duly pre wired plate complete with ballast, ignitor, capacitor for 70 watt M.H. with lamp complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
440(II)	Same as item no. 440 (I) but for 1x150 watt M.H. T lamp.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
440(III)	Same as item no. 440 (I) but for 1x250 watt M.H. T lamp.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
440(IV)	Same as item no. 440 (I) but for 1x400 watt M.H. T lamp.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
441(I)	Supply and fixing of factory wired assymetrical beamed non integral flood light luminaires for 2x250 watt M.H.with die cast aluminium housing & aluminium reflector having separate control gear unit complete with ballast,ignitor,capacitor & with 2 nos.250 watt M.H. T lamp complete in all respect.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted

441(II)	Same as item no. 441 (I) but for 2No. 400 watt M.H. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
442(I)	Same as item no. 440 (I) but for 1No. 1x70 watt S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
442(II)	Same as item no. 440 (I) but for 1No. 1x150 watt S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
442(III)	Same as item no. 440 (I) but for 1No. 1x250 watt S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
442(IV)	Same as item no. 440 (I) but for 1No. 1x400 watt S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
443(I)	Supply and fixing of factory wired assymetrical beamed non integral flood light for 2x150 watt S.V.with 'Glaskot' aluminium reflector having heat resistant toughened glass cover with 150 watt control gear box & 2No. 150 watt H.P.S.V. -T lamp complete in all respect.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
443(II)	Same as item no. 443 (I) but with 1No. 2x250 watt H.P.S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
443(III)	Same as item no. 443 (I) but with 1No. 2x400 watt H.P.S.V. T lamp.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
<b>(V) Energy Saver - Street Lights</b>				
444(I)	Supply and fixing of factory wired CFL street light having deep drawn M.S. housing with powder coated finish and acrylic cover suitable for and with 2 nos. of 18 watt CFL lamps complete in all respect. <b>on wall.</b>	<b>Cat AAA</b>		Deleted
		<b>Cat AA</b>		
444(II)	Same as item no. 444 (I) but on pole.	<b>Cat AAA</b>		Deleted
		<b>Cat AA</b>		

444(III)	Same as item no. 444 (I) but for 2x11 watt CFL on wall.		
	<b>Cat AAA</b> <b>Cat AA</b>		Deleted
444(IV)	Same as item no. 444 (I) but for 2x11 watt CFL on pole.		
	<b>Cat AAA</b> <b>Cat AA</b>		Deleted
444(V)	Supply and fixing of factory wired CFL lamp street lighting luminiers deep drawn sheet body, flat glass with IP65 protection suitable for 45 to 85 watt lamp with lamp on G.I. pipe bracket complete in all respect. <b>on wall</b>		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
444(VI)	Same as item no - 444(V) but on Pole.		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
445(I)	Supply and fixing of factory wired totally enclosed integral street light fitting having top opening, single piece, powder coated die cast aluminium housing, 'Glaskot' pot optics reflector, side entry/ pole mounting arrangement with full frame glass accessories suitable for and with 150 watt H.P.S.V.-T lamp, conforming to IP 66 protection complete in all respect. <b>on wall.</b>		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
445(II)	Same as item no. 445 (I) but on pole.		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
446(I)	Same as item no. 445 (I) but 250 watt HPSV-T lamp. <b>on wall.</b>		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
446(II)	Same as item no. 446 (I) but <b>on pole.</b>		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
447(I)	Same as item no. 445 (I) but for 400 watt H.P.S.V. -T lamp <b>on wall.</b>		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted
447(II)	Same as item no. 447 (I) but on pole.		
	<b>Cat AAA</b>	each	Deleted
	<b>Cat AA</b>	each	Deleted

<b>(VI) Energy Saver - Bulk head / ceiling fitting</b>			
448	Supply and fixing of industrial bulk head fitting of cast aluminium body, having heat resistant glass cover and M.S. galvanized wire guard suitable for and with 9/10 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
449	Supply and fixing of industrial bulk head fitting with polycarbonate base guard, prismatic reflector silicon gasket suitable for and with 1x18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
450(I)	Supply and fixing of fancy type round ceiling fitting made of polycarbonate suitable for and with 1x15/18 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
450(II)	Supply and fixing of round ceiling fitting suitable for & with 2x9 watt CFL complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
450(III)	Same as item no.450(I) but for square shape suitable for & with 1x9watt CFL complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	Deleted
<b>(VII) Fluorescent tube light fitting</b>			
451(I)	Supply and fixing of factory wired, HPF box type, fluorescent tube light fitting suitable for 1 x 20 /1x18 watt fluorescent tube complete including tube etc.on surface complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	Deleted
451(II)	Supply and Fixing wired decorative mirror light on suitable for 18 Watt CFL with lamp complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
452	Supply and fixing of factory wired, HPF box type, fluorescent tube light fitting suitable for 2 x 20 watt fluorescent tube complete including tubes etc on surface complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	Deleted

453	Supply and fixing of factory wired, HPF box type, fluorescent tube light fitting suitable for 1 x 40 watt fluorescent tube complete including tube etc.on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
453 (I)	Same as in item no. 453 but with electronic ballast.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
454	Supply and fixing of factory wired, HPF box type, fluorescent tube light fitting suitable for 2 x 40 watt fluorescent tube complete including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
454 (I)	Supply and fixing of factory wired, HPF box type, fluorescent tube light fitting suitable for 2 x 40 watt fluorescent tube with electronic ballast complete including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
455	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with vitreous enamelled reflector suitable for 1x40 watt fluorescent tube including tubes etc. on surface complete in all respect..		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
455 (I)	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with vitreous enamelled reflector suitable for 1x40 watt fluorescent tube with electronic ballast including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
456	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with vitreous enamelled reflector suitable for 2x40 watt, fluorescent tube including tubes etc.on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
456 (I)	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with vitreous enamelled reflector suitable for 2x40 watt, fluorescent tube including tubes etc.on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted



457	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with stove enamelled reflector suitable for 1x40 watt, fluorescent tube including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
457 (I)	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with stove enamelled reflector suitable for 1x40 watt, fluorescent tube including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
458	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with stove enamelled reflector suitable for 2x40 watt, fluorescent tube including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
458 (I)	Supply and fixing of factory wired HPF industrial type fluorescent tube light fitting with stove enamelled reflector suitable for 2x40 watt, fluorescent tube including tubes etc. on surface complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
459	Supply and fixing of factory wired HPF decorative fluorescent tube light fitting with perforated metallic side panels and polystyrene louvres suitable for 2x40 watt fluorescent tube including tubes etc. complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
460	Supply and fixing of factory wired HPF decorative type, fluorescent tube light fitting with acrylic diffuser and electronic ballst suitable for 1x40 watt fluorescent tube etc. complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
461	Supply and fixing of factory wired HPF decorative type, fluorescent tube light fitting with acrylic diffuser and electronic ballst suitable for 2x40 watt fluorescent tube etc. complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
462	Supply and fixing of factory wired HPF recess / surface mounting type, modular, fluorescent tube light fitting with polystyrene louvres suitable for 4x20 watt fluorescent tube including tubes etc. complete in all respect.		
		<b>Cat AA</b>	Deleted
		<b>Cat A</b>	Deleted

463	Supply and fixing of factory wired HPF recess / surface mounting modular, fluorescent tube light fitting with acrylic diffuser suitable for 4x20 watt fluorescent tube including tubes etc. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
464 (I)	Supply and fixing of factory wire4d HPF recess enclosed type fluorescent tube light fitting with aluminium cross louvres suitable for 1x40 watt fluorescent tube with electronic ballast including tubes etc. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
464 (II)	Supply and fixing of factory wired HPF recess enclosed type fluorescent tube light fitting with aluminium cross louvres suitable for 2x40 watt fluorescent tube with electronic ballast including tubes etc. complete in all respect.		
	<b>Cat AA (Seg.)</b> <b>Cat A</b>	each	Deleted
465 (I)	Supply and fixing of factory wired HPF surface fluorescent tube light fitting with mirror optics suitable for 1x28 watt T-5 tube with electronic ballast including tube etc. complete in all respect.		
	<b>Cat AA (Seg.)</b> <b>Cat A</b>	each	Deleted
465 (II)	Supply and fixing of factory wired HPF surface fluorescent tube light fitting with mirror optics suitable for 2x28 watt T-5 tube with electronic ballast including tube etc. complete in all respect.		
	<b>Cat AA (Seg.)</b> <b>Cat A</b>	each	Deleted
466(I)	Supply and fixing of factory wired HPF recess fluorescent tube light fitting with mirror optics suitable for 1x40 / 1x36 watt fluorescent tube with electronic ballast including tubes etc. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
466(II)	Supply and fixing of factory wired HPF recess fluorescent tube light fitting with mirror optics suitable for 2x40 / 2x36 watt fluorescent tube with electronic ballast including tube etc. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted
466(III)	Supply and fixing of factory wired HPF recess fluorescent tube light fitting with mirror optics suitable for 4 x18 watt FTL with electronic ballast including tube etc. complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>	each	Deleted

<b>(VIII) Street light</b>			
467(I)	Supply and fixing of factory wired HPF street light fluorescent tube light fitting suitable for 1 x 40 watt fluorescent tube including tube etc. on G.I. Pipe bracket complete in all respect. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
467 (II)	Supply and fixing of factory wired HPF street light fluorescent tube light fitting suitable for 1 x 40 watt fluorescent tube including tube etc. on G.I. Pipe bracket complete in all respect. <b>on wall on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
468 (I)	Supply and fixing of factory wired HPF street light fluorescent tube light fitting suitable for 2x40 watt fluorescent tube including tubes etc. on G.I. Pipe bracket complete in all respect. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
468 (II)	Supply and fixing of factory wired HPF street light fluorescent tube light fitting suitable for 2x40 watt fluorescent tube including tubes etc. on G.I. Pipe bracket complete in all respect. <b>on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
<b>(IX) Post Top - Lantern</b>			
469	Supply and fixing of H.P.M.V. post top lantern, suitable for 80watts M.V. lamp complete with control gear pole mounting box with 80 watt M.V. lamp etc.complete in all respect..		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
470	Supply and fixing of H.P.M.V. post top lantern, integral with control gear etc suitable for 125 watt M.V. lamp complete with 125 watt M.V. lamp etc.complete in all respect.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
471	Supply and fixing of H.P.S.V. post top lantern, integral with control gear etc suitable for 70 watt Sodium Vapour lamp complete with 70 watt S.V. lamp etc.complete in all respect.		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted

**(X) Energy Saver -Down Lights**

472(I)	Supply and fixing of recess mounting CFL down light having designed aluminium reflector, powder coated rim housing, copper ballast suitable for & with 13 watt single CFL complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>		Deleted
472(II)	Same as item no. 472 (I) but with 18 watt CFL complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>		Deleted
473(I)	Supply and fixing of recess mounting CFL down light specially designed for SATIN FINISH aluminium reflector, copper ballast suitable for & with 18 watt CFL complete in all respect.		
	<b>Cat AA</b>	each	Deleted
	<b>Cat A</b>	each	Deleted
473(II)	Same as item no. 473 (I) but with 2 nos. 18 watt CFL complete in all respect.		
	<b>Cat AA</b>	each	Deleted
	<b>Cat A</b>	each	Deleted
<b>(XI) Energy Saver - Bush lighting</b>			
474	Supply and fixing of bush flood light having die cast aluminium body suitable for & with 50 watt Halogen lamp complete in all respect.		
	<b>Cat AA</b>	each	Deleted
	<b>Cat A</b>	each	Deleted
<b>(XII) Energy Saver - Under water lights</b>			
475(I)	Supply and fixing of under water flood light, floor mounting suitable for & with 50 watt Halogen lamp confirming to IP 68 protection with 4 meter long special water proof cable complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>		Deleted
475(II)	Supply and fixing of under water flood light, recess mounting suitable for & with 50 watt Halogen lamp confirming to IP 68 protection with 4 meter long special water proof cable complete in all respect.		
	<b>Cat AA</b> <b>Cat A</b>		Deleted
<b>(XIII) Energy Saver - Walk Over / Drive Over</b>			
476 (I)	Supply and fixing of Integral walkover / driveover symmetric beam fitting having casted aluminium body, outer housing of stainless steel suitable for and with 70 watt M.H. lamp confirming to I P 67 complete in all respect.		
	<b>Cat AA</b>	each	Deleted
	<b>Cat A</b>	each	Deleted

476 (II)	Supply and fixing of Integral decorative walkover / driveover fitting having casted aluminium housing suitable for and with 50 watt Halogen lamp confirming to I P 67 complete in all respect.		
		<b>Cat AA</b>	each Deleted
		<b>Cat A</b>	each Deleted
<b>(XIV) Street light lanterns for M.H./HPSV. lamp</b>			
481(I)	Supply and fixing of factory wired street light luminaire single piece cast aluminium body, flat glass with IP 65 protection suitable for 70 watt M.H lamp including integral control gear, 70 watt M.H. lamp on G.I pipe bracket complete in all respect. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
481(II)	Same as in item no 481(I) but <b>on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
482(I)	Same as in item no 481(I) but for 150 watt M.H. lamp. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
482(II)	Same as in item no 482(I) but <b>on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
483(I)	Same as in item no 481(I) but for 250 watt M.H. lamp. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
483(II)	As in item no. 483(I) but <b>on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
484(I)	Same as in item no 481(I) but for 400 watt M.H. lamp. <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
484(II)	As in item no. 484(I) but <b>on pole.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted
485 (I)	Supply and fixing of factory wired sodium vapour street lighting luminaries single piece cast 'Aluminium' body flat glass with IP 65 protection suitable for 70 watt S.V. lamp including integral control gear with 70 watt S.V. lamp on G.I. Pipe bracket complete in all respect <b>on wall.</b>		
		<b>Cat AAA</b>	each Deleted
		<b>Cat AA</b>	each Deleted

485(II)	As in item no. 485(I) but <b>on pole.</b>	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
486(I)	Same as in item no 485(I) but for 150 watt H.P S.V. lamp. <b>on wall.</b>	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
486(II)	As in item no. 486(I) but on pole.	<b>Cat AA</b>	each	Deleted
		<b>Cat A</b>	each	Deleted
487(I)	Same as in item no 485(I) but for 250 watt H.P S.V. lamp. <b>on wall.</b>	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
487(II)	As in item no. 487(I) but on pole.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
488(I)	Same as in item no 485(I) but for 400 watt H.P S.V. lamp. <b>on wall.</b>	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
488(II)	As in item no. 488(I) but on pole.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted
489(I)	Supply and fixing of factory wired low pressure sodium vapour lamp street lighting luminaries single piece cast 'Aluminium' body suitable for 35 watt S.V. lamp including integral control gear 35 watt S.V. lamp on G.I. Pipe bracket complete in all respect. <b>on wall.</b>	<b>Cat AAA</b>		Deleted
		<b>Cat AA</b>		
489(II)	As in item no. 489(I) but on pole.	<b>Cat AAA</b>		Deleted
		<b>Cat AA</b>		
490	Supply and fixing of Halogen flood light luminaire, having die cast aluminium powder coated housing, heat resistant toughened clear glass cover with faceted 'Glaskot' Al. reflector suitable for and with 1000 watt halogen lamp complete in all respect.	<b>Cat AAA</b>	each	Deleted
		<b>Cat AA</b>	each	Deleted

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## CHAPTER 5

## UNDER GROUND CABLES

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
501	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade at a depth of 750 mm below ground level over a cushion of 75 mm. thick sand all around and protected with burnt bricks on sides and on top. On surface the cable run shall be fixed on M.S. clamps etc. of suitable size or as directed by the Engineer-Incharge, complete in all respect. The armouring of the cable shall be properly connected with the earth conductor by clamps etc.			
(a)	6 sq. mm 2 core	Mtr.	276.00	185.00
(b)	10 sq. mm 2 core	Mtr.	292.00	185.00
(c)	16 sq. mm 2 core	Mtr.	311.00	185.00
(d)	4 sq. mm 3 core	Mtr.	271.00	185.00
(e)	6 sq. mm 3 core	Mtr.	284.00	185.00
(f)	4 sq. mm 4 core	Mtr.	283.00	185.00
(g)	6 sq. mm 4 core	Mtr.	297.00	185.00
(h)	10 sq. mm 4 core	Mtr.	327.00	185.00
(i)	16 sq. mm 4 core	Mtr.	343.00	185.00
(j)	25 sq. mm 3-1/2 core	Mtr.	373.00	185.00
(k)	35 sq. mm 3-1/2 core	Mtr.	422.00	185.00
(l)	50 sq. mm 3-1/2 core	Mtr.	492.00	185.00
(m)	70 sq. mm 3-1/2 core	Mtr.	613.00	197.00
(n)	95 sq. mm 3-1/2 core	Mtr.	700.00	197.00
(o)	120 sq. mm 3-1/2 core	Mtr.	824.00	197.00
(p)	150 sq. mm 3-1/2 core	Mtr.	957.00	215.00
(q)	185 sq. mm 3-1/2 core	Mtr.	1140.00	215.00
(r)	240 sq. mm 3-1/2 core	Mtr.	1379.00	215.00
(s)	300 sq. mm 3-1/2 core	Mtr.	1613.00	233.00
(t)	400 sq. mm 3-1/2 core	Mtr.	2048.00	233.00
502	Supply and fixing of outdoor cable end box M-seal or equivalent complete with porcelain bushings (in outdoor only) filling the box with approved compound for P.V.C. cables, insulating with tapes etc. complete in all respect including making connection with overhead wires. (a) to (r)		<b>Deleted</b>	

503	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.			
(a)	6 sq. mm 2 core	each	76.00	45.00
(b)	10 sq. mm 2 core	each	80.00	45.00
(c)	16 sq. mm 2 core	each	87.00	45.00
(d)	4 sq. mm 3 core	each	76.00	45.00
(e)	6 sq. mm 3 core	each	76.00	45.00
(f)	4 sq. mm 4 core	each	76.00	45.00
(g)	6 sq. mm 4 core	each	80.00	45.00
(h)	10 sq. mm 4 core	each	87.00	45.00
(i)	16 sq. mm 4 core	each	87.00	45.00
(j)	25 sq. mm 3-1/2 core	each	123.00	45.00
(k)	35 sq. mm 3-1/2 core	each	178.00	85.00
(l)	50 sq. mm 3-1/2 core	each	178.00	85.00
(m)	70 sq. mm 3-1/2 core	each	199.00	85.00
(n)	95 sq. mm 3-1/2 core	each	222.00	85.00
(o)	120 sq. mm 3-1/2 core	each	243.00	85.00
(p)	150 sq. mm 3-1/2 core	each	305.00	114.00
(q)	185 sq. mm 3-1/2 core	each	397.00	114.00
(r)	240 sq. mm 3-1/2 core	each	473.00	114.00
(s)	300 sq. mm 3-1/2 core	each	505.00	136.00
(t)	400 sq. mm 3-1/2 core	each	631.00	136.00
504	Supply and fixing of plain or pin type copper tin plated cable socket ( lug ) to the cable leads, insulating with tape and making connection etc. complete in all respect as per direction of the Engineer-Incharge.			
(a)	4 sq. mm	each	17.00	11.00
(b)	6 sq. mm	each	18.00	11.00
(c)	10 sq. mm	each	20.00	12.00
(d)	16 sq. mm	each	21.00	12.00
(e)	25 sq. mm	each	27.00	12.00
(f)	35 sq. mm	each	31.00	12.00
(g)	50 sq. mm	each	48.00	17.00



(h)	70 sq. mm	each	67.00	17.00
(i)	95 sq. mm	each	88.00	17.00
(J)	120 sq. mm	each	117.00	19.00
(k)	150 sq. mm	each	146.00	19.00
(l)	185 sq. mm	each	193.00	27.00
(m)	240 sq. mm	each	272.00	27.00
(n)	300 sq. mm	each	392.00	34.00
(o)	400 sq. mm	each	596.00	34.00
505	Supply and Fixing of cable route marker in suitable masonry enclosure as directed by the Engineer-Incharge.	each	Deleted	
<b>(I) High Tension 11 KV Grade XLPE</b>				
506 (a)	Supply and laying of 3 core standard aluminium conductor XLPE (Cross linked polyethylene) insulated PVC bedded, Galvanised flat steel strip armoured cables conforming to I.S. 7098 (Part-II with latest amendments) II KV grade at a depth of 900 mm below ground level over a cushion of 100 mm thick fine river sand all around and protected with well burnt bricks on sides and on top put across. The armoring of cable shall be properly connected with earth conductor by clamps etc.			
(a)	25 sq. mm 3 core	Deleted		
(b)	35 sq. mm 3 core	Deleted		
(c)	50 sq. mm 3 core	Deleted		
(d)	70 sq. mm 3 core	Mtr.	915.00	257.00
(e)	95 sq. mm 3 core	Mtr.	1263.00	257.00
(f)	120 sq. mm 3 core	Mtr.	1480.00	310.00
507	Deduct in item no. 501 (I) 501 (t) and 506 (a) to (f) when cables is passed through G.I./M.S. or Hume pipe in road crossing or along the wall. The cost of the G.I. pipe, hume pipe is to be extra when and where required.	Mtr.	170.00	-

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## CHAPTER 6

### OVER HEAD MAINS

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
601	Supply & fixing of wall roof type service bracket of 50 mm dia 4 Meter long fabricated from class "B" G.I. pipe complete with two bends, sockets, wall clamps. 7/3.15 mm G.I. stay wire, stay insulators etc. complete in all respect.	each	2585.00	227.00
602	Supply & fixing steel tubular pole 7 Metre long designated 410 SP-1 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	7871.00	1082.00
603	Supply & fixing steel tubular pole 7 Metre long designated 410 SP-2 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	8659.00	1082.00
604	Supply & fixing steel tubular pole 7 Metre long designated 410 SP-3 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	9519.00	1082.00
605	Supply & fixing steel tubular pole 7.50 Metre long designated 410 SP-4 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	8229.00	1082.00
606	Supply & fixing steel tubular pole 7.50 Metre long designated 410 SP-5 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	9089.00	1082.00
607	Supply & fixing steel tubular pole 7.50 Metre long designated 410 SP-6 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	10092.00	1082.00
608	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-27 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	11375.00	1286.00
609	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-28 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	8990	11733.00	1082.00
610	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-29 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	11477.00	1286.00

611	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-30 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	13166.00	1286.00
612	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-31 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	14169.00	1286.00
613	Supply & fixing steel tubular pole 9 Metre long designated 410 SP-32 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	14671.00	1286.00
614	Supply & fixing steel tubular pole 9.50 Metre long designated 410 SP-34 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	12953.00	1299.00
615	Supply & fixing steel tubular pole 9.50 Metre long designated 410 SP-35 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	13455.00	1299.00
616	Supply & fixing steel tubular pole 9.50 Metre long designated 410 SP-36 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	14028.00	1299.00
617	Supply & fixing steel tubular pole 9.5 Metre long designated 410 SP-37 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	15175.00	1299.00
618	Supply & fixing steel tubular pole 9.50 Metre long designated 410 SP-38 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	15676.00	1299.00
619	Supply & fixing steel tubular pole 9.50 Metre long designated 410 SP-39 in 1:3:6 cement concrete foundation including excavation back filling etc. complete in all respect.	each	16393.00	1299.00
620	Supply & fixing of 75 mm x 90 mm shackle insulator /100 mm x 65 mm pin insulator including G.I. Bolts / spindle nuts etc. complete in all respect.	each	68.00	23.00
621	Supply & fixing of 100 mm x 110 mm shackle insulator /100 mm x 80 mm pin insulator including G.I. Bolts / spindle nuts etc. complete in all respect.	each	79.00	23.00
622	Supply & fixing of 230 mm x 32 mm x 1.5 mm galvanised steel strips including holes for shackle insulators pins and bolts etc. complete in all respect.	each	113.00	23.00
623	Supply & erection of "D" clamps of 50 mm x 6mm flat iron on steel tubular poles / steel rail poles with bolts, nuts etc. complete in all respects including painting with aluminium paint .	each	223.00	43.00

624	Supply & erection of "D" clamps of 38 mm x 6 mm flat iron for wall /roof type service bracket with bolts, nuts etc.complete in all respects including painting with aluminium paint .	each	147.00	23.00
625	Supply & erection of 600 mm long cross arm of 50 mm x 50 mm x 6 mm mild steel angle iron with necessary clamps, bolts, nuts etc. on poles complete in all respects including painting with aluminium paint.	each	571.00	65.00
627	Supply & erection of overhead line with ACSR conductor on poles / service bracket including binding etc. complete in all respects.	Per Kg.	263.00	27.00
628	Supply & erection of overhead line with G.I. wire no. 8 to 4 SWG on poles/serivce bracket including binding etc. complete in all respect.	Per Kg.	66.00	27.00
629	Supply & erection of hexagonal / cradle type gaused of G.I. wire no. 8 to 4 SWG including binding etc. complete in all respect.	each	66.00	34.00
630	Supply & erection of stay set at least 3.5 Metres away from the pole complete with galvanised 19 mm dia x1.80 Metre long stay rod, 30 cm x 30 cm x 6.3 mm anchor plate, thimble stay clamps, stay insulator, 19 mm x 600 double screw tightener, 7/4.00 mm G.I stay wire etc. in 1:3:6 cement concrete complete in all respect.	each	3210.00	490.00
631	Supply & erection of stay set at 3.5 Metres away from the pole complete with galvanised 19 mm dia x1.80 Metre long stay rod, 30 cm x 30 x 6.3 mm anchor plate, thimble stay clamps, stay insulator,19 mm 600 mm double screw tightener, 7/3.5 mm G.I. stay wire etc. in 1:3:6 cement concrete complete in all respect.	each	3029.00	490.00
632	Supply & fixing of horn gap type lighning arrestor complete in all respects.	<b>Deleted</b>		
633	Supply & fixing of horn gap type lighning arrestor complete in all respect.	<b>Deleted</b>		
634	Painting of the electric pole with 2 coats of aluminium paint over red oxide primer complete in all respect.	each	324.00	136.00
635	Supply & fixing of anticlimbing device fabricated from G.I.(flat) of 25 mm x 6mm size in a shape of ring of the pole size, having G.I. flat pointed fins of length 225 mm in 8 nos. including all the materials, labour, T&P and other material required for proper completion for work and to the satisfaction of Engineer-in-Charge.	each	253.00	117.00

**G.I OCTAGONAL POLE**

641	Supply & fixing of 7 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 130mm and base plate 12mm thik) having 3mm thickness with single arm bracket (1 Mtr length) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	16500.00	788.00
642	Supply & fixing of 7 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 130 mm and base plate 12mm thik) having 3mm thickness with Double arm bracket (1 Mtr length) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	17100.00	788.00
643	Supply & fixing of 8mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 135 mm and base plate 12mm thik) having 3mm thickness with single arm bracket (1 Mtr length) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	17750.00	788.00
644	Supply & fixing of 8 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 135 mm and base plate 12mm thik) having 3mm thickness with Double arm bracket (1 Mtr length) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	18290.00	788.00
645	Supply & fixing of 9 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 155 mm and base plate 12mm thik) having 3mm thickness with single arm bracket (1 Mtr length) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	20890.00	936.00
646	Supply & fixing of 9 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 155 mm and base plate 12mm thik) having 3mm thickness with Double arm bracket (1 Mtr length each ) on RCC foundation including the cost of foundation, foundation bolts, excavation & back filling and Required T&P completee in all respect.	each	21430.00	936.00
647	Supply & fixing of 6 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 130mm and base plate 12mm thik) having 3mm thickness with Single arm bracket 1 Mtr length in 1:2:4 RCC foundation bolt including the cost of foundation, excavation & back filling and Required T&P completee in all respect.	each	14750.00	788.00

648	Supply & fixing of 6 mtr GI Octagonal Pole of approved make (top dia 70mm, Bottom dia 130mm and base plate 12mm thick) having 3mm thickness with Double arm bracket 1 Mtr length in 1:2:4 RCC foundation bolt including the cost of foundation, excavation & back filling and Required T&P completee in all respect.	each	15280.00	788.00
649	Supply & fixing of 10 mtr GI Octagonal Pole of approved make (top dia 100mm, Bottom dia 200 mm and base plate 16mm thick) having 3 mm thickness with Single arm bracket 1 Mtr length in 1:2:4 RCC foundation bolt including the cost of foundation, excavation & back filling and Required T&P completee in all respect.	each	27920.00	936.00
650	Supply & fixing of 10 mtr GI Octagonal Pole of approved make (top dia 100 mm, Bottom dia 200 mm and base plate 16mm thick) having 3 mm thickness with Double arm bracket 1 Mtr length in 1:2:4 RCC foundation bolt including the cost of foundation, excavation & back filling and Required T&P completee in all respect.	each	28460.00	936.00
<b><u>HIGH MAST SHAFT</u></b>				
651	Supply & fixing of 12.5 mtr High mast shaft of approved make with rising system hot dip glavanized inside & out side dip,heaving pole sheet thickness 3 mm. Top dia minium 150 mm, Bottom dia 310 mm base plate 25 mm thick suitable for wind velocity as per IS 875 part 3 & having no circumferential weld, with accessories for high mast such as head frame suitable for 6 luminaries & its control gear boxes 0.75 HP power tool moter, 3 point suspension system with steel wire rope 6 mm dia, double drum winch, including making suitable foundation as per manufature drawing/ site reuiment along with foundation bolts nuts, washers, anchor plates etc completee in all respect.	each	208000.00	11000.00
652	Supply & fixing of 16 mtr High mast shaft of approved make with rising system hot dip glavanized inside & out side dip,heaving pole sheet thickness 3 mm. Top dia minium 150 mm, Bottom dia 360 mm base plate 32 mm thick suitable for wind velocity as per IS 875 part 3 & having no circumferential weld, with accessories for high mast such as head frame suitable for 6 to 12 luminaries & its control gear boxes 1.5 HP power tool moter, 3 point suspension system with steel wire rope 6 mm dia, double drum winch, including making suitable foundation as per manufature drawing/ site reuiment along with foundation bolts nuts, washers, anchor plates etc completee in all respect.	each	231000.00	11000.00

653	Supply & fixing of 20 mtr High mast shaft of approved make with rising system hot dip glavanized inside & out side dip,heaving pole sheet thickness 4 mm. Top dia minium 150 mm, Bottom dia 410 mm base plate 32 mm thick suitable for wind velocity as per IS 875 part 3 & having no circumferential weld, with accessories for high mast such as head frame suitable for 6 to 12 luminaries & its control gear boxes 1.5 HP power tool moter, 3 point suspension system with steel wire rope 8 mm dia, double drum winch, including making suitable foundation as per manufature drawing/ site reuiment along with foundation bolts nuts, washers, anchor plates etc completee in all respect.	each	314000.00	16500.00
654	Supply & fixing of 25 mtr High mast shaft of approved make with rising system hot dip glavanized inside & out side dip,heaving pole sheet thickness 4 mm. Top dia minium 150 mm, Bottom dia 460 mm base plate 32 mm thick suitable for wind velocity as per IS 875 part 3 & having no circumferential weld, with accessories for high mast such as head frame suitable for 8 to 12 luminaries & its control gear boxes 1.5 HP power tool moter, 3 point suspension system with steel wire rope 8 mm dia, double drum winch, including making suitable foundation as per manufature drawing/ site reuiment along with foundation bolts nuts, washers, anchor plates etc completee in all respect.	each	421000.00	16500.00
655	Supply & fixing of 30 mtr High mast shaft of approved make with rising system hot dip glavanized inside & out side dip,heaving pole sheet thickness 4 mm. Top dia minium 150 mm, Bottom dia 500 mm base plate 32 mm thick suitable for wind velocity as per IS 875 part 3 & having no circumferential weld, with accessories for high mast such as head frame suitable for 8 to 12 luminaries & its control gear boxes 1.5 HP power tool moter, 3 point suspension system with steel wire rope 8 mm dia, double drum winch, including making suitable foundation as per manufature drawing/ site reuiment along with foundation bolts nuts, washers, anchor plates etc completee in all respect.	each	471000.00	16500.00

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## CHAPTER 7

## **EARTHING AND LIGHTING CONDUCTOR**

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
701	Supply and burying of 40mm dia x 4.5 metres long G.I. Pipe vertically for earthing having 12mm dia. Holes spaced 75mm apart drilled up to 2 metre from the bottom complete with earthing lead of No. 6 to 8SWG GI wire in G.I. Pipe up to apron (and from apron to switch board the cost of G.I. wire and pipe will be extra) upto switch board, 30cm square C.I. box with hinged cover masonary enclosure, funnel at top, alternate layers of charcoal/coke and salt at least 150mm thick alround etc. as per directions of Engineer-in-charge complete in all respects as per drawing.	each	4076.00	1075.00
702	Supply and burying of 600mm x 600mm x 6mm G.I. plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe and funnel for watering and one earthing lead of one no. 8 to 10 SWG GI wire in 15mm dia G.I. pipe up to switch board (from apron to switch board the cost of G.I. pipe and G.I. wire will be extra) 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick alround etc. as per directions of Engineer-in-charge complete in all respects as per drawing (This will apply for earthing of poles also).	each	5350.00	1075.00
703	Supply and burying of 600mm x 600mm x 6mm G.I. plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe and funnel for watering and one earthing lead of two no. 8 to 10 SWG GI wire in 15mm dia G.I. pipe up to switch board (from apron to switch board the cost of G.I. pipe and G.I. wire will be extra) 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick alround etc. as per directions of Engineer-in-charge complete in all respect.	each	5380.00	1075.00



704	Supply and burying of 600mm x 600mm x 3mm copper plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe and funnel for watering and one earthing lead of one no. 8 to 10 SWG copper wire in 15mm dia G.I. pipe up to switch board (from apron to switch board the cost of G.I. pipe and copper wire will be extra) 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick around etc. complete in all respect.	each	10170.00	1075.00
705	Supply and burying of 600mm x 600mm x 3mm copper plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe and funnel for watering and two earthing lead of two no. 8 SWG copper wire in 15mm dia G.I. pipe up to switch board (from apron to switch board the cost of G.I. pipe and copper wire will be extra) 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick around etc. complete in all respect.	each	10450.00	1075.00
706	Supply and burying earth electrode for lighting conductor of 600mm x 600mm x 6mm G.I. plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe for watering funnel, 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick around etc. as per directions of Engineer-in-charge complete in all respect.	each	4650.00	1075.00
707	Supply and burying earth electrode for lighting conductor of 900mm x 900mm x 6mm G.I. plate vertically for earthing with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe for watering funnel, 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick around etc. as per directions of Engineer-in-charge complete in all respect.	each	7440.00	1075.00
708	Supply and burying earth electrode for lighting conductor of 600mm x 600mm x 3mm Copper plate vertically with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe for watering funnel, 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick around etc. as per directions of Engineer-in-charge complete in all respect.	each	10150.00	1075.00

709	Supply and burying earth for lighting conductor of 900mm x 900mm x 3mm copper plate vertically with its top at least 3 metres below ground level complete with 20mm dia G.I. pipe for watering funnel, 30cm square C.I. frame with hinged cover masonry housing alternate layers of charcoal/coke and salt at least 150mm thick alround etc. as per directions of Engineer-in-charge complete in all respect.	each	17800.00	1075.00
710	Supply and fixing of horizontal air termination (roof conductor) of 25mm x 3mm G.I. strip, G.I. clamps on surface complete in all respects as approved by Engineer-in-charge.	Metre	170.00	50.00
711	Supply and fixing of horizontal air termination (roof conductor) of 25mm x 3mm copper strip, on G.I. clamps on surface complete in all respects as approved by Engineer-in-charge.	Metre	510.00	58.00
712 (A)	Supply and fixing of vertical air termination final rod comprising of 300mm long x 25mm dia. Copper rod with one pointed prong and 100mm dia x 3 mm thick base plate etc. complete in all respect.	each	1330.00	170.00
712 (B)	As in item 712(A) but with G.I. Material	each	570.00	160.00
713(A)	Supply and fixing of vertical down conductor of 32mm x 6mm G.I. strip etc. on approved clamps on surface for lightning conductor complete in all respects (for two storeyed Buildings).	Metre	310.00	102.00
713(B)	As in item 713(A) but for three or four storeyed buildings	Metre	355.00	143.00
713(C)	As in item 713(A) but for five and above storeyed building	Metre	390.00	184.00
714(A)	Supply and fixing of vertical down conductor of 32mm x 6mm copper strip etc. on approved clamps on surface for lightning conductor complete in all respects (For two storeyed buildings).	Metre	1284.00	102.00
714(B)	As in item 714(A) but for three storeyed building	Metre	1325.00	143.00
714(C)	As in item 714(A) but for five and above storeyed building	Metre	1370.00	220.00
715	Supply and laying of 12mm x 3mm G.I. strip from earth electrode directly in the ground as required complete in all respect.	Metre	72.00	34.00
716	Supply and laying of 25mm x 3mm G.I. strip from earth electrode directly in the ground as required complete in all respect.	Metre	90.00	34.00
717	Supply and laying of 32 mm x 6 mm G.I. strip from earth electrode directly in the ground as required complete in all respect.	Metre	150.00	34.00
718	Supply and laying of 32mm x 6mm copper strip from earth electrode directly in the ground as required complete in all respect.	Metre	1110.00	34.00

719	Supply and fixing of testing joint of G.I. strip 32mm x 6mm and 150mm long with G.I. bolts and nut etc. complete in all respect.	each	65.00	26.00
720	Supply and fixing of testing joint of copper strip 32mm x 6mm and 150mm long with tinned of brass bolts and nut etc. complete in all respect.	each	250.00	26.00
721	Supply and fixing of one number 8 SWG G.I. wire in 15mm dia. G.I. pipe for earthing, laid in ground or in wall duly concealed including the cost of cement, sand, labour, T&P other material required for proper completion of the work as directed at site.	Metre	200.00	43.00
722	Same as PS 721 but with one number 8 SWG copper wire	Metre	260.00	43.00
723	Same as PS 721 but with two number 8 SWG G.I. wire	Metre	210.00	49.00
724	Same as PS 721 but with two number 8 SWG copper wire	Metre	330.00	49.00
<b>ENCAPSULATED PIPE - IN- PIPE EARTHING</b>				
725 (A)	Supply and burring of Safe Earthing Electrode T-19 (Hot Dip Galvanized), Length up to 2000mm, outer pipe 50mm, inner pipe 25, terminal Dia 12 mm, outer GI pipe of 16 swg and inner GI pipe of 12 swg with Hot Dip Galvanization up to 100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30cm square C.I. frame with hinged cover & masonry husing (from electrode terminal to switch board, cost of 25 x 3 G.I . strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	6450.00	2500.00
725 (B)	Supply and burring of Safe Earthing Electrode T-19, (Hot Dip Galvanized), Length up to 3000mm, outer Dia 50 mm inner Dia 25 mm, terminal Dia 12mm, outer GI pipe of 16 swg and inner GI pipe of 12 swg with Hot Dip Galvanization up to 100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity and one earthing lead of 25mm x 3mm G.I. strip, upto switch board (from apron to switch board, the cost of G.I. strip will be extra) along with 30 cm square C.I. frame with hinged cover & masonry housing. Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	10040.00	2500.00

725 (C)	Supply and burring of Safe Earthing Electrode T-39 (Hot-Dip Galvanized), Length 2000mm, outer pipe 76mm inner Dia 38mm terminal Dia 12 mm ,outer GI pipe of 16 SWG and inner GI pipe of 12 SWG with Hot Dip Galvanization up to 100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 X 3 GI. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	8070.00	2500.00
725(D)	Supply and burring of Safe Earthing Electrode T-39 (Hot-Dip Galvanized), Length up to 3000mm, outer pipe 76mm inner Dia 38mm terminal Dia 12 mm ,outer GI pipe of 16 SWG and inner GI pipe of 12 SWG with Hot Dip Galvanization up to 100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 X 3 GI. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	12700.00	2500.00
726 (A)	Supply and burring of Safe Earthing Electrode T-19 Zn-Zinc Coated, Length 2000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	7530.00	2500.00

726 (B)	Supply and burring of Safe Earthing Electrode T-19 Zn-Zinc Coated, Length 3000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	11700.00	2500.00
726 (C.)	Supply and burring of Safe Earthing Electrode T-39 Zn-Zinc Coated, Length 2000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	9580.00	2500.00
726 (D)	Supply and burring of Safe Earthing Electrode T-39 Zn-Zinc Coated, Length 3000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	14850.00	2500.00
727 (A)	Supply and burring of Safe Earthing Electrode T-19 Cu-Copper Coated, Length 2000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 Copper Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	10260.00	2500.00

727 (B)	Supply and burring of Safe Earthing Electrode T-19 Cu-Copper Coated, Length 3000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 Copper Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	15080.00	2500.00
727 (C.)	Supply and burring of Safe Earthing Electrode T-39 Cu Copper Coated, Length 2000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 Copper Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	13240.00	2500.00
727 (D)	Supply and burring of Safe Earthing Electrode T-39 Cu Copper Coated, Length up to 3000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 Copper Strip will be extra). Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	19750.00	2500.00
728 (A)	Supply and burring of Safe Earthing Electrode T-19 A-Alloy Coated, Length 2000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	9220.00	2500.00

728 (B)	Supply and burring of Safe Earthing Electrode T-19 A-Alloy Coated, Length 3000mm, outer pipe 48.4mm x 3.2mm, inner pipe 26.9mm x 2.6, terminal Dia 12 mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	14170.00	2500.00
728 (C.)	Supply and burring of Safe Earthing Electrode T-39 A-Alloy Coated, Length 2000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	11730.00	2500.00
728 (D)	Supply and burring of Safe Earthing Electrode T-39 A-Alloy Coated, Length 3000mm, outer pipe 76.3mm x 3.2 inner pipe 42.4mm x 2.6mm, terminal Dia 12mm, coating 80-100 micron filled with crystalline conductive mixture (CCM) having anti corrosive & conductive property with 50 kgs activated soil (BFC) capable of reducing the soil resistivity with good mixture of retaining capacity along with 30 cm square C.I. frame with hinged cover & masonry housing. (From electrode terminal to switch board, cost of 25 x 3 G.I. Strip will be extra) Make: As approved in U.P. P.W.D., & C.P.R.I. Certified.	Each	17470.00	2500.00
729(A)	Supply and burrying of 75 mm Dia 1 Mtrs. Long Electrode casted with maintenance free, conductive concrete, non corrosive mixture ( Ultra low Resistive carbon 0.001 ohm/Mtr) in the ratio of 3:1:1 (marconite : cement : water) on M.S. Rod wiih hole (16 mm diameter X3 Mtrs ) will be vertically installed for earthing with 1 Mtr G.I strip (25 mm X 2.5mm) connected with SS nut bolt. The earth electrode will be installed into the 100 mm pit up to 3000 mm depth. noraml soil will be used as backfill material. Make : As approved in U.P.P.W.D & C.P.R.I. Certified.	each	7050.00	227.00

729(B)	Supply and burrying of 75 mm Dia 2 Mtrs. Long Electrode casted with maintenance free, conductive concrete, non corrosive mixture ( Ultra low Resistive carbon 0.001 ohm/Mtr) in the ratio of 3:1:1 (marconite : cement : water) on M.S. Rod wiih hole (16 mm diameter X3 Mtrs ) will be vertically installed for earthing with 1 Mtr G.I strip (25 mm X 2.5mm) connected with SS nut bolt. The earth electrode will be installed into the 100 mm pit up to 3000 mm depth. noraml soil will be used as backfill material Make : As approved in U.P.P.W.D & C.P.R.I. Certified.	each	13500.00	227.00
729(C)	Supply and burrying of 75 mm Dia 3 Mtrs. Long Electrode casted with maintenance free, conductive concrete, non corrosive mixture ( Ultra low Resistive carbon 0.001 ohm/Mtr) in the ratio of 3:1:1 (marconite : cement : water) on M.S. Rod wiih hole (16 mm diameter X3 Mtrs ) will be vertically installed for earthing with 1 Mtr G.I strip (25 mm X 2.5mm) connected with SS nut bolt. The earth electrode will be installed into the 100 mm pit up to 3000 mm depth. noraml soil will be used as backfill material. Make : As approved in U.P.P.W.D & C.P.R.I. Certified.	each	19700.00	227.00

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## CHAPTER 8

### L.T. SWITCH PANEL BOARDS

Schedule Item No	Description of Item	Unit	Complete Rate	Labour Rate
<b>801</b>	<p>Supply and erection of factory fabricated and wired metal clad dust and vermin proof floor mounting panel TPN switch board complete with the following HRC type heavy duty TPN fuse switches with fuses and instrument chamber etc. complete in all respects. The instrument chamber shall be separate and shall comprise of flush type ammeter, voltmeter, selector switches for ammeter and voltmeter, instrument fuses, current transformer etc. The board shall have suitable capacity electrolytic aluminium busbars as per IS8623 insulated with heat shrink sleeving and mounted on non hygroscopic supports such as CMC/DMC support with detachable side covers and shall be suitable for extension on the sides. The switches shall be complete with suitable cable end boxes, reverse entry boxes in case of pedestal type, cable sockets, compression glands and indicating lamp on incoming etc.</p> <p>The job includes the grounding of the board as per direction of Engineer-in-Charge. All outgoing switches of 100 Amp. and above will be provided with ampere metre current transformers and selector switches and instrument fuses etc. The switches board shall be fabricated with CRCA sheet with a minimum thickness of 1.6 mm/2 mm. Cubicle type switch board shall be of cat A B &amp; B-II and pedestal type for Cat-B and C only.</p>			
<b>Incoming</b>				
<b>100 Amp. TPN-1 No</b>				
<b>Outgoing</b>				
<b>(a)</b>	<b>63 Amp. TNP-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	58260.00	2343.00
<b>(b)</b>	<b>32 Amp. TPN-3 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	63600.00	2343.00

<b>(c)</b>	<b>63 Amp. TPN-1 No and 32 Amp. TPN-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	60389.00	2343.00
<b>802</b>	<b>Incoming</b>			
	<b>200 Amp. TPN-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>100 Amp. TNP-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	76700.00	2343.00
<b>(b)</b>	<b>63 Amp. TPN-3 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	64700.00	2343.00
<b>(c)</b>	<b>100 Amp. TPN-1 No and 63 Amp. TPN-3 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	80900.00	2343.00
<b>803</b>	<b>Incoming</b>			
	<b>315 Amp. TPN-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>100 Amp. TNP-3 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	106700.00	2343.00
<b>(b)</b>	<b>100 Amp. TPN-2 Nos.&amp; 63 Amp. TPN-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	107830.00	2343.00
<b>(c)</b>	<b>100 Amp. TPN-1 No and 63 Amp. TPN-3 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	94700.00	2343.00
<b>(d)</b>	<b>63 Amp. TPN-5 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	108257.00	2343.00
<b>(e)</b>	<b>200 Amp.TPN-1No, 100 Amp.TPN-1No&amp; 32 Amp.TPN-1No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	105300.00	2343.00

<b>804</b>	<b>Incoming</b>			
	<b>400 Amp. TPN-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>315 Amp.TPN-1 No, 100 Amp.TPN-1 No and 63 Amp.TPN-1 No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	125100.00	2937.00
<b>(b)</b>	<b>200 Amp. TPN-2 Nos. &amp; 63 Amp. TPN-1 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	135100.00	2937.00
<b>(c)</b>	<b>200 Amp.TPN-1Nos, 100 Amp.TPN-2Nos. &amp; 63 Amp.TPN-1Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	142800.00	2937.00
<b>(d)</b>	<b>200 Amp.TPN-1Nos, 100 Amp.TPN-1Nos. &amp; 63 Amp.TPN-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	136700.00	2937.00
<b>(e)</b>	<b>100 Amp.TPN- 3 Nos. &amp; 63 Amp.TPN-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	138907.00	2937.00
<b>805</b>	<b>Incoming</b>			
	<b>630 Amp. TPN-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>100 Amp.TPN-5 Nos., 63 Amp.TPN-1Nos &amp;32 Amp TPN.-1 Nos</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	190928.00	3916
<b>(b)</b>	<b>315 Amp.TPN-1No, 200Amp TPN-1No, 63 Am. TPN-1 Nos &amp; 32 Amp TPN.-1 No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	176000.00	3916.00
<b>(c)</b>	<b>200 Amp.TPN-2Nos., 100 Amp.TPN-1No &amp; 63 Amp.TPN-2 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	181390.00	3916.00
<b>(d)</b>	<b>200 Amp.TPN-1No, 100 Amp.TPN-2Nos &amp; 63 Amp.TPN-2 Nos &amp; 32 Amp TPN.-1 No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	192800.00	3916.00

(e)	<b>200 Amp.TPN-1No &amp; 63 Amp.TPN-5 Nos.</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	177000.00	3916.00
<b>806</b>	<b>Incoming</b>			
	<b>800 Amp. TPN-1 No</b>			
	<b>Outgoing</b>			
(a)	<b>630 Amp.TPN-1 No, 200 Amp.TPN-1No &amp; 63 Amp.TPN-1No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	190000.00	3916.00
(b)	<b>630 Amp. TPN-1 No, 100Amp TPN- 2 No&amp; 63 Am. TPN-1 No</b>			
(i)	Cat. A Cubicle Type	each	-	-
(ii)	Cat. B. Cubicle Type	each	217100.00	3916.00
(c)	<b>315 Amp.TPN-1No, 100 Amp.TPN-4 No&amp; 63 Amp.TPN-1No</b>			
(ii)	Cat. A. Cubicle Type	each	-	-
(iii)	Cat. B Cubicle Type	each	207980.00	3916.00
(d)	<b>315 Amp.TPN-2 No, 100 Amp.TPN-1No &amp; 63 Amp.TPN-1No</b>			
(ii)	Cat. A Cubicle Type	each	-	-
(iii)	Cat. B Cubicle Type	each	220300.00	3916.00
(e)	<b>200 Amp.TPN-3 Nos, 100 Amp.TPN-1No &amp; 63 Amp.TPN-1No</b>			
(ii)	Cat. A. Cubicle Type	each	-	-
(iii)	Cat. B Cubicle Type	each	227400.00	3916.00
<b>807</b>	Supply and fixing following capacity of automatic street light cubicle control panel painted with anti corrosive alkali and acid proof paint consisting of time switch TSO 100 series with contactors, HRC fuses, isolating switch metering instrument & instrument box with CTs etc. in case of TPN, complete in all respect.			
(a) (ii)	15 A SPN	each	17200.00	600.00
(b) (ii)	25 A SPN	each	17800.00	600.00
(c) (ii)	40 A SPN	each	19200.00	600.00
(d) (ii)	15 A TPN	each	22200.00	600.00
(e) (ii)	25 A TPN	each	26500.00	600.00
(f) (ii)	40 A TPN	each	29300.00	600.00

**Cubical Panel Board ( MCCB Type)**

<b>811</b>	<p>Supply &amp; Erraccetion of factory fabricated &amp; wired metal clad dust and vermin proof floor mounting, M.S. Channel Base with bottom and top cable entreis Electrical control panel with TPN MCCB's (Four Pole 36 KA with thermal magnatic release)Switches Complete and instrument chamber etc.complete in all respects. The instrument chamber shall be separate and shall comprise of flush type digital metering system for phase to phase voltage and single phase voltage, current and other parameters(KVA,P.F,KW etc) in each phase with touch type selector switches for different readings, instrument fuses, current transformer etc. The panel board shall have suitable capacity electrolytic alumininum busbars as per IS8623 or above istulated with heat shrink sleeving and mounted on non hygroscopic supports such as CMC/BMC support with deteachable side covers and shall be suitable for extension on the sides. The MCCB's shall be complete with suitable cable end boxes, compression glands and indicating lamp on incoming etc.</p> <p>The Job includes the grounting of the board as per directions of Engineer-in charge. All out goings of 100 Amp and above shall have an Ammeter. The panel board shall be fabricated with CRCA sheet with a minimum thickness of 1.6mm/2mm. Cubicle type switch board shall be of cat A &amp; B Only.</p>			
	<b>Incoming</b>			
	<b>100 Amp MCCB -1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>63 Amp. MCCB-2 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	92600.00	2343.00
<b>(b)</b>	<b>32 Amp. MCCB-3 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	117200.00	2343.00
<b>(c)</b>	<b>63 Amp. MCCB-1 No &amp; 32 Amp. MCCB-2 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	109943.00	2343.00
<b>812</b>	<b>Incoming</b>			
	<b>200 Amp. MCCB-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>100 Amp. MCCB-2 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	114000.00	2343.00

<b>(b)</b>	<b>63 Amp. MCCB-3 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	125700.00	2343.00
<b>(c)</b>	<b>100 Amp. MCCB-1 No &amp; 63 Amp. MCCB-3 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	138070.00	2343.00
<b>813</b>	<b>Incoming</b>			
	<b>400 Amp. MCCB-1 Nos.</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>200 Amp. MCCB-2 Nos,100 Amp MCCB- 1 No, &amp; 63 Amp MCCB-1 No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	203851.00	3322.00
<b>(b)</b>	<b>200 Amp. MCCB-2 Nos.&amp; 63 Amp. MCCB-1 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	201500.00	3322.00
<b>(c)</b>	<b>200 Amp. MCCB-1 No, 100 Amp MCCB - 2 Nos &amp; 63 Amp. MCCB-1 No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	194441.00	3322.00
<b>(d)</b>	<b>200 Amp. MCCB-1 No100 Amp MCCB-1 No &amp; 63 Amp MCCB-2 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	199000.00	3322.00
<b>(e)</b>	<b>100 Amp.MCCB-3Nos. &amp; 63 Amp.MCCB-2Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	199172.00	3322.00
<b>814</b>	<b>Incoming</b>			
	<b>630 Amp. MCCB-1 No</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>100 Amp.MCCB-5 Nos.&amp; 63 Amp.MCCB-2 Nos</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	301000.00	3916.00
<b>(b)</b>	<b>200 Amp. MCCB-2 Nos. 100 Amp-MCCB-1 No&amp; 63 Amp. MCCB-2 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	295200.00	3916.00
<b>(c)</b>	<b>200 Amp.MCCB-2Nos., 100 Amp.MCCB-2Nos. &amp; 63 Amp.MCCB-1No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	298200.00	3916.00
<b>(d)</b>	<b>200 Amp.MCCB-1No, 100 Amp.MCCB-2Nos. 63 Amp.MCCB-2 Nos. &amp; 32 Amp MCCB- 1 No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B.Pannel Cubicle Type	each	331200.00	3916.00
<b>(e)</b>	<b>200 Amp.MCCB- 1 No ,100 Amp MCCB-1 No &amp; 63 Amp.MCCB-5 Nos.</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	354000.00	3916.00
<b>815</b>	<b>Incoming</b>			

	<b>800 Amp. MCCB-1 Nos.</b>			
	<b>Outgoing</b>			
<b>(a)</b>	<b>630 Amp.MCCB-1 No, 200 Amp.MCCB-1No&amp; 63 Amp.MCCB-1No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	359200.00	4301.00
<b>(b)</b>	<b>630 Amp. MCCB-1 No, 100Amp MCCB- 2 Nos. &amp; 63 Am. MCCB-1 No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B. Pannel Cubicle Type	each	365000.00	4301.00
<b>(c)</b>	<b>400 Amp.MCCB-1No, 100 Amp.MCCB-4 Nos.&amp; 63 Amp.MCCB-1No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	390660.00	4301.00
<b>(d)</b>	<b>400 Amp.MCCB-1 No, 200 Amp.MCCB-1No,100 Amp.MCCB-1No &amp; 63 Amp MCCB - 1 No</b>			
(i)	Cat. A Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	372500.00	4301.00
<b>(e)</b>	<b>200 Amp.MCCB-3 Nos., 100 Amp.MCCB-1No &amp; 63 Amp.MCCB-1No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	383000.00	4301.00
<b>Cubical Panel Board (ACB &amp; MCCB Type)</b>				
<b>821</b>	<p>Supply &amp; Erraceton of factory fabricated &amp; wired metal clad dust and vermin proof floor mounting, M.S. Channel Base with bottom and top cable entreis Electrical control panel with TPN ACB(65 KA,4Pole Elect draw out , Micor processer Release IPR2 ) and TPN MCCB's (Four Pole 36 KA with thermal magnatic release) Switches and instrument chamber etc.complete in all respects. The instrument chamber shall be separate and shall comprise of flush type/digital ammeter Voltmeter, Selector switches for ammeter and Voltmeter, istrument fuses, current transormer etc. The Board shall have suitable capacity electrolytic aluminium busbars as per IS8623 insulated with heat shrink sleeving and mounted on non hygroscopic supports such as CMC/DMC support with deteachable side covers and shall be suitable for extension on the sides. The switches entry boxes shall be complete with suitable cable end boxes reverse.</p> <p>The Job includes the grounting of the board as per directions of Engineer-in charge. All out goings of 100 Amp and above Will be provided with Amp Metre, current transfonners and selector switches etc and insurtment fuse. The switch board shall be fabricated with CRCA sheet with a minimum thickness of 1.6 mm/2mm. Cubicle type switch board shall be of cat A &amp; B Only.</p>			

<b>INCOMING</b>
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	<b>630 Amp /415Volt ACB- 1 No</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>100 Amp.MCCB-5 Nos., &amp; 63 Amp.MCCB-1No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	557500.00	3916.00
<b>(b)</b>	<b>200 Amp MCCB- 2 Nos.,63 Amp, MCCB-2Nos &amp; 32 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	542000.00	3916.00
<b>(c)</b>	<b>200 Amp. MCCB-3 Nos. &amp; 63 Amp,MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	580500.00	3916.00
<b>(d)</b>	<b>200 Amp, MCCB-1 No,100Amp MCCB-2 Nos.,63 Amp,MCCB-2No &amp; 32 Amp,MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	572900.00	3916.00
<b>(e)</b>	<b>200 Amp, MCCB-1 No &amp; 63 Amp,MCCB-5Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	567500.00	3916.00
<b>822</b>	<b>INCOMING</b>			
	<b>800 Amp /415Volt ACB-1 No</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>630 Amp ACB- 1 No, 200 Amp MCCB-1 No&amp; 63 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	755200.00	4301.00
<b>(b)</b>	<b>630 Amp,ACB-1 No,100 Amp MCCB-2 Nos. &amp; 63 AmpMCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	786700.00	4301.00
<b>(c)</b>	<b>400 Amp MCCB-1 Nos, 200 Amp MCCB- 2 No &amp; 63 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	698600.00	4301.00
<b>(d)</b>	<b>400 Amp MCCB-1 No, 200 Amp MCCB-1No,100 Amp MCCB-1 No &amp; 63 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	620963.00	4301.00
<b>(e)</b>	<b>200 Amp MCCB-3Nos, 100 Amp MCCB- 1No &amp; 63 Amp,MCCB-2 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	584400.00	4301.00
<b>823</b>	<b>INCOMING</b>			
	<b>1000 Amp / 415 Volt ACB-1 No</b>			
	<b>OUT GOING</b>			



<b>(a)</b>	<b>630 Amp ACB-1No &amp; 400 Amp MCCB,-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	796300.00	5665.00
<b>(b)</b>	<b>630 Amp MCCB-1No &amp; 400 Amp MCCB,-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	615700.00	5665.00
<b>(c)</b>	<b>630 Amp ACB-2Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	947900.00	5665.00
<b>(d)</b>	<b>630 Amp MCCB-2Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	617700.00	5665.00
<b>(e)</b>	<b>400 Amp MCCB-2Nos.&amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	638300.00	5665.00
<b>(f)</b>	<b>200 Amp MCCB- 5Nos.&amp; 100 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	669200.00	5665.00
<b>824</b>	<b>INCOMING</b>			
	<b>1250 Amp /415Volt ACB- 1 No</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>800 Amp MCCB- 1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	611180.00	6050.00
<b>(b)</b>	<b>800 Amp ACB- 1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	860600.00	6050.00
<b>(c)</b>	<b>630 Amp MCCB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	653300.00	6050.00
<b>(d)</b>	<b>630 Amp ACB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	955600.00	6050.00
<b>(e)</b>	<b>630 Amp MCCB-2 Nos &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	709900.00	6050.00
<b>(f)</b>	<b>630 Amp ACB-2 Nos &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1080170.00	6050.00
<b>(g)</b>	<b>400 Amp MCCB- 3 Nos &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	785100.00	6050.00

<b>(h)</b>	<b>200 Amp MCCB- 6 Nos &amp; 100 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	760900.00	6050.00
<b>(i)</b>	<b>1000 Amp ACB-1 No &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	895800.00	6050.00
<b>825</b>	<b>INCOMING</b>			
	<b>1600 Amp /415Volt ACB-1 No</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>800 Amp MCCB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	697400.00	6435.00
<b>(b)</b>	<b>800 Amp ACB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1102700.00	6435.00
<b>(c)</b>	<b>800 Amp MCCB- 1 No ,630 Amp MCCB-1 No &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	709300.00	6435.00
<b>(d)</b>	<b>800 Amp ACB- 1 No, 630 Amp ACB-1 No &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1148300.00	6435.00
<b>(e)</b>	<b>630 Amp MCCB- 1 No,400 Amp MCCB-2 Nos &amp; 200 Amp MCCB-1 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	771200.00	6435.00
<b>(f)</b>	<b>630 Amp ACB- 1 No ,400 Amp MCCB-2 No &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	951900.00	6435.00
<b>(g)</b>	<b>630 Amp MCCB- 1 No ,200 Amp MCCB-3 Nos &amp; 100 Amp MCCB-4 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	835200.00	6435.00
<b>(h)</b>	<b>630 Amp ACB-1 No, 200 Amp MCCB-3 No &amp; 100 Amp MCCB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1047000.00	6435.00
<b>(i)</b>	<b>400Amp MCCB-4 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	746240.00	6435.00
<b>(j)</b>	<b>400 Amp MCCB- 1 No,200 Amp MCCB-3 Nos., 100 Amp MCCB-3 Nos &amp; 63 Amp MCCB-4 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	911000.00	6435.00

<b>(k)</b>	<b>200 Amp MCCB- 4 Nos., 100 Amp MCCB-5 Nos.,63 Amp MCCB-4 Nos &amp; 32 Amp MCCB-2 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	977800.00	6435.00
<b>826</b>	<b>INCOMING</b>			
	<b>2000 Amp /415Volt ACB- 1 No</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>800 Amp MCCB- 2 Nos &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	870000.00	7029.00
<b>(b)</b>	<b>800 Amp ACB- 2 Nos &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1238500.00	7029.00
<b>(c)</b>	<b>800 Amp MCCB- 1 No &amp; 630 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	822100.00	7029.00
<b>(d)</b>	<b>800 Amp ACB- 1 No &amp; 630 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1043600.00	7029.00
<b>(e)</b>	<b>1000 Amp ACB- 1 No &amp; 630 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1055600.00	7029.00
<b>(f)</b>	<b>800 Amp MCCB- 1 No &amp; 200 Amp MCCB-6 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	951500.00	7029.00
<b>(g)</b>	<b>800 Amp ACB- 1 No &amp; 200 Amp MCCB-6 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each		-
(ii)	Cat. B Pannel Cubicle Type	each	1129600.00	7029.00
<b>(h)</b>	<b>630 Amp MCCB- 1 No, 400 Amp MCCB-2 Nos.&amp; 200 Amp MCCB -4 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	948900.00	7029.00
<b>(i)</b>	<b>630 Amp MCCB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	832100.00	7029.00
<b>(j)</b>	<b>630 Amp MCCB-2 Nos &amp; 200 Amp MCCB-4 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	955100.00	7029.00
<b>(k)</b>	<b>1000 Amp ACB- 1 No ,400 Amp MCCB-3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1058100.00	7029.00

<b>(l)</b>	<b>1000 Amp ACB- 1 No,630 Amp MCCB-1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1053600.00	7029.00
<b>(m)</b>	<b>1000 Amp ACB- 1 No,400 Amp MCCB-2 Nos &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1085900.00	7029.00
<b>(n)</b>	<b>1000 Amp ACB- 1 No &amp; 200 Amp MCCB-5 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1122800.00	7029.00
<b>827</b>	<b>INCOMING</b>			
	<b>2500 Amp /415Volt ACB</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>1000 Amp ACB- 2 Nos &amp; 630 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1386200.00	7799.00
<b>(b)</b>	<b>1000 Amp ACB- 2 Nos &amp; 630 Amp ACB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1508600.00	7799.00
<b>(c)</b>	<b>1000 Amp ACB- 1 No, 800 Amp MCCB-1 No,400 Amp MCCB-1 No &amp;200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1138400.00	7799.00
<b>(d)</b>	<b>1000 Amp ACB- 1 No, 800 Amp ACB-1 No,400 Amp MCCB-1 No &amp; 200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1393300.00	7799.00
<b>(e)</b>	<b>800 Amp MCCB-2 No,630 Amp MCCB-1 No,200 Amp MCCB-1 No &amp; 100 Amp MCCB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	974600.00	7799.00
<b>(f)</b>	<b>800 Amp ACB- 2 Nos.,630 Amp ACB-1 No,200 Amp MCCB-1 No &amp; 100 Amp MCCB- 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1582700.00	7799.00
<b>(g)</b>	<b>800 Amp MCCB- 2 Nos ,630 Amp MCCB-1 No &amp; 400 Amp MCCB- 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	918200.00	7799.00
<b>(h)</b>	<b>800 Amp ACB- 2 Nos ,630 Amp ACB-1 No &amp; 400 Amp MCCB- 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1573100.00	7799.00

(i)	<b>800 Amp MCCB- 1 No ,630 Amp MCCB-2 Nos &amp; 400 Amp MCCB- 3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1086800.00	7799.00
(j)	<b>800 Amp ACB- 1 No, 630 Amp ACB-2 Nos &amp; 400 Amp MCCB- 3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1696700.00	7799.00
(k)	<b>630 Amp MCCB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	882500.00	7799.00
(l)	<b>630 Amp ACB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each		-
(ii)	Cat. B Pannel Cubicle Type	each	1828000.00	7799.00
(m)	<b>800 Amp MCCB-3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	879100.00	7799.00
(n)	<b>800 Amp ACB-3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1593600.00	7799.00
(o)	<b>630 Amp MCCB- 2 Nos &amp; 400 Amp MCCB-3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	948800.00	7799.00
(p)	<b>630 Amp ACB- 2 Nos &amp; 400 Amp MCCB-3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1520600.00	7799.00
<b>828</b>	<b>INCOMING</b>			
	<b>3200 Amp/415 Volt ACB</b>			
	<b>OUT GOING</b>			
(a)	<b>2000 Amp ACB- 1 No,800 Amp MCCB-1No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1253500.00	7799.00
(b)	<b>2000 Amp ACB- 1 Nos &amp; 630Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1267700.00	7799.00
(c)	<b>1250 Amp ACB- 1 No, 800Amp MCCB-2 Nos &amp; 400 Amp MCCB- 3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1510400.00	7799.00
(d)	<b>1250 Amp ACB- 1 No,800Amp ACB-2 Nos &amp; 400 Amp MCCB- 3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1978900.00	7799.00

<b>(e)</b>	<b>1000 Amp ACB- 3 Nos &amp; 200Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1921300.00	7799.00
<b>(f)</b>	<b>1000 Amp ACB- 2 Nos,800Amp MCCB-1 No &amp; 400 Amp MCCB- 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1664700.00	7799.00
<b>(g)</b>	<b>1000 Amp ACB- 2 Nos,800Amp ACB-1 No &amp; 400 Amp MCCB- 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1824100.00	7799.00
<b>(h)</b>	<b>800Amp MCCB-3 Nos &amp; 630 Amp MCCB- 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1125100.00	7799.00
<b>(i)</b>	<b>800Amp ACB-3 Nos &amp; 630 Amp ACB-1 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2063700.00	7799.00
<b>(j)</b>	<b>800Amp MCCB-2 Nos &amp; 630 Amp MCCB-2 Nos &amp; 400 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1278100.00	7799.00
<b>(k)</b>	<b>800Amp ACB-2 Nos &amp; 630 Amp ACB-2 Nos &amp; 400 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2262800.00	7799.00
<b>(l)</b>	<b>800Amp MCCB-1 Nos &amp; 630 Amp MCCB-3 Nos &amp; 400 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1333800.00	7799.00
<b>(m)</b>	<b>800Amp ACB-1 No , 630 Amp ACB-3 Nos &amp; 400 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2203000.00	7799.00
<b>(n)</b>	<b>800Amp MCCB-1 No, 630 Amp MCCB-2 Nos.,400 Amp MCCB-2 Nos &amp; 200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1329000.00	7799.00
<b>(o)</b>	<b>800 Amp ACB-1 No, 630 Amp ACB-2 Nos.,400 Amp MCCB-2 Nos &amp; 200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2104500.00	7799.00
<b>(p)</b>	<b>630 Amp MCCB-4 Nos,400 Amp MCCB-2 Nos&amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1325500.00	7799.00

<b>(q)</b>	<b>630 Amp ACB-4 Nos ,400 Amp MCCB-2 Nos &amp; 200Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2099800.00	7799.00
<b>(r)</b>	<b>630 Amp MCCB-5 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1215500.00	7799.00
<b>(s)</b>	<b>630 Amp ACB-5 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2479400.00	7799.00
<b>(t)</b>	<b>630 Amp MCCB-4 Nos,400 Amp MCCB-1 No &amp; 200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each		-
(ii)	Cat. B Pannel Cubicle Type	each	1101800.00	7799.00
<b>(u)</b>	<b>630 Amp MCCB-4 Nos,400 Amp MCCB-1 No &amp; 200 Amp MCCB-2 Nos</b>			
(ii)	Cat. B Pannel Cubicle Type	each	1145300.00	7799.00
<b>(v)</b>	<b>630 Amp ACB-4 Nos,400 Amp MCCB-1 No &amp; 200 Amp MCCB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2466900.00	7799.00
<b>829</b>	<b>INCOMING</b>			
	<b>4000 Amp/415 Volt ACB</b>			
	<b>OUT GOING</b>			
<b>(a)</b>	<b>2000 Amp ACB-1 No,1250Amp ACB-1 No &amp; 800 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2002600.00	9548.00
<b>(b)</b>	<b>2000 Amp ACB-1 No,1600Amp ACB-1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2029800.00	9548.00
<b>(c)</b>	<b>2000 Amp ACB-1 No &amp; 1000Amp ACB-2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2297400.00	9548.00
<b>(d)</b>	<b>2000 Amp ACB-1 No,1000Amp ACB-1 No, 800 Amp MCCB-1 Nos &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2094500.00	9548.00
<b>(e)</b>	<b>2000 Amp ACB-1 No,1000Amp ACB-1 No &amp; 800 Amp ACB-1 No &amp; 200 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2284900.00	9548.00
<b>(f)</b>	<b>2000 Amp ACB-1 No &amp; 630 Amp MCCB-3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1634900.00	9548.00

<b>(g)</b>	<b>2000 Amp ACB-1 No &amp; 630 Amp ACB-3 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2636800.00	9548.00
<b>(h)</b>	<b>1600 Amp ACB-2 Nos &amp; 800 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2198900.00	9548.00
<b>(i)</b>	<b>1600 Amp ACB-2 Nos,&amp; 800 Amp ACB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2130700.00	9548.00
<b>(j)</b>	<b>1600 Amp ACB-1 No &amp; 1250 Amp ACB-2 Nos.</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2135200.00	9548.00
<b>(k)</b>	<b>1600 Amp ACB-1 No,1000 Amp ACB-1 No, 800 Amp MCCB-1 No &amp; 630 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2095473.00	9548.00
<b>(l)</b>	<b>1600 Amp ACB-1 No,1000Amp ACB-1 No, 800 Amp ACB-1 No &amp; 630 Amp ACB-1 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2500900.00	9548.00
<b>(m)</b>	<b>1000 Amp ACB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2541700.00	9548.00
<b>(n)</b>	<b>1000 Amp ACB-3 Nos,800 Amp MCCB-1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2347400.00	9548.00
<b>(o)</b>	<b>1000 Amp ACB-3 Nos,800 Amp ACB-1 No &amp; 400 Amp MCCB-1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2600100.00	9548.00
<b>(p)</b>	<b>800 Amp MCCB-5 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1530900.00	9548.00
<b>(q)</b>	<b>800 Amp MCCB-4 Nos &amp; 400 MCCB - 3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1793900.00	9548.00
<b>(r)</b>	<b>800 Amp MCCB-4 Nos., 630 Amp MCCB-1 No &amp; 400 MCCB - 1 No</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1675700.00	9548.00
<b>(s)</b>	<b>800 Amp MCCB-2 Nos ,630 Amp MCCB-2 Nos 400 MCCB - 3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1793300.00	9548.00



<b>(t)</b>	<b>800 Amp MCCB-2 Nos ,630 Amp MCCB-3 Nos 400 MCCB - 2 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1758200.00	9548.00
<b>(u)</b>	<b>800 Amp MCCB-1 No,630 Amp MCCB-2 Nos &amp; 400 MCCB - 5 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1805600.00	9548.00
<b>(v)</b>	<b>630 Amp MCCB-6 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1602300.00	9548.00
<b>(w)</b>	<b>630 Amp MCCB-2 Nos, 400 Amp MCCB-5 Nos &amp; 200 Amp MCCB-4 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2025600.00	9548.00
<b>(x)</b>	<b>630 Amp MCCB-5 Nos, 400 Amp MCCB-3 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	1877800.00	9548.00
<b>(y)</b>	<b>400 Amp MCCB-10 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2114000.00	9548.00
<b>(z)</b>	<b>400 Amp MCCB-7 Nos &amp; 200 Amp MCCB-6 Nos</b>			
(i)	Cat. A.Pannel Cubicle Type	each	-	-
(ii)	Cat. B Pannel Cubicle Type	each	2164800.00	9548.00

uk/ % mDr njkaeth0, lOVH0 NIMelj vU; l Hh enat\$ s& dkVz] ykMz] vuykMz rFlk  
Bclnkj ykMak bR; kn l fefyr ga

## **CHAPTER 9**

### **RISING MAINS**

<b>Schedule Item No.</b>	<b>Description of Item</b>	<b>Unit</b>	<b>Complete Rate</b>	<b>Labour Rate</b>
907	Supply and erection of 200 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	R/mtr	6270.00	620.00
908	Supply and erection of 315 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	R/mtr	8100.00	620.00
909	Supply and erection of 400 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	R/mtr	8710.00	620.00
910	Supply and erection of 600 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	R/mtr	13275.00	795.00
911	Supply and erection of 800 Amp. TPN Rising Mains complete with top end cover plate etc. On angle iron wall brackets complete in all respect.	R/mtr	15100.00	795.00
912	Supply and erection of 32 Amp. TPN tap off box on rising mains complete with HRC fuses etc. complete in all respect.	each	4790.00	445.00
913	Supply and erection of 63 Amp. TPN tap off box on rising mains complete with HRC fuses etc. complete in all respect.	each	5715.00	445.00
914	Supply and erection of 100 Amp. TPN tap off box on rising mains complete with HRC fuses etc. complete in all respect.	each	9990.00	445.00
915	Supply and erection of 200 Amp. TPN tap off box on rising mains complete with HRC fuses etc. complete in all respect.	each	12055.00	445.00
916	Supply and erection of incoming adopter box for mounting 315 Amp. TPN CFS unit including connectors of required capacity on to the rising Mains complete in all respect.	each	8780.00	310.00
916 (A)	Supply and erection of incoming adopter box for mounting 400 Amp. TPN CFS unit including connectors of required capacity on to the rising Mains complete in all respect.	each	9200.00	310.00

917	Supply and erection of incoming adaptor box for mounting 500 Amp. TPN CFS unit including connectors of required capacity on to the rising mains complete in all respect.	each	11330.00	310.00
917 (A)	Supply and erection of incoming adaptor box for mounting 630 Amp. TPN CFS unit including connectors of required capacity on to the rising mains complete in all respect.	each	12560.00	310.00
918	Supply and erection of incoming adopter box for mounting 800 Amp. TPN CFS unit including connectors of required capacity on to the rising Mains complete in all respect.	each	16810.00	310.00
921	Supply and Fixing 400 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	17800.00	1240.00
922	Supply and Fixing 630 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	18800.00	1240.00
923	Supply and Fixing 800 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	20500.00	1240.00
924	Supply and Fixing 1000 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	22990.00	1240.00
925	Supply and Fixing 1250 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	25300.00	1240.00
926	Supply and Fixing 1600 Amp TPN Sandwich aluminium bus bar trunking complete shutable for IP 54 protection with top end cover plate of 1.6mm thik G.I. Sheet with sutable arrangement for fixing etc complete in all respect.	each	28500.00	1590.00
927	Supply and Fixing of plugging point 400 Amp to 1000 Amp TPN Sandwich aluminium bus bar trunking complete in all respect.	each	5250.00	-
928	Supply and Fixing of plugging point 1250 Amp to 1600 Amp TPN Sandwich aluminium bus bar trunking complete in all respect.	each	7030.00	-
929	Supply and Fixing of Tape off box 32 Amp to 100 Amp TPN for Sandwich aluminium bus bar trunking complete in all respect.	each	29500.00	310.00

930	Supply and Fixing of Tape off box 125 Amp to 200 Amp TPN for Sandwich aluminium bus bar trunking complete in all respect.	each	31600.00	310.00
931	Supply and Fixing of Tape off box 250 Amp to 400 Amp TPN for Sandwich aluminium bus bar trunking complete in all respect.	each	44200.00	310.00
932	Supply and Fixing of Bend for 400 Amp sandwich Al bus bar trunking complete in all respect.	each	29010.00	620.00
933	Supply and Fixing of Bend for 630 Amp sandwich Al bus bar trunking complete in all respect.	each	30400.00	620.00
934	Supply and Fixing of Bend for 800 Amp sandwich Al bus bar trunking complete in all respect.	each	33050.00	620.00
935	Supply and Fixing of Bend for 1000 Amp sandwich Al bus bar trunking complete in all respect.	each	36500.00	620.00
936	Supply and Fixing of Bend for 1250 Amp sandwich Al bus bar trunking complete in all respect.	each	39500.00	620.00
937	Supply and Fixing of Bend for 1600 Amp sandwich Al bus bar trunking complete in all respect.	each	44500.00	620.00
938	Supply and Fixing of Flange End for 400 Amp sandwich Al bus bar trunking complete in all respect.	each	25750.00	620.00
939	Supply and Fixing of Flange End for 630 Amp sandwich Al bus bar trunking complete in all respect.	each	26730.00	620.00
940	Supply and Fixing of Flange End for 800 Amp sandwich Al bus bar trunking complete in all respect.	each	28530.00	620.00
941	Supply and Fixing of Flange End for 1000 Amp sandwich Al bus bar trunking complete in all respect.	each	31500.00	620.00
942	Supply and Fixing of Flange End for 1250 Amp sandwich Al bus bar trunking complete in all respect.	each	33450.00	620.00
943	Supply and Fixing of Flange End for 1600 Amp sandwich Al bus bar trunking complete in all respect.	each	37050.00	620.00
944	Supply and Fixing of End Cover for 400 Amp sandwich Al bus bar trunking complete in all respect.	each	6200.00	310.00
945	Supply and Fixing of End Cover for 800 Amp sandwich Al bus bar trunking complete in all respect.	each	6590.00	310.00
946	Supply and Fixing of End Cover for 800 Amp sandwich Al bus bar trunking complete in all respect.	each	7900.00	310.00
947	Supply and Fixing of End Cover for 1000 Amp sandwich Al bus bar trunking complete in all respect.	each	10090.00	310.00

948	Supply and Fixing of End Cover for 1250 Amp sandwich Al bus bar trunking complete in all respect.	each	14150.00	310.00
949	Supply and Fixing of End Cover for 1600 Amp sandwich Al bus bar trunking complete in all respect.	each	19500.00	310.00

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## CHAPTER 10

### MINIATURE CIRCUIT BREAKER

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
1001	S&F of 0.5 Amp to 5 Amp. SP MCB (10KA) C Curve			
	CAT A	each	368.00	30.00
	CAT B	each	280.00	30.00
	CAT C	each	-	-
1002	S&F of 6 Amp to 32 Amp. SPMCB (10 KA) C Curve			
	CAT A	each	260.00	30.00
	CAT B	each	206.00	30.00
	CAT C	each	-	-
1003 (A)	S&F of 40 Amp. SPMCB (10KA)C Curve			
	CAT A	each	530.00	30.00
	CAT B	each	390.00	30.00
	CAT C	each	-	-
1003 (B)	S&F of 50 Amp to 63 Amp. SPMCB (10KA)			
	CAT A	each	530.00	30.00
	CAT B	each	390.00	30.00
	CAT C	each	-	-
1004 (A)	S&F of 40 Amp. S.P. Isolator			
	CAT A	each	-	-
	CAT B	each	250.00	30.00
	CAT C	each	-	-
1004 (B)	S&F of 63 Amp. S.P. Isolator			
	CAT A	each		
	CAT B	each	280.00	30.00
	CAT C	each	-	-
1005 (A)	S&F of 40 Amp. D.P. Isolator			
	CAT A	each	455.00	30.00
	CAT B	each	355.00	30.00
	CAT C	each	-	-
1005 (B)	S&F of 63 Amp. D.P. Isolator			
	CAT A	each	595.00	30.00
	CAT B	each	450.00	30.00
	CAT C	each	-	-

1006 (A)	S&F of 40 Amp. T.P. Isolator				
		CAT A	each	770.00	50.00
		CAT B	each	650.00	50.00
		CAT C	each	-	-
1006 (B)	S&F of 63 Amp. T.P. Isolator				
		CAT A	each	890.00	50.00
		CAT B	each	710.00	50.00
		CAT C	each	-	-
1006 (C)	S&F of 100 Amp. T.P. Isolator				
		CAT A	each	1000.00	50.00
		CAT B	each	900.00	50.00
		CAT C	each	-	-
1007 (A)	S&F of 40 Amp. 4 Pole. Isolator				
		CAT A	each	945.00	50.00
		CAT B	each	790.00	50.00
		CAT C	each	-	-
1007 (B)	S&F of 63 Amp. 4 Pole Isolator				
		CAT A	each	1070.00	50.00
		CAT B	each	858.00	50.00
		CAT C	each	-	-
1007 (C)	S&F of 100 Amp. 4 Pole. Isolator				
		CAT A	each	1365.00	50.00
		CAT B	each	1120.00	50.00
		CAT C	each	-	-
1008	S&F of 0.5 Amp. to 5 Amp. DP MCB (10 KA) C Curve				
		CAT A	each	920.00	30.00
		CAT B	each	720.00	30.00
		CAT C	each	-	-
1009	S&F of 6 Amp. to 32 Amp. DP MCB (10 KA) C Curve				
		CAT A	each	740.00	30.00
		CAT B	each	570.00	30.00
		CAT C	each	-	-
1010	S&F of 40 Amp. DP MCB (10 KA) C Curve				
		CAT A	each	1180.00	30.00
		CAT B	each	880.00	30.00
		CAT C	each	-	-

1011	S&F of 63 Amp. DP MCB (10 KA)				
		CAT A	each	1180.00	30.00
		CAT B	each	910.00	30.00
		CAT C	each	-	-
1012	S&F of 0.5 Amp. to 5 Amp. TP MCB (10 KA) C Curve				
		CAT A	each	1485.00	50.00
		CAT B	each	1070.00	50.00
		CAT C	each	-	-
1013	S&F of 6 Amp. to 32 Amp. TP MCB (10 KA) C Curve				
		CAT A	each	1190.00	50.00
		CAT B	each	920.00	50.00
		CAT C	each	-	-
1014	<b>Deleted</b>				
1015	<b>Deleted</b>				
1016	S&F of 40 Amp. TP MCB (10 KA) C Curve				
		CAT A	each	1780.00	50.00
		CAT B	each	1280.00	50.00
		CAT C	each	-	-
1017	S&F of 63 Amp. TP MCB (10 KA) C Curve				
		CAT A	each	1790.00	50.00
		CAT B	each	1310.00	50.00
		CAT C	each	-	-
1018	S&F of 0.5 Amp to 5 Amp. 4 pole MCB (10 KA) C Curve				
		CAT A	each	1920.00	86.00
		CAT B	each	1450.00	86.00
		CAT C	each	-	-
1019	S&F of 6 Amp. to 32 Amp. 4 pole MCB (10 KA) C Curve				
		CAT A	each	1600.00	86.00
		CAT B	each	1260.00	86.00
		CAT C	each	-	-
1020	S&F of 40 Amp. 4 pole MCB (10 KA)				
		CAT A	each	2275.00	86.00
		CAT B	each	1705.00	86.00
		CAT C	each	-	-
1020 (A)	S&F of 63 Amp. 4 pole MCB(10 KA) C Curve				
		CAT A	each	2290.00	86.00
		CAT B	each	1720.00	86.00
		CAT C	each	-	-



1021	S&F of 80 to 100 Amp 4 pole MCCB (16 KA) Thermal Magnetic release				
		CAT A	each	6300.00	86.00
		CAT B	each	3880.00	86.00
		CAT C	each		
1021 (A)	S&F of 125 Amp 4 pole MCCB (16 KA) Thermal Magnetic release				
		CAT A	each	8310.00	86.00
		CAT B	each	3910.00	86.00
		CAT C	each	-	
1021 (B)	S&F of 160 Amp 4 pole MCCB (16 KA) Thermal Magnetic release				
		CAT A	each	9700.00	86.00
		CAT B	each	3960.00	86.00
		CAT C	each		
1021 (C)	S&F of 100 Amp 4 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	8140.00	86.00
		CAT B	each	5010.00	86.00
		CAT C	each		
1021 (D)	S&F of 125 Amp 4 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	10615.00	86.00
		CAT B	each	5290.00	86.00
		CAT C	each		
1021 (E)	S&F of 160 Amp 4 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	12660.00	86.00
		CAT B	each	6500.00	86.00
		CAT C	each		
1021 (F)	S&F of 200 Amp 4 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	17330.00	86.00
		CAT B	each	8240.00	86.00
		CAT C	each		
1021 (G)	S&F of 250 Amp 4 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	21080.00	86.00
		CAT B	each	9060.00	86.00
		CAT C	each		
1021 (H)	S&F of 80-100 Amp 3 pole MCCB (16 KA) Thermal				

	Magnetic release				
		CAT A	each	4700.00	86.00
		CAT B	each	2670.00	86.00
		CAT C	each	-	-
1021 (I)	S&F of 125 Amp 3 pole MCCB (16 KA) Thermal Magnetic release				
		CAT A	each	6580.00	86.00
		CAT B	each	-	-
		CAT C	each	-	-
1021 (J)	S&F of 160 Amp 3 pole MCCB (16 KA) Thermal Magnetic release				
		CAT A	each	7880.00	86.00
		CAT B	each	-	-
		CAT C	each	-	-
1021 (K)	S&F of 100 Amp 3 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	5800.00	86.00
		CAT B	each	-	-
		CAT C	each	-	-
1021 (L)	S&F of 125 Amp 3 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	8225.00	86.00
		CAT B	each	3190.00	86.00
		CAT C	each	-	-
1021 (M)	S&F of 160 Amp 3 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	9625.00	86.00
		CAT B	each	4660.00	86.00
		CAT C	each	-	-
1021 (N)	S&F of 200 Amp 3 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	14010.00	86.00
		CAT B	each	-	-
		CAT C	each	-	-
1021 (O)	S&F of 250 Amp 3 pole MCCB (25 KA) Thermal Magnetic release				
		CAT A	each	17500.00	86.00
		CAT B	each	-	-
		CAT C	each	-	-
1022	S&F surface/flush mounting 4 ways SPN distribution board without MCB complete in all respect,as directed at site by Engineer in charge.				
		CAT A	each	1240.00	202.00
		CAT B	each	910.00	202.00
		CAT C	each	-	-

1022 (A)	S&F surface/flush mounting 4 ways SPN distribution board with additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	1590.00 202.00
		CAT B	each	1265.00 202.00
		CAT C	each	- -
1023	<b>Deleted</b>			
1024	S & F surface/Flush mounting 8ways SPN distribution board without additional metal door without MCB complete in all respect, as direct by Engineer in Charge.			
		CAT A	each	1470.00 202.00
		CAT B	each	1090.00 202.00
		CAT C	each	- -
1024 (A)	S&F surface/flush mounting 8ways SPN distribution board with additional metal door without MCB complete in all respect, as directed by Engineer in charge.			
		CAT A	each	1900.00 202.00
		CAT B	each	1575.00 202.00
		CAT C	each	- -
1025	S & F surface/Flush mounting 12ways SPN distribution board without additional metal door without MCB complete in all respect, as direct by Engineer in Charge.			
		CAT A	each	1705.00 202.00
		CAT B	each	1350.00 202.00
		CAT C	each	- -
1025 (A)	S & F surface/Flush mounting 12 ways SPN distribution board with additional metal door without MCB complete in all respect, as Direct by Engineer in Charge.			
		CAT A	each	2250.00 202.00
		CAT B	each	1850.00 202.00
		CAT C	each	- -
1026	S & F surface/Flush mounting 4ways TPN distribution board without additional Door without MCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	3080.00 334.00
		CAT B	each	2375.00 334.00
		CAT C	each	- -
1026 (A)	S & F surface/Flush mounting 4ways TPN distribution board with additional metal door without MCB complete in all respect,as directed at site by Engineer in charge.			
		CAT A	each	3610.00 334.00
		CAT B	each	2890.00 334.00
		CAT C	each	- -

1026 (B)	S & F surface/Flush mounting 4ways V TPN distribution board without additional Door without MCB complete in all respect, as directed at site by Engineer in charge.				
		CAT A	each	7500.00	334.00
		CAT B	each	6450.00	334.00
		CAT C	each		
1026 (C)	S & F surface/Flush mounting 4ways V TPN distribution board with additional metal door without MCB complete in all respect,as directed at site by Engineer in charge.				
		CAT A	each	8560.00	334.00
		CAT B	each	7560.00	334.00
		CAT C	each	-	-
1027	S & F surface/Flush mounting 6ways TPN distribution board without additional board without MCB complete in all respect, as directed at site by Engineer in charge.				
		CAT A	each	3660.00	334.00
		CAT B	each	2700.00	334.00
		CAT C	each	-	-
1027 (A)	S & F surface/Flush mounting 6ways TPN distribution board with additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.				
		CAT A	each	4370.00	334.00
		CAT B	each	3250.00	334.00
		CAT C	each	-	-
1027 (B)	S & F surface/Flush mounting 6ways V TPN distribution board without additional Door without MCB complete in all respect,as directed at site by Engineer in charge.				
		CAT A	each	8910.00	334.00
		CAT B	each	6960.00	334.00
		CAT C	each	-	-
1027 (C)	S & F surface/Flush mounting 6ways VTPN distribution board with additional metal door without MCB complete in all respect,as directed at site by Engineer in charge.				
		CAT A	each	9450.00	334.00
		CAT B	each	8250.00	334.00
		CAT C	each	-	-
1028	S & F surface/Flush mounting 8ways TPN distribution board without additional door without MCB complete in all respect,as directed at site by Engineer in charge.				
		CAT A	each	4580.00	405.00
		CAT B	each	3320.00	405.00
		CAT C	each	-	-

1028 (A)	S & F surface/Flush mounting 8ways TPN distribution board with additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	5210.00	405.00
	CAT B	each	4430.00	405.00
	CAT C	each	-	-
1028 (B)	S & F surface/Flush mounting 8ways V TPN distribution board without additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	9060.00	405.00
	CAT B	each	8010.00	405.00
	CAT C	each	-	-
1028 (C)	S & F surface/Flush mounting 8ways V TPN distribution board with additional metal board without MCB complete in all respect,as directed at site by Engineer in charge.			
	CAT A	each	11010.00	405.00
	CAT B	each	9540.00	405.00
	CAT C	each	-	-
1029	S & F surface/Flush mounting 12ways TPN distribution board without additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	6320.00	405.00
	CAT B	each	4410.00	405.00
	CAT C	each	-	-
1029 (A)	S & F surface/Flush mounting 12ways TPN distribution board with additional metal door without MCB complete in all respect,as directed at site by Engineer in charge.			
	CAT A	each	7740.00	405.00
	CAT B	each	6310.00	405.00
	CAT C	each	-	-
1029 (B)	S & F surface/Flush mounting 12ways V TPN distribution board without additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	12455.00	405.00
	CAT B	each	10290.00	405.00
	CAT C	each	-	-
1029 (C)	S & F surface/Flush mounting 12ways V TPN distribution board with additional metal door without MCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	13640.00	405.00
	CAT B	each	12040.00	405.00
	CAT C	each	-	-
1030	S & F surface/Flush mounting 4ways V TPN distribution board without additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
	CAT A	each	9890.00	405.00
	CAT B	each	8185.00	405.00
	CAT C	each	-	-

1030(A)	S & F surface/Flush mounting 4ways V TPN distribution board with additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	10550.00 405.00
		CAT B	each	9680.00 405.00
		CAT C	each	- -
1030(B)	S & F surface/Flush mounting 4ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	17260.00 405.00
		CAT B	each	8960.00 405.00
		CAT C	each	- -
1030(C)	S & F surface/Flush mounting 4ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect,as directed at site by Engineer in charge.			
		CAT A	each	19210.00 405.00
		CAT B	each	10000.00 405.00
		CAT C	each	- -
1030(D)	S & F surface/Flush mounting 6ways V TPN distribution board without additional Door without DPX3 160 MCCB complete in all respect,as directed at site by Engineer in charge.			
		CAT A	each	- -
		CAT B	each	10435.00 405.00
		CAT C	each	7950.00 405.00
1030(E)	S & F surface/Flush mounting 6ways V TPN distribution board with additional Door without DPX3 160 MCCB complete in all respect,as directed at site by Engineer in charge.			
		CAT A	each	11980.00 405.00
		CAT B	each	9270.00 405.00
		CAT C	each	- -
1030(F)	S & F surface/Flush mounting 6ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	- -
		CAT B	each	9330.00 405.00
		CAT C	each	- -
1030(G)	S & F surface/Flush mounting 6ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	- -
		CAT B	each	10970.00 405.00
		CAT C	each	- -

1030(H)	S & F surface/Flush mounting 8ways V TPN distribution board without additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	11650.00 405.00
		CAT B	each	10200.00 405.00
		CAT C	each	- -
1030(I)	S & F surface/Flush mounting 8ways V TPN distribution board with additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	13130.00 405.00
		CAT B	each	11990.00 405.00
		CAT C	each	- -
1030(J)	S & F surface/Flush mounting 8ways V TPN distribution board without additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	19450.00 405.00
		CAT B	each	10900.00 405.00
		CAT C	each	- -
1030(K)	S & F surface/Flush mounting 8ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	23250.00 405.00
		CAT B	each	12365.00 405.00
		CAT C	each	- -
1030(L)	S & F surface/Flush mounting 12ways V TPN distribution board without additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	17050.00 405.00
		CAT B	each	14150.00 405.00
		CAT C	each	- -
1030(M)	S & F surface/Flush mounting 12ways V TPN distribution board with additional Door without DPX3 160 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	17400.00 405.00
		CAT B	each	15680.00 405.00
		CAT C	each	- -
1030(N)	S & F surface/Flush mounting 12ways V TPN distribution board without additional Door without DPX3 250 MCCB complete in all respect, as directed at site by Engineer in charge.			
		CAT A	each	21420.00 405.00
		CAT B	each	14590.00 405.00
		CAT C	each	- -

1030(O)	S & F surface/Flush mounting 12ways V TPN distribution board with additional Door without DPX3 250 MCCB complete in all respect as directed at site by Engineer in charge.			
		CAT A	each	24280.00 405.00
		CAT B	each	16390.00 405.00
		CAT C	each	- -
1031	S & F sheet steel enclosure surface/Flush mounting fitted with 20Amp. 2Pin and earth metal clad scraping earth plug and socket complete in all respect. as directed at site by Engineer in charge.			
		CAT A	each	1620.00 172.00
		CAT B	each	1110.00 172.00
		CAT C	each	- -
1031(A)	S & F sheet steel enclosure surface/Flush mounting fitted with 30Amp. 2Pin and earth metal clad scraping earth plug and socket complete in all respect. as directed at site by Engineer in charge.			
		CAT A	each	3450.00 172.00
		CAT B	each	2670.00 172.00
		CAT C	each	- -
1032	S & F sheet steel enclosure for S.P/ D.P. MCB with neutral link and earth terminal.			
		CAT A	each	550.00 172.00
		CAT B	each	450.00 172.00
		CAT C	each	- -
1033	S & F sheet steel enclosure for T.P./Four Pole MCB.			
		CAT A	each	850.00 172.00
		CAT B	each	550.00 172.00
		CAT C	each	- -
1034 (B)	S&F single pole MCB blanking plate			
		CAT A	each	25.00 10.00
		CAT B	each	20.00 10.00
		CAT C	each	- -
<b>(I) SPN Distribution Board (Consumer Unit)</b>				
1035	<b>Deleted</b>			
1035 (A)	S & F of Surface/Flush mounting 4way SPN DB Box (Consumer Unit) with 40Amp. DP isolator for incoming but without MCB, complete in all respect.			
		CAT A	each	- -
		CAT B	each	Deleted
		CAT C	each	- -
1036	<b>Deleted</b>			
1036 (A)	Same as PS 1035 (A) but 8 ways.			
		CAT A	each	- -
		CAT B	each	Deleted
		CAT C	each	- -
1037	<b>Deleted</b>			



1037 (A)	Same as PS 1035 (A) but 12 ways.				
		CAT A	each	-	-
		CAT B	each	Deleted	
		CAT C	each	-	-
1038	<b>Deleted</b>				
1038 (A)	S & F of Surface/Flush mounting 4way SPN DB Box (Consumer Unit) with 63Amp. DP isolator for incoming but without MCB, complete in all respect.				
		CAT A	each	-	-
		CAT B	each	Deleted	
		CAT C	each	-	-
1039	<b>Deleted</b>				
1039 (A)	Same as PS 1038 (A) but 8 ways.				
		CAT A	each	-	-
		CAT B	each	Deleted	
		CAT C	each	-	-
1040	<b>Deleted</b>				
1040 (A)	Same as PS 1038 (A) but 12 ways.				
		CAT A	each	-	-
		CAT B	each	Deleted	
		CAT C	each	-	-

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## **CHAPTER 11**

### **MISCELLANEOUS ITEMS**

<b>Schedule Item No.</b>	<b>Description of Item</b>	<b>Unit</b>	<b>Complete Rate</b>	<b>Labour Rate</b>
1101	Supply and fixing of call bell of approved make on polished MDFEG/ Teak ply board including making connections etc. complete in all respect.	each	175.00	30.00
1102	Supply and fixing of door chime on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	200.00	30.00
1103	Supply and fixing of buzzer on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	140.00	30.00
1104	Supply and fixing of 2 ways bell indicator on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	370.00	60.00
1105	Supply and fixing of 3 ways bell indicator on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	430.00	60.00
1106	Supply and fixing of 4 ways bell indicator on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	515.00	75.00
1107	Supply and fixing of 5 ways bell indicator on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	615.00	75.00
1108	Supply and fixing of 6 ways bell indicator on polished MDFEG / Teak ply board including making connections etc. complete in all respect.	each	715.00	75.00
1109	Supply and fixing danger board fabricated from 10 gauge M.S. Sheet as per I.E. Rules.	each	85.00	75.00
1111	Supply and fixing of 15A 240 Volts I.C. cut out of approved make on the Metre board or polished MDFEG / Teak ply board. complete in all respect.	each	65.00	20.00
1112	Supply and fixing of 32A 240 volts I.C. cut out of approved make on the Metre board or polished MDFEG / Teak ply board. complete in all respect.	each	100.00	20.00
1112(A)	Supply and fixing of 63A 240 volts I.C. cut out of approved make on the Metre board or polished MDFEG / Teak ply board. complete in all respect.	each	165.00	24.00

1113	Supply and fixing of square G.I. earth connecting strip complete with holes for earth leads and clamping screws as directed complete in all respects :			
	(a) Suitable for 2 nos. earth leads	each	30.00	17.00
	(b) Suitable for 3 nos. earth leads	each	35.00	17.00
	(c) Suitable for 4 nos. earth leads	each	45.00	17.00
	(d) Suitable for 6 nos. earth leads	each	60.00	20.00
	(e) Suitable for 8 nos. earth leads	each	70.00	20.00
	(f) Suitable for 10 nos. earth leads	each	85.00	24.00
	(g) Suitable for 12 nos. earth leads	each	100.00	24.00
1114 A	Supply and fixing of M.S. box of size 480mm x 480mm x 200mm deep in sunk for housing BDB/TPN fabricated from 16 gauge M.S. Sheet and 13mm x 2.5mm flat iron etc. painted outside with red oxide primer and inside with synthetic enamel paint complete in all respect.	each	1110.00	160.00
1114 B	Supply and fixing of M.S. box of size 600mm x 480mm x 200mm deep in sunk for housing BDB/TPN fabricated from 16 gauge M.S. Sheet and 13mm x 2.5mm flat iron etc. painted outside with red oxide primer and inside with synthetic enamel paint complete in all respect.	each	1320.00	160.00
1115	Erection and testing of ceiling fan and regulator etc. excluding supply of down rod, complete in all respect.	each	80.00	60.00
1116	Erection and testing of ceiling fan and regulator for room height upto 3.5 metres including supply of 3mm thick G.I.Pipe 19mm dia. Duly painted, complete in all respect.	each	140.00	60.00
1117	Add extra to item (1116) for 15cm or part thereof for room height from 3.5 to 5.00 metres.	each	40.00	30.00
1118	Add extra to item (1116) for 15cm or part thereof for room height from more than 5.00 metres.	each	50.00	30.00
1119	Add extra to item (1116) to (1118) for flushing of regulators.	each	Deleted	
1120	Erection and testing of exhaust fan on the existing hole with suitable size of rag bolts, nuts and washers etc., complete in all respect.	each	195.00	100.00
1121	Making hole in the wall for exhaust fan and finishing properly complete in all respect.	each	375.00	300.00
1122	Supply and fixing of 16 gauge M.S. drum duly painted including making hole in the wall for exhaust fan and finishing properly complete in all respect.	each	810.00	350.00
1122 (A)	Supply and fixing of 16 SWG M.S. drum with luvors duly painted including making hole in the wall for exhaust fan and finishing properly complete in all respect.	Each	1180.00	400.00
1123	Supply and fixing of fan hook fabricated from M.S. rod for ceiling fan each.	each	135.00	60.00

1124	Supply and fixing of cross clamp of required size fabricated from 50mm x 12mm M.S. flat complete with fan hook including painting etc. complete in all respect.	each	265.00	60.00
1125	Supply and fixing of polished MDFEG / Teak ply cover for surface type I.C. switch complete with 50mm hinges, aluminium kunda, chhapka and handle etc. complete in all respect.	each	740.00	50.00
1126	Supply and fixing of polished MDFEG / Teak ply cover for surface type B.D.B. 2 ways to 4 ways complete with 50mm hinges, aluminium kunda, chhapka and handle etc. complete in all respect.	each	820.00	50.00
1127	Supply and fixing of polished MDFEG / Teak ply cover for surface type B.D.B. above 4 ways complete with 50mm hinges, aluminium kunda, chhapka and handle etc. complete in all respect.	each	910.00	50.00
1128	Supply and fixing of heavy duty cadmium plated copper connector with end plate complete in all respect. (a) Two way connector HKM 100 (b) Three way connector HKM 100 (c) Four way connector HKM 100	each each each	150.00 215.00 270.00	25.00 25.00 25.00
1129	Supply and fixing of crimping, solderless, copper tin electroplated lugs of Dowells/Ismail make suitable for 1.5 sq.mm to 2.5 sq.mm cables, including tapping with insulating tape, complete in all respect.	each	15.00	7.00
1130	Supply and fixing of crimping, solderless, Dowells/Ismail make copper tin plated, in line connectors, including tapping with insulating tape, complete in all respect.			
1130 A	1.5 to 2.5 sq.mm			
1130 B	4.00 to 6.00 sq.mm			
1130 C	10.00 to 16.00 sq.mm			
1131	Supply and fixing of fire extinguisher, ABC Type 4.00 kg. capacity (ISI Marked IS : 15683 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	each	7860.00	30.00
1131 (A)	Supply and fixing of fire extinguisher, ABC Type 6.00 kg. capacity (ISI Marked IS : 15683 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	each	9100.00	30.00
1131(B)	Supply and fixing of fire extinguisher, ABC Type 9.00 kg. capacity (ISI Marked IS : 15683 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	each	11100.00	30.00

1132	Supply and fixing of CO2 type fire extinguisher 4.5 kg. capacity (ISI Marked IS : 2878 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	each	11980.00	30.00
1132 (A)	Same as in item no. 1132 but of 6..5 kg. capacity	each	19900.00	30.00
1133	Supply and fixing of fire bucket, round bottom made of G.I. sheet 9-11 litres capacity duly painted as per fire brigade design, supported on hanging bracket chained and locked, initially filled with fine river sand, water as per directions of Engineer-in-Charge.	each	490.00	95.00
1134	Supply and fixing of shock treatment chart (prescribed under I.E. rules) duly framed with glass and supported from back with hard board or soft board with supply of all material labour T&P for proper completion of work.	each	305.00	20.00
1135	Supply and fixing of 600mmx 600mm size polished MDFEG / Teak ply cover fabricated from 19mm thick block board with one phase polished, fixed with 75mm hinges on to 65mm x 20mm size PMDFEG / Teak wood chowkhat including aluminium anodized handle of suitable size kunda, chhapka, etc. with all material labour T&P etc. required for proper completion of work.	each	940.00	93.00
1136	Supply and laying of 1800mm x 900mm x 12mm thick chequered rubber matting of tested quality.	each	2550.00	17.00
1137	Supply and fixing of power plug with 15A/250V tumbler switch with porcelain base and 3 pin 15A/250V socket with porcelain base on PMDFEG / Teak ply double board.	<b>Deleted</b>		
1138	Supply and fixing of power plug with 16A/240V ICDP switch(B-category) and 3 pin 15A/250V socket socket with porcelain base on well seasoned PMDFEG / Teak ply double board.	<b>Deleted</b>		
1139	Supply and fixing of power plug with 15A/250 volt flush type switch and 5 pin 15A/250V flush type universal socket in suitable M.S. box of 175mm x 100mm x 50mm size with phenolic laminated bakelite sheet cover 3mm thick fixed with brass machine screw and cup washer.	each	340.00	75.00
1139 (A)	Supply and fixing of power plug with 20 Amp./250 volt flush type modular switch and 5 pin 20 A/250 volt flush type universal modular socket switch on concealed M.S box including supply of all material, labour T&P etc. required for proper completion of work.	each	625.00	75.00
1140	Supply and fixing of interlock metal-clad switch socket and plug combined unit. Fixed on wall with rag bolts and nuts including supply of all material, labour T&P etc. required for proper completion of work.	<b>Deleted</b>		

1141(A)	Construction of recess of 480mm x 480mm x 200mm size for fixing of main boards, distribution boards of all sizes including cutting of brick work, providing lintel of suitable size and thickness, plastering etc. with supply of all materials labour T&P for proper completion of work.	each	525.00	240.00
1141(B)	Construction of recess of 600mm x 480mm x 200mm size of main boards, distribution boards of all sizes including cutting of brick work, providing lintel of suitable size and thickness, plastering etc. with supply of all materials labour T&P required for proper completion of work.	each	650.00	300.00
1142	Supply and fixing of 2 metres high cage fabricated with 3mm thick expanded metal fixed on 50mm x 50mm x 6mm angle iron frame having vertical members spaced at 1 to 1.25 mts and horizontal members spaced at 1 mt. The vertical members shall be grouted in floor and horizontal members in the wall to a depth of 300mm with ends forked. The cage shall have 2000mm x 1000mm size one leaf door with locking device having door frame fabricated with 35mm x 35mm x 6mm angle iron and 3mm expanded metal duly fixed with the cage member with hinges etc. The cage shall be painted with red oxide primer and synthetic enamel paint. The job includes all materials, labour, T&P etc. for proper completion of work.	Per Sq. mts.	1275.00	150.00
1143	Add for fixing of tube fitting as pendent with two number 19mm dia. 16 gauge rigid steel conduit double check nuts : spring loaded flanges or M.S. hook fabricated from 25mm x 3mm flat iron duly grouted in the ceiling upto 3.5 height of ceiling, including painting with synthetic enamel paint. Alongwith supply of all materials, labour, T&P etc. required for proper completion of work.	each	310.00	95.00
1144	Add extra to item No. 1143 for 15cm or part thereof for room height above 3.5m.	each	60.00	30.00
1145	Supply and fixing of single leaf factory fabricated M.S. cover with mounting frame for 480mm x 480mm x 200mm size sunk fabricated from 18 SWG M.S. sheet duly painted with red oxide primer followed by two coats of synthetic enamel spray paint complete with steel almirah type handle and locking arrangements and fixed with hold fasts etc. including supply of all materials, labour and T&P etc. required for proper completion of work.	each	1340.00	185.00

1146	Supply and fixing of single leaf factory fabricated M.S. cover with mounting frame for 600mm x 480mm x 200mm size sunk fabricated from 18 SWG M.S. sheet duly painted with red oxide primer followed by two coats of synthetic enamel spray paint complete with steel almirah type handle and locking arrangements and fixed. with hold fasts etc. including supply of all material labour and T&P etc. required for proper completion of work.	each	1650.00	185.00
1147	Supply and fixing of factory fabricated M.S. box in existing sunk of size 600mm x 480mm x 200mm deep with Godrej type almirah, cover with handle etc. fabricated from 18 SWG (1.25mm) M.S. sheet duly painted with red oxide primer followed by two coats of synthetic enamel paint complete with necessary conduit entry and D.P./T.P.N.; fixing arrangements and provision for compartment for loose wires openable housing on the top and hold fast etc. including supply of all material, labour, T&P etc. required for proper completion of the work.	each	1720.00	259.00
1148	Same as in P.S. 1147 but of 480mm x 480mm x 200mm deep size.	each	1500.00	259.00
1149	Supply and fixing hexagonal/Round G.P.fan box of approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes of 25.4 mm for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed fitted with 300 mm round zink coted M.S Bar X 12 mm & brand name should be embossed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	each	150.00	30.00
1150	Painting of conduit pipe assorted size two coat, laid for telephone (Green) of fire lighting (red) etc. by synthetic enamel paint including all material, labour, T&P etc. required for proper completion of the work.	each	15.00	5.00
1151(A)	Supply and fixing of G.P. Boxes/Housing for Concealed LED / CFL Lamps 335 mm wide x 63.5 mm deep(2.5")of approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of 25.4 mm of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed & brand name should be embossed. Including all materials, labour and T&P required for proper completion of work as directed at site by the Engineer in charge.	each	100.00	30.00
1151 (B)	S/f of 340 mm wide x 76.2 mm deep(3.0")G.P. Box/Housing)	each	102.00	30.00
1151.(C)	S/f of 340 mm wide x 101.6 mm deep(3.0")G.P. Box/Housing)	each	110.00	30.00

1152(A)	Supply and fixing of G.P. Modular switch box for 1 / 2 Module of approved make made up of 1.0 mm thick ISI Marked G.P.sheet including adjustable Nakka and holes plugged with PVC Nylon Caps . Two or more holes for pipe entry of 25.4 mm on upper and lower sides of the box. Holes should be semi-shuttered type and fitted with heavy brass Earth Piller duly screwed & brand name should be embossed. Box flushed in wall including cutting of brick work, fixing it to the level with cement sand mortar, including matching colour wash with s/o all materials, labour and T&P required for proper completion of work as directed at site by the Engineer in charge.	each	115.00	60.00
1152(B)	Same as in item no 1152 (A) but for 3 Module	each	120.00	60.00
1152(C.)	Same as in item no 1152 (A) but for 4 Module	each	130.00	60.00
1152(D)	Same as in item no 1152 (A) but for 6 Module	each	145.00	60.00
1152(E)	Same as in item no 1152 (A) but for 8 Module	each	175.00	60.00
1152(F)	SSame as in item no 1152 (A) but for 12 Module	each	200.00	60.00
1152(G)	Same as in item no 1152 (A) but for16 Module	each	210.00	60.00
1152(H)	Same as in item no 1152 (A) but for 18 Module	each	260.00	60.00
1153	Supply and fixing of 20mm dia conduit on surface on wall with necessary bends. Tees, elbows, Couplers, cap and spacers including all the required materials, T&P labour etc. for proper completion of work.	<b>Deleted</b>		
1154	As above in P.S. No. 1153 but 25mm dia	<b>Deleted</b>		
1155	As above in P.S. No. 1153 but 32mm dia	<b>Deleted</b>		
1156	Supply and fixing of galvanised round junction boxes of assorted size suitable for above tubing.	<b>Deleted</b>		
1157	Deduct in P.S. No. 148 to 152 for laying of conduit pipe in the ground 900mm below including the cost of digging the trench and refilling the excavated earth making joints water tight with zink-white or red lead.	<b>Deleted</b>		

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## CHAPTER 12

### Electronic Items

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
1201	Supply and fixing of energy saving electronic ballast for single 20/40 watt fluorescent tube, with R.F.I. and E.M.I. filter suitable for operation on 230 v AC/DC supply including making connections, all the required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work.	each	256.00	45.00
1202	Supply and replacement of copper wound ballast with energy saving electronic ballast for single 20/40 watt fluorescent tube, with R.F.I. and E.M.I. filter suitable for operation on 230 V AC/DC supply including making connection, all the required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work (the old material inclusive of copper ballast, condenser and starter unit will be taken over by the contractor.		<b>Deleted</b>	
1203	Supply and fixing of electronic fan dimmer, 300/400 watt, ISI marked, on the existing switch board including making connections, required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work.	each	218.00	45.00
1203 (A)	Supply and fixing of electronic fan regulator 120-280 V. ISI marked, on the existing switch board including making connections, required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work.	each	267.00	45.00
1203(B)	Supply and fixing of electronic fan dimmer(Modular) 300/400 watt, ISI marked, on the existing switch board including making connections, required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work.	each	491.00	45.00
1203(C)	Supply and fixing of electronic fan regulator( Modular) 120-280 V. ISI marked, on the existing switch board including making connections, required material, labour T&P etc. for proper completion of work to the satisfaction of Engineer in charge of work.	each	517.00	45.00
1204	Supply and fixing of Nature Switch for automatic control of light sensitive electrical circuit using space grade infra-red Sensor to adjust automatically On & Off adjustment. Time shall be adjusted as per seasonal variation of sunrise & sunset for single phase 5 k.watt load.		<b>Deleted</b>	

1205	Same as item No. 1204 but for single phase 3 k.watt load.	<b>Deleted</b>		
1206	Supply and fixing of Energy Pack for outdoor luminaire to optimise Switching On / Off cycle, automatically, using Nature Switch having space grade infra-red Sensor for seasonal variation of day light to be used for group control of luminaires, eliminating the need of any manual operation capacity -15 k.watt - three phase load.	<b>Deleted</b>		
1207	Supply and fixing of silver light spot high performance detector for the presence of the person in the room, manufactured under Passive Infra-Red technology with non regulating Photocell for automatic On&Off remote controlling of light & fan up to 6 Amp load Detector shall be installed centrally in the false ceiling with special type of wiring as directed.	<b>Deleted</b>		
1208	Supply and fixing of midrange light spot, superior performance detector for the presence of the person in the room, manufactured under microwave technology for the use in big halls e.g. conference halls, warehouses gymnasium class rooms etc. for automatic On / Off remote controlling of light & fan up to 10 Amp load The detector shall be installed centrally in the false ceiling with the special type of wiring as directed.	<b>Deleted</b>		
1209	Supply and fixing of single phase multifunctional electronic energy meter 10 to 60 Amp. capacity fitted in integral box on wall complete in all respect .	each	1698.00	134.00

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# CHAPTER 13

## SUB MAIN

Schedule Item No.	Description of Item	Unit	Complete Rate	Labour Rate
<b>1- Submain in conduit on surface (2.5 sq. mm.)</b>				
1301	Supply and wiring of submain with two number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire etc, complete in all respects.		Deleted	
1301(A)	As in item no. 1301 but in 20 mm dia heavy duty (2 mm thick) PVC conduit with one number 1.5 sq. mm. PVC insulated 1100 V grade aluminium conductor cable as earth continuity wire drawn inside the conduit.		Deleted	
1301(B)	Supply and wiring of submain with two number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia. heavy guage rigid steel conduit on surface, with one number 14 SWG copper earth continuity wire etc, complete in all respect.	Metre	197.00	19.00
1301(C)	As in item no.1301(B) but in 20mm dia. heavy duty (2mm thick) PVC conduit with one number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand copper conductor cable as earth continuity wire drawn inside the conduit.	Metre	124.00	16.00
1302	Supply and wiring of submain with three number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage cable in 20 mm dia. heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc.,complete in all respect.		Deleted	
1302(A)	As in item no. 1302 but in 20 mm dia heavy duty (2 mm thick) PVC conduit with 2 number 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit .		Deleted	
1302(B)	Supply and wiring of submain with three number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia. heavy guage rigid steel conduit on surface, with two number 14 SWG copper earth continuity wire etc., complete in all respect.	Metre	240.00	22.00
1302(C)	As in item no.1302(B) but in 20mm dia heavy duty (2mm thick) PVC conduit with 2 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit .	Metre	154.00	17.00

1303	Supply and wiring of submain with four number 2.5 sq.mm.PVC insulated 1100 V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit on surface, with two number 8 SWG GI earth continuity wire etc.,complete in all respect.	Deleted		
1303(A)	As in item no.1303 but in 25 mm dia. heavy duty (2 mm thick) PVC conduit with 2 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit .	Deleted		
1303(B)	Supply and wiring of submain with four number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia heavy guage rigid steel conduit on surface with two number 14 SWG copper earth continuity wire etc., complete in all respect.	Metre	299.00	27.00
1303(C)	As in item no.1303(B) but in 25mm dia heavy duty (2mm thick) PVC conduit with 2 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth wire drawn inside the conduit.	Metre	202.00	21.00
<b>(2) Submain in conduit concealed in wall.</b>				
1304	Supply and wiring of submain with two number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage rigid steel conduit concealed in wall complete with one number 8 SWG GI earth continuity wire etc.,complete in all respects including matching colour wash etc. complete in all respect.	Deleted		
1304(A)	As in item no.1304 but in 20 mm dia. heavy duty (2 mm thick) PVC conduit with 1 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable drawn inside the conduit as earth continuity wire.	Deleted		
1304(B)	Supply and wiring of submain with two number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, with one number 14 SWG copper earth continuity wire etc., complete in all respects including matching colour wash etc. complete in all respect.	Metre	207.00	39.00
1304(C)	As in item no.1304 (B) but in 20 mm dia heavy duty (2mm thick) PVC conduit with 1 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor as earth continuity wire.	Metre	133.00	37.00
1305	Supply and wiring of submain with three number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, with two nos. 8 SWG GI earth continuity wire etc., complete in all respects including matching colour wash etc. complete in all respect.	Deleted		

1305(A)	As in item no.1305 but in 20 mm dia heavy duty PVC conduit (2 mm thick) concealed in wall with 2 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit .	Deleted		
1305(B)	Supply and wiring of submain with three number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia. heavy gauge rigid steel conduit concealed in wall, complete with two number 14 SWG copper earth continuity wire etc.,complete in all respects including matching colour wash etc. complete in all respect.	Metre	253.00	40.00
1305(C)	As in item no.1305(B) but in 20mm dia. heavy duty (2mm thick) PVC conduit concealed in the wall with 2 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit.	Metre	168.00	35.00
1306	Supply and wiring of submain with four number 2.5 sq.mm. PVC insulated single core aluminium conductor cable in 25 mm dia heavy gauge rigid steel conduit concealed in wall, with two nos. 8 SWG GI earth continuity wire etc., complete in all respects including matching colour wash etc. complete in all respect.	Deleted		
1306(A)	As in item no.1306 but in 25 mm dia heavy duty (2mm thick) PVC conduit with 2 nos.1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit.	Deleted		
1306(B)	Supply and wiring of submain with four number 2.5 sq.mm. FRLSH PVC insulated single core multistrand copper conductor cable in 25 mm dia. heavy gauge rigid steel conduit concealed in wall, with two number 14 SWG copper earth continuity wire etc., complete in all respects including matching colour wash etc. complete in all respect.	Metre	306.00	49.00
1306(C)	As in item no.1306(B) but in 25 mm dia heavy duty (2 mm thick) PVC conduit with 2 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit .	Metre	209.00	44.00
<b>(3) Submain in conduit (partly laid in slab and partly concealed in wall)</b>				
1307	Supply and wiring of submain with two number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy gauge rigid steel conduit partly laid in slab with reinforcement before concreting and partly concealed in wall, with one no. 8 SWG GI earth continuity wire etc. complete in all respects including matching colour wash.	Deleted		
1307(A)	As in item no.1307 but in 20 mm dia. heavy duty (2mm thick) PVC conduit with 1 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor	Deleted		

	cable as earth continuity wire drawn inside the conduit.			
1307(B)	Supply and wiring of submain with two number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit partly laid in slab alongwith reinforcement before concreting and partly concealed in wall, with one no. 14 SWG copper earth continuity wire etc, complete in all respects including matching colour wash.	Metre	200.00	35.00
1307(C)	As in item no.1307(B) but in 20 mm dia heavy duty (2mm thick) PVC conduit with 1 nos. 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit complete in all respect.	Metre	121.00	27.00
1308	Supply and wiring of submain with three nos. 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20mm dia. heavy guage rigid steel conduit partly laid in slab with reinforcement before concreting and partly concealed in wall, with two nos. 8 SWG GI earth continuity wire etc.,complete in all respects including matching colour wash.	Deleted		
1308(A)	As in item no.1308 but in 20 mm dia heavy duty (2mm thick) PVC conduit with 2 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit.	Deleted		
1308(B)	Supply and wiring of submain with three number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia. heavy guage rigid steel conduit partly laid in slab alongwith reinforcement before concreting and partly concealed in wall, with 2 no. 14 SWG copper earth continuity wire etc, complete in all respects including matching colour wash.	Metre	247.00	37.00
1308(C)	As in item no.1308(B) but in 20 mm dia heavy duty (2mm thick) PVC conduit with 2 nos. 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit complete in all respect.	Metre	160.00	30.00
1309	Supply and wiring of submain with four number 2.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 25 mm dia heavy guage rigid steel conduit partly laid in slab with reinforcement before concreting and partly concealed in wall, with two nos. 8 SWG GI earth continuity wire etc,complete in all respects including matching colour wash.	Deleted		
1309(A)	As in item no.1309 but in 25 mm dia heavy duty (2mm thick) PVC conduit with 2 nos. 1.5 sq. mm. PVC insulated 1100 V grade aluminium conductor cable as earth continuity wire drawn inside the conduit.	Deleted		

1309(B)	Supply and wiring of submain with four number 2.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 25 mm dia. heavy guage rigid steel conduit partly laid in slab alongwith reinforcement before concreting and partly concealed in wall, with 2 no. 14 SWG copper earth continuity wire etc, complete in all respects including matching colour wash.	Metre	302.00	46.00
1309(C)	As in item no.1309(B) but in 25 mm dia heavy duty (2mm thick) PVC conduit with 2 nos. 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand copper conductor cable as earth continuity wire drawn inside the conduit.	Metre	204.00	41.00
<b>SUB Main in Conduit on Surface</b>				
1311	Supply and wiring of submain with two number 1.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage rigid steel conduit on surface, with one number 8 SWG GI earth continuity wire etc, complete in all respects.	Deleted		
1311(A)	As in item no. 1311 but in 20 mm dia heavy duty (2 mm thick) PVC conduit with one number 1.5 sq. mm. PVC insulated 1100 V grade aluminium conductor cable as earth continuity wire drawn inside the conduit.	Deleted		
1311(B)	Supply and wiring of submain with two number 1.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia. heavy guage rigid steel conduit on surface, with one number 14 SWG copper earth continuity wire etc, complete in all respect.	Metre	182.00	19.00
1311(C)	As in item no.1311(B) but in 20mm dia. heavy duty (2mm thick) PVC conduit with one number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand copper conductor cable as earth continuity wire drawn inside the conduit.	Metre	98.00	14.00
<b>Submain in conduit concealed in wall</b>				
1312	Supply and wiring of submain with two number 1.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage rigid steel conduit concealed in wall complete with one number 8 SWG GI earth continuity wire etc.,complete in all respects including matching colour wash etc. complete in all respect.	Deleted		
1312(A)	As in item no.1312 but in 20 mm dia. heavy duty (2 mm thick) PVC conduit with 1 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable drawn inside the conduit as earth continuity wire.	Deleted		

1312(B)	Supply and wiring of submain with two number 1.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit concealed in wall, with one number 14 SWG copper earth continuity wire etc., complete in all respects including matching colour wash etc. complete in all respect.	Metre	191.00	39.00
1312(C)	As in item no.1312 (B) but in 20 mm dia heavy duty (2mm thick) PVC conduit with 1 number 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor as earth continuity wire.	Metre	116.00	37.00
<b>Submain in conduit (partly laid in slab and partly concealed in wall)</b>				
1313	Supply and wiring of submain with two number 1.5 sq.mm. PVC insulated 1100 V grade single core aluminium conductor cable in 20 mm dia. heavy guage rigid steel conduit partly laid in slab with reinforcement before concreting and partly concealed in wall, with one no. 8 SWG GI earth continuity wire etc. complete in all respects including matching colour wash.	Deleted		
1313(A)	As in item no.1313 but in 20 mm dia. heavy duty (2mm thick) PVC conduit with 1 nos. 1.5 sq. mm. PVC insulated 1100 V grade single core aluminium conductor cable as earth continuity wire drawn inside the conduit.	Deleted		
1313(B)	Supply and wiring of submain with two number 1.5 sq.mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable in 20 mm dia heavy guage rigid steel conduit partly laid in slab alongwith reinforcement before concreting and partly concealed in wall, with one no. 14 SWG copper earth continuity wire etc, complete in all respects including matching colour wash.	Metre	185.00	34.00
1313(C)	As in item no.1313(B) but in 20 mm dia heavy duty (2mm thick) PVC conduit with 1 nos. 1.5 sq. mm. FRLSH PVC insulated 1100 V grade multistrand single core copper conductor cable as earth continuity wire drawn inside the conduit complete in all respect.	Metre	105.00	28.00

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# CHAPTER-14

## LED LUMINAIRES

Schedule Item No	DESCRIPTION Of Item	Unit	Comple Rate	Labour Rate
<b><u>DOWN LIGHT LUMINAIRES</u></b>				
1401	Supply and fixing of recess/ Surface/ Pendent mounting round 6 Watt 8 Watt LED Down Lighter having Powder coated die cast aluminium housing with heat sink, diffuser/ Reflector and driver set complete in all respect.			
	CAT- AAA	Each	770.00	122.00
	CAT-AA	Each	700.00	122.00
	CAT-A	Each	500.00	122.00
1402	Supply and fixing of recess/ Surface/ Pendent mounting round 10 to 15 Watt LED Down Lighter having Powder coated die cast aluminium housing with heat sink, diffuser/ Reflector and driver set complete in all respect.			
	CAT- AAA	Each	1350.00	122.00
	CAT-AA	Each	1150.00	122.00
	CAT-A	Each	650.00	122.00
1403	Supply and fixing of recess mounting round 15 to 18 Watt LED Down Lighter having Powder coated die cast aluminium housing with heat sink, diffuser/ Reflector and driver set complete in all respect.			
	CAT- AAA	Each	1870.00	122.00
	CAT-AA	Each	1610.00	122.00
	CAT-A	Each	1150.00	122.00
1403(A)	Supply and fixing of recess mounting round Ceiling cutout 200 mm height 85 mm 18 Watt LED Down Lighter having Powder coated die cast aluminium housing with heat sink, diffuser/ Reflector and driver set complete in all respect.			
	CAT- AAA	Each	Deleted	
	CAT-AA	-		
	CAT-A	-		
1404	Supply and fixing of recess/surface mounting round 24 Watt to 32 Watt LED Down Lighter having Powder coated die cast aluminium housing with extended heat sink, diffuser/ Reflector and driver set completed in all respects.			
	CAT- AAA	Each	3500.00	122.00
	CAT-AA	Each	2050.00	122.00
	CAT-A	Each	1120.00	122.00

1405	Supply and fixing of recess/surface mounting round 24 to 32 Watt LED Down Lighter having Powder coated die cast aluminium housing with extended heat sink, diffuser/ Reflector and driver set complete in all respect.	CAT- AAA CAT-AA CAT-A	Each Each Each	3650.00 2120.00 -	122.00 122.00 -
1406	Supply and fixing of 36 Watt to 46 Watt indoor Recess mounting LED Square Fitting for Armstrong Ceiling having Powder coated die cast aluminium housing body with extended heat sink and diffuser of Special Polycarbonate material and driver set complete in all respect.	CAT-AAA CAT-AA CAT-A	Each Each Each	4880.00 3940.00 3590.00	122.00 122.00 122.00
1407	Supply and fixing of 55 Watt indoor Recess mounting LED Square Fitting for Armstrong Ceiling having Powder coated die cast aluminium housing with body with extended heat sink, diffuser of Polycarbonate material and driver set complete in all respect.	CAT- AAA CAT-AA CAT-A	Each - -	8670.00 7590.00 -	122.00 122.00 -
1408	Supply and fixing of 36 Watt to 46 Watt lumen above 3300 Surface mounting LED Square Ceiling Fitting having Powder coated die cast aluminium housing body with extended heat sink, diffuser of Polycarbonate material and driver set complete in all respect.	CAT- AAA CAT-AA CAT-A	Each - -	Deleted	
1409	Supply and fixing of 55 Watt Surface mounting LED Square Ceiling Fitting having Powder coated die cast aluminium housing body with heat sink, diffuser of Polycarbonate material and drive set complete in all respect.	CAT- AAA CAT-AA CAT-A	Each	Deleted	

1410	Supply and fixing of 12 Watt to 15 Watt indoor Recess mounting LED Square Fitting for Armstrong Ceiling having Powder coated die cast aluminium housing with extended heat sink, diffuser of Polycarbonate material and driver set complete in all respect.  CAT- AAA CAT-AA CAT-A	Each Each Each	1610.00 1030.00 900.00	122.00 122.00 122.00
1411	Supply and fixing of 18 Watt indoor Recess mounting LED Square Ceiling Fitting for Armstrong Ceiling having Powder coated die cast aluminium body housing with extended heat sink, diffuser of Polycarbonate material and driver set complete in all respect.  CAT- AAA CAT-AA CAT-A		Deleted	
1412	Supply and fixing of 24 to 27 Watt Recess mounting LED Square Ceiling Fitting for Armstrong Ceiling having Powder coated die cast aluminium housing heat sink, diffuser of Polycarbonate material with drive set complete in all respect.  CAT-AAA CAT-AA CAT-A		Deleted	
1413	Supply and fixing of LED Tube Light with batten suitable for up to 1 X 22 watt LED tube light fitting including tube on Surface complete in all respect.  CAT- AAA CAT-AA	Each Each	1190.00 1020.00	122.00 122.00
1413 (A)	Supply and fixing of LED Tube Light batten fitting suitable for up to 1 X 22 watt LED tube light on surface complete in all respect.  CAT- AAA CAT-AA CAT-A	Each Each Each	620.00 570.00 520.00	122.00 122.00 122.00
1414	Supply and fixing of LED Tube Light with batten suitable for up to 2 X 22 watt LED tube light fitting including tube on Surface complete in all respect.  CAT- AAA CAT-AA	Each Each	1790.00 -	122.00 -

1415	Supply and fixing of Pendent sleek mounting having 1' X 4' Size 48 to 55 Watt seamlessly intergrateds LED luminier with acrylic sheet diffuser complete in all respect.  CAT- AAA CAT-AA	Each Each	12200.00 6550.00	122.00 122.00
1416	Supply and fixing of Pendent mounting having 1' X 4' Size 36 to 46 Watt seamlessly intergrateds LED luminier with acrylic sheet diffuser and intergral electronic driver complete in all respects.  CAT- AAA CAT-AA CAT-A	Each Each Each	6200.00 4290.00 2200.00	122.00 122.00 122.00
1417	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire with driver set confirming to IP 65 and above Protection . complete in all respect.  CAT-AAA CAT-AA	Each Each	1400.00 1250.00	122.00 122.00
1417 (A)	Supply and fixing of Single LED light wall bracket 3 to 6 Watt on matching M.D.F.E.G Board base etc. complete in all respect.  CAT- AAA CAT-AA	Each Each	2600.00 -	82.00 -
1418	Supply & Fixing of 20 Watt LED Surface Mounting weather proof Luminaire with PC Housing and opal finish cover confirming to IP 65 Complete in all respect.  CAT- AAA CAT-AA CAT-A	Each - -	2030.00 - -	122.00 - -
1418(A)	Supply & Fixing of 40 Watt LED Surface Mounting weather proof Luminaire with PC Housing and opal finish cover confirming to IP 65 Complete in all respect.  CAT-AAA CAT-AA CAT- A	Each - -	2290.00 - -	122.00 - -
<b><u>STREET LIGHT LUMINAIRES</u></b>				
1419	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 15 Watt. to 25 Watt. Confirming to IP 66 protection complete in all respect.  CAT- AAA CAT-AA CAT-A	Each Each Each	2070.00 1980.00 1620.00	163.00 163.00 163.00

1420	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 30Watt. to 40 Watt. Confirming to IP 66 protection complete in all respect.	CAT- AAA CAT-AA CAT-A	Each Each Each	4500.00 2590.00 1570.00	163.00 163.00 163.00
1421	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 45 watt to 50 Watt. Confirming to IP 66 protection complete in all respect.	CAT- AAA CAT-AA	Each Each	4940.00 2770.00	163.00 163.00
1422	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 52 watt to 72 Watt. Confirming to IP66 Protection complete in all respect.	CAT- AAA CAT-AA	Each Each	5810.00 4680.00	163.00 163.00
1423	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 75 to 90 Watt. Confirming to IP 66 and above Protection complete in all respect.	CAT- AAA CAT-AA	Each Each Each	8850.00 5200.00 5020.00	163.00 163.00 163.00
1424	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 110 to 130 Watt. Confirming to IP 66 Protection complete in all respect.	CAT- AAA CAT-AA	Each Each	10500.00 8500.00	148.00 148.00
1425	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 140 to 150 Watt. Confirming to IP 66 Protection complete in all respects	CAT- AAA CAT-AA	Each Each	12300.00 9370.00	148.00 148.00
1425(A)	Supply and fixing of LED Street light Fitting having die cast aluminium body and diffuser with driver set suitable for 175 to 200 Watt. Confirming to IP 66 Protection complete in all respects	CAT- AAA CAT-AA	Each Each	13190.00 12500.00	148.00 148.00

**PATH LIGHT & BOLLARD LUMINAIRES**

1441	Supply and fixing of 3 Watt LED Path / Walkover luminaire having powder coated die cast aluminium body with driver set . Confirming to IP 65 Protection complete in all respect.  CAT-AAA CAT-AA	Each -	1810.00 -	148.00 -
1441 (A)	Supply and fixing of 3 Watt to 6 Watt LED Spot/Spike light luminaire Confirming to IP 66 Protection complete in all respect.  CAT-AAA CAT-AA	Each Each	1850.00 980.00	163.00 163.00
1442	Supply and fixing of decorative 8 to 16 Watt LED bollard luminaire with driver set confirming to IP 65 protection complete in all respect.  CAT-AAA CAT-AA	Each Each	4070.00 3720.00	163.00 163.00
1443	Supply and fixing of decorative 40 to 45 Watt LED Post top indirect light luminaire having Pressure die cast aluminium body and Clear glass with driver set confirming to IP 65 and above protection complete in all respect.  CAT-AAA CAT-AA	Each Each	8410.00 7890.00	163.00 163.00
<b><u>FLOOD LIGHT LUMINAIRES</u></b>				
1451	Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with driver set suitable for 40 to 50 Watt. Confirming to IP 65 protection complete in all respect.  CAT-AAA CAT-AA	Each Each	4550.00 2160.00	163.00 163.00
1452	Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with driver set suitable for 70 to 90 Watt. Confirming to IP 65 protection complete in all respect.  CAT-AAA CAT-AA	Each -	7110.00 5620.00	163.00 163.00

1453	Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with dirver set suitable for 100 to 120 Watt. Confirming to IP 65 protection complete in all respect.	CAT-AAA	Each	8850.00	163.00
		CAT-AA	-	6230.00	163.00
1454	Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with dirver set suitable for 140 to 150 Watt. Confirming to IP 66 protection complete in all respect.	CAT-AAA	Each	13190.00	163.00
		CAT-AA	Each	9540.00	163.00
		CAT-A	Each	8960.00	163.00
1455	Supply and fixing of factory wired integral LED flood light luminaires with die cast aluminium housing built with dirver set suitable for 170 to 200 Watt. Confirming to IP 66 protection complete in all respect.	CAT- AAA	Each	22750.00	163.00
		CAT-AA	Each	11900.00	163.00

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