

SCOPE OF WORK/ SPECIFICATION

GENERAL:-

1. The scope of work includes, but not limited to, the following.
2. All works, resources, expenses etc., required for completion of works under the BoQ Items are included in the scope of work.
3. All tools & tackles like meggers, multi-meters (with capacitance measurement), clamp testers, drilling machines, air blowers, vacuum cleaners, transport, labour, supervision, consumables like lugs, ferrules, cable glands, crimping paste, hardware, marking cloth, broom sticks, brushes, cloth dusters, cleaning brushes, CTC etc., enabling works and works facilitating/ required for satisfactory completion of BOQ items are covered in the scope of work and are to be supplied by the contractor free of cost.
4. Exceptions shall be those tools, tackles, consumables, materials specifically mentioned in this contract as supply by VSP free of cost.
5. VSP will supply the following materials free of cost:
6. Panel instruments like relays and their control wirings, CTs etc., Neoprene rubber gaskets, spare parts of LTCB, Red insulating varnish, support insulator, components required (for street light maintenance like lamp/ choke/ igniter/ capacitor/ glass cover/ acrylic cover/ metallic cover/ lamp holder etc.,) if any will be supplied by VSP free of cost or issue job orders for supply against relevant BOQ items by contracting agency, if any.
7. The scope includes handing over of all the material removed from site to VSP and shall be stacked as directed.

Part A. Maintenance of Sub-stations & Kiosks:

1. BOQ item No: A1 (General cleaning of Sub-stations...)

This item includes cleaning of sub-stations, electrical panel rooms by cleaning floors, cable trenches, walls, ceilings and removal of cobwebs and removal of all foreign materials from the cable trenches etc., and cleaning of outer surfaces of LT panels, LT bus ducts, HT panels, transformers etc., using duster, Vacuum cleaner, marking cloths etc. as required. No cotton, water shall be used.

2. BOQ Item No: A2 (Revisioning of Switch fuse unit...)

Opening, removing and re-fixing of switch fuse units which are there in the LT panels and SLDB panels of sub-stations, kiosks, electrical panel rooms after obtaining proper shutdown. All moving parts should be lubricated. Contacts should be cleaned with suitable cleaning agent. All terminations including terminations at outgoing terminal strips and in-coming bus connections should be properly tightened and terminated with proper lugging, wherever necessary. Where ever required contacts should be cleaned properly with cleaning agent. Any damaged terminal strips, jumper, bus-bars shall be replaced. Feeder details should be written/ rewritten with enamel paint/ marker pen on enclosures of switch these units wherever required. Loose connections of these peripherals/ accessories shall be tightened/ re-terminated properly.

3. BOQ Item No: A3 (Revisioning of LT circuit breakers...)

Opening & removing of LT ACB after obtaining proper shutdown, checking the operation of the breaker, lubrication of all moving parts including all spring mechanism, cleaning of breaker contacts with cleaning agent & checking of contact pressure and replacement of worn out parts. The spare parts of LT ACB shall be supplied by VSP free of cost.

4. BOQ Item No: A4 (Revisioning of LT bus ducts...)

LT Bus duct interconnecting transformer and LT ACB incomer shall be opened after obtaining proper shut down. Support insulators shall be cleaned with clean marking cloth. Nuts, bolts of inter connecting bus bars shall be checked for proper tightness. Bus bar shall be meggered with 1000V Megger. Any requirement of painting support insulators with Red Insulating Varnish or by replacement of support insulators etc. are included in the scope. Red Insulating Varnish / Support insulator for this job shall be supplied by VSP free of cost.

5. BOQ Item No: A 5,6 & 7 (Revisioning of LT Panel, Kiosks...)

Opening, removing and re-fixing of switch fuse units / MCCBS which are there in the LT panels and SLDB panels of sub-stations, kiosks, electrical panel rooms. Lubrication of all moving parts. Wherever required, cleaning of Contacts with suitable cleaning agent. Proper tightening and termination of all terminations including terminations at outgoing terminal strips and in-coming bus connections with proper lugging, wherever necessary. Replacement of any damaged terminal strips, jumper, bus-bars. Writing / rewriting Feeder details with enamel paint/ marker pen on enclosures of switch fuse units wherever required. Checking of all the panel instruments like Voltmeters, Ammeters and their control wirings CTs etc., of the SFUs/ MCCBs. Proper tightening/ re-termination of loose connections of these peripherals/ accessories. All the panel instruments like Voltmeters, Ammeters and their control wirings CTs etc. of the SFUs which are given for re-visioning have to be checked and intimated to the Engineer/ his representative.

Make all Bus connections inside the panel free of any loose connections. Meggering Bus-bars and outgoing cables of all the Switch Fuse Units/ MCCBs with 1000V Megger. Cleaning of bus bar sections, support insulators, panel boards (inside and outside) with marking cloth or by blowing hot air is also under the scope of this work. Materials which need to be replaced, like terminal strips, jumper, bus-bars, bus support insulators etc., shall be issued by VSP free of cost. All the panel instruments like relays and their control wirings, CTs etc., have to be checked. If any of these instruments/ fittings are to be replaced, the contractor shall do this at no extra cost to VSP. While revisioning switch fuse units in panel, total panel is to be made dust and vermin proof. The material like CTs, wiring, gaskets shall be supplied by VSP free of cost.

Part B. Maintenance of Street Lights:

While working on street lights, cutting the tree branches etc. within one metre range that are obstructing to the approach or working on light fitting is in the scope of the work and to be carried out as and when directed by Engineer/ his representative at no extra cost to VSP.

1. BOQ Item No: B1 (Fault testing & rectification of light fittings)

This work involves testing of light fittings and rectification of all defects including termination of incoming wires. The components required like Lamp / Choke / igniter / capacitor / glass cover / acrylic cover / metallic cover / metallic stud / metallic clamp / lamp holder / LED Lights/ LED Lamps etc. for replacement, if any, will be supplied by VSP free of cost. Any material like nut / washer etc. for fixing of above is in the scope of contracting agency.

2. BOQ Item No: B2 (Replacement / temporary arrangement of light fitting)

This work involves fixing the light fitting with gear box supplied by VSP free of cost after removing the existing light fitting, if any by making modifications if necessary like welding of extension pieces to the pole, or by fixing proper clamps, removal and replacement of reducers, nipples etc. to the existing system. The material required for this modification, like nipples, reducers etc will be supplied by VSP free of cost.

In case of temporary arrangement, light fitting with necessary control gear box / cable / clamps etc., are to be collected from TA Dept. stores and the same is to be fixed at a place as directed by the Engineer/ his representative. Work is inclusive of necessary termination of cable(s) and returning of the fitting to the stores etc., after normalising the system to its original status. G.I. wires / ropes etc., required for fixing light fittings / control gear box temporarily shall be supplied by the contractor at no extra cost to VSP.

3. BOQ Item No: B3 (Revisioning of LILO boxes)

Revisioning of LILO boxes is to be taken up circuit wise. However payment shall be made for individual LILO boxes. Isolation of defective LILO boxes is included in the scope of work. This work involves replacement of fuse cut-outs / bus bars / termination strips / re-termination of cables where ever required and cleaning of LILO box for dust, insulators with cleaning agent etc., tightening of all connections, greasing of hinges, door locking mechanism etc., and necessary checking for balancing of the system are included in the scope of work. Meggering of the circuit is to be done after revisioning work. Fuse cut outs / Bus bars / termination strips / lugs wherever required shall be supplied by VSP free of cost.

4. BOQ Item No: B4 (Installation of TP Contactor)

The work involves removal / installation of existing / new contactor with necessary modifications.

The scope includes removal of existing bus links, fabrication of bus links suitable for mounting of contactor and termination of cables / wires with lugs etc.

The supply of material like clamps, bolts & nuts etc. are in the scope of contracting agency. Contactor and bus links shall be provided by VSP free of cost.

5. BOQ Item No: B5 (Inspection of Street lights)

The total Zone of the contract shall be broadly divided in to two areas. Payment will be made for inspection of each area.

Part C. Maintenance of Under Ground Cables

1. BOQ Item No: C1 (Re-excavation of existing/ New cable trench..)

The work involves excavation of existing/ new cable trench to a depth of 900 mm.

Normal width of existing / new cable trench is 300 mm. However, depending on site conditions, wherever width is less than 400 mm, payment shall be made under BoQ Item No.C-1 (i). Payment shall be done against C-1 (ii) for widths more than or equal to 400 mm.

Laying of cable issued by VSP free of cost and supply and laying of PCC Slabs are done by the agency and payment shall be made against relevant BoQ Items.

For facilitating the inspection and identification of cable fault, PCC slabs are to be removed and cable is to be exposed as directed by Engineer/ his Representative.

2. BOQ Item No: C2 (Identification of cable faults..)

The work involves isolation of faulty cable and identifying the fault location as per the guidance of Engineer / his Representative. In order to ensure power supply in some instances, temporary cable may have to be laid from nearest possible source which shall be removed after rectification / replacement of defective cable, for which payment shall be made against relevant BoQ Item. Cables to be laid temporarily, consumables like lugs, ferrules etc., shall be issued by VSP free of cost. Separate payment shall be made for any excavation of cable trench required for fault identification.

3. BOQ Item No: C3 (Replacement / Installation of cables..)

The work involves removal of defective portion of existing cable and replacement / installation of new cable in existing cable trench. Cable required for relaying work shall be supplied by VSP free of cost. The new cable is to be collected from TA Dept. Store. The defective cable retrieved from cable trench has to be handed over to TA Department Stores after proper coiling and shall be stacked in the place shown by VSP.

4. BOQ Item No: C4 (Supply & installation of jointing kits..)

The work involves supply and installation of cable jointing kits of epoxy / heat shrinking type as directed by Engineer / his Representative. Necessary tools / tackles and material like ferrules, insulation tapes etc., are to be provided by the contacting agency. VSP may provide jointing kits of epoxy/ heat shrinking type free of cost and the payment for installation of kits will be made as per the installation rates provided in the BOQ. After completion of the jointing the total cable should be tested for its healthiness and re-terminated.

Necessary shut down is to be taken by the contracting agency before start of the work.

5. BOQ Item No: C5 (Termination of cables..)

The work involves trimming, lugging and termination of the cables. Supply of consumables like lugs, crimping paste etc., is in the scope of contractor. Any excavation required for pulling of cable is to be done as per BOQ no. C8 and payment for excavation will be made accordingly.

6. BOQ Item No: C6 (Supply & laying of PCC Slabs...)

The work involves supply and laying of PCC slabs as directed by Engineer / his Representative. The PCC slab shall be made from 1:2:4 cement concrete of size as per BoQ Item. This item includes supply of all materials including cement, sand etc., and casting and curing the slabs at least for 15 days and laying in cable trenches.

7. BOQ Item No: C7 (Excavation of cables for gland faults ...)

The work involves excavation of various size cables for gland faults at street light poles / Kiosks / Junction boxes / LT panel to expose the faulty cable for rectification. After rectification of the fault the excavated area is to properly back filled.

8. BOQ Item No: C8 (Inline drilling excavation underneath BT/ RCC Road...)

The work involves inline drilling excavation underneath BT / RCC road by mechanical method and laying of road crossing pipes of size 100 mm. Pipes for laying will be supplied by VSP free of cost.

9. BOQ Item No: C9 (Providing & laying PCC for roads and drains works...)

The work involves providing and laying PCC for roads and drains works of grade 1:2:4 using 20mm down graded stone aggregate for back filling in road cutting and drain repair while laying cables. This item includes supply of all materials including cement, sand etc., and curing.

Part D. Maintenance of RCCBs:

The work involves removal of defective ELCB / RCCB, which are DIN mounted or Box type and installing the working RCCB (with necessary terminations) supplied by either the contracting agency or VSP free of cost as directed by Engineer / his Representative.

Any modification for fixing of ELCB / RCCB and supply of DIN channel, Clamps, Bolts & nuts, Screws, lugs, PVC dummies to cover the gaps and PVC enclosure etc., where ever required are in the scope contracting agency.

1. BOQ Item No: D1 (Supply and Installation of Earth Leakage Circuit Breakers-ELCB)

RCCBs supplied shall be of 230V / 415V, 2/ 4 pole; current operated with isolating facility. The sensitivity of the RCCB shall be a maximum of 30 milli-amps and the tripping time shall be 30 milli-seconds or less. The RCCB shall be of DIRECT ACTING TYPE conforming to IS-12640. The RCCB shall be of DIN rail mounting type and suitable for mounting inside MCB DBs and have a test button for testing the function of the breaker and isolating facility.

2. BOQ Item No: D2 (Identification & Rectification of earth fault in dwelling units..)

This item is meant for meggering the various circuits, identifying the faulty circuit/ gadget and isolating the faulty area. Replacement of defective wire/ spare shall be paid against relevant BOQ Item.

Part E. Maintenance of Ceiling fans, exhaust fans, motors etc.:

1. BOQ Item Nos.: E1, E2 & E3 (Rewinding of..)

The work involves dismantling, removal of old winding, rewinding and re-assembling the ceiling fan / air circulators / wall mounted fans / pedestal fans / exhaust fans / motor etc. Removal of the fan from site and installation after rewinding / repairs is included in the scope of the item. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is included in the scope of the contracting agency.

The scope includes use of required standard gauge (same gauge as the original winding). Super enamel insulated high purity copper wire of not less than class-F insulation. Insulating and heating the motor of the fan/ air circulator for drying of insulation, testing of the motor for insulation resistance, re-assembling the fan/ air circulator to its original position. Insulating materials lead wires and other materials used in repair should not be below class-F. After heating the core for removal of moisture, winding shall be done, winding should be varnished. After varnishing, Winding shall be dried by heating. After that one coat of air drying varnish shall be applied on winding. Ceiling fan motor winding to done with automatic rewinding machine only. The winding insulation resistance shall be tested after rewinding with 500V Megger and shall be run in all speeds and tested for no abnormal sound.

Copper wires removed from winding will become the property of the contractor.

2. BOQ Item No: E 4 (S & I of double sealed metal ball bearings ...)

The work involves removing the old damaged bearings with proper bearing puller, cleaning of the bearing housing with cleaning agent, supplying / fixing new double sealed metal ball bearing of standard makes after proper lubrication and reassembling of the fan, testing the fan for satisfactory performance. Wherever shaft is worn out, necessary modification like metal building, machining / turning the shaft etc., for fixing of bearings is to be carried out. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is included in the scope of the contracting agency. Installation of fan at site after repairs is included in the scope of this item.

3. BOQ Item No: E 5 (S & I of non-magnetic gun-metal bushes..)

The work involves removing the old damaged bushes properly, cleaning of the bush housing with cleaning agent, supplying / fixing of non-magnetic gun metal bushes and reassembling of the fan, testing the fan for satisfactory performance. Wherever bush / shaft are worn out, those are to be removed, necessary modification like metal building, machining / turning the shaft etc. for fixing of bushes / bearings is to be carried out. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is included in the scope of the contracting agency. Installation of fan at site after repairs is included in the scope of this item.

4. BOQ Item No: E 6 (S & I of capacitors)

The work involves supply / replacement of old capacitor, fixing new capacitor and testing the fan motor for normal working. Providing / replacement of capacitor clamp and soldering of terminals and sleeving the joints where ever required is included in the scope of this item. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is included in the scope of the contracting agency.

The capacitor supplied by the contracting agency to confirm to IS:1709 as directed by Engineer / his Representative.

5. BOQ Item No: E 7 (S & I Regulators...)

The work involves supply / replacement, fixing new regulator and testing for different speeds.

The fan regulator supplied by the contracting agency to confirm to IS:374 as directed by Engineer / his Representative.

6. BOQ item no: E 8, E 9 & E 10 (Painting of...)

The work involves dismantling, cleaning of surfaces, painting and assembling of ceiling fan / air circulators / wall mounted fans / pedestal fans / exhaust fans etc.

The surface to be painted shall be cleaned free of dirt, oil, rust and surface is to be made smooth for taking new paint. Painting shall be done on well dried surface only. Painting of exhaust fan louver along with exhaust fan is also included in the scope of work.

Wherever painting is to be done on mild steel parts, two coats of red oxide primer are to be applied before painting with two coats of automobile grade enamel paint. Paint shall be applied through spray painting. Painting shall be done for all metal surfaces, down rod etc., of fans/ Air circulators/ wall mounted fans/ pedestal fans/ exhaust fans including louvers. Ceiling fans shall be painted with two coats of automobile grade paint without red oxide. Exhaust fans etc., including wings with iron blades shall be painted with two coats of red oxide and two coats of automobile grade paint. Installation of fan at site after repairs/ painting is included in the scope of this item. The paint to be used shall confirm to relevant IS. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is in included in the scope of the contracting agency.

7. BOQ Item No: E 11 (Cleaning of ...)

The work involves overall cleaning of fans thoroughly with cleaning agent followed by mopping with liquid soap so as to remove oil / grease etc. and mopping with wet cloth to remove traces of soap. Care shall be taken to avoid water / oil entering into the motor. Fans are to be removed from the position, wings are to be dismantled and cleaning is to be done. Installation of fan at site after cleaning is included in the scope of this item.

8. BOQ Item No: E 12 (General Checking of Ceiling Fans...)

The work involves removal of the existing fan from the ceiling and checking of all the hardware parts i.e., bolts and nut, cotter pins, eye hook, rubber bush etc., provided to clamp set and down rod for their wear and tear, mechanical damages etc. Worn out / damaged bolts and nuts, cotter pins, rubber bush etc., shall be replaced with new ones. The new bolts and nuts will be provided by VSP free of cost. The necessary cotter pins and any other hardware required shall be provided by the agency.

9. BOQ Item No: E 13 (Electronic Regulator Step type (5A socket dimension...))

Supply / replacement, fixing new regulator and testing for different speeds.

10. BOQ Item No: E 14 (Electronic Regulator Step type (Modular)

Supply / replacement, fixing new regulator and testing for different speeds.

11. BOQ Item No: E 15 (Installation of Ceiling/ wall mounted fans..)

The work involves installation of ceiling fans issued by VSP. Rectification of faults at fan terminals / switches etc. is also included in the scope of the work. Materials required for this job shall be issued by VSP free of cost.

Part F. Maintenance of Energy Meters:

1. BOQ Item No: F1 (Replacement of Energy Meters...)

Replacement of energy meters in the place of defective ones or installation of new meter.

2. BOQ Item No: F2 (Supply and Installation of boards...)

The work involves supply and installation of various sizes of board suitable for fixing of energy meter as directed by Engineer / his Representative. The scope includes removal of energy meters and other electrical fittings from the existing / damaged board and installation of the energy meter and other electrical fittings on the new board. The damaged fittings removed from the old board shall be replaced with new fittings issued from VSP Stores free of cost and making circuit connections as per the original scheme by supply / replacement of lugs etc.

Part G. Maintenance works in Public buildings & Residential units:

1. BOQ item No: G 1(Rectification of faults ...)

The work involves rectification of electrical fault in dwelling units and public buildings without replacement of any material except for the items covered under BOQ no. G2 & G3.

2. BOQ item No: G2 & G 3 (Rectification of light fittings ..)

The work involves testing of the light fitting and rectification of all defects after duly checking the healthiness of other peripherals. Lamps, chokes, Holders etc. required for the rectification shall be supplied by VSP free of cost.

3. BOQ item No: G 3 (Replacement of lamps)

The work involves testing of the light fitting and rectification of all defects after duly checking the healthiness of other peripherals. Lamps, Holders etc. required for the rectification shall be supplied by VSP free of cost.

4. BOQ item No: G4 to G6 (Supply and installation of..)

The work involves supply / installation / replacement and rectification of all defects after duly checking the healthiness of other peripherals of incandescent lamp /romptolux lamp / CFL/ Choke/ Holder etc. as directed by Engineer / his Representative. Relevant installation BOQ item will be operated for the lamp/ CFL/ Choke/ Holder supplied by VSP free of cost.

5. BOQ item No: G7 (Supply and installation of Modular type items)

The work involves supply / installation / replacement of Modular type switch, socket, bell push etc. on the existing / new switch board and making all electrical connections as directed by Engineer / his Representative. Relevant installation BOQ item will be operated for the items supplied by VSP free of cost.

6. BOQ Item No: G 8 (Supply and installation of casing..)

The work involves supply / installation / replacement of 1.0 mm thick casing and capping. Relevant installation BOQ item will be operated for the casing and capping supplied by VSP free of cost. Hardware items like screw etc. are in the scope of the contracting agency.

7. BOQ Item No: G 9 (Supply and installation of PVC conduit..)

The work involves supply / installation / replacement of PVC conduit of 1.8mm thick as directed by Engineer / his Representative. Relevant installation BOQ item will be operated for the PVC conduit supplied by VSP free of cost. Hardware items like screw, clamp etc. are in the scope of the contracting agency.

8. BOQ Item No: G10 (Removal and re-doing wiring...)

The work involves removal / rewiring / installation of wire / cable through casing and capping / conduit as directed by Engineer / his Representative.

9. BOQ Item No: G 11 (Supply, replacement & fixing of electrical fittings...)

The work involves supply / installation / replacement of lamp holder, bulk head light fitting (with bracket, holders and glass sockets etc.), socket, switch, 2 way switch, ceiling roses, teak wood round blocks, after duly checking the healthiness of other peripherals. Relevant installation BOQ item will be operated for the items supplied by VSP free of cost. Hardware items like screw, clamp etc. is in the scope of the contracting agency.

10. BOQ Item No: G12 (Installation of Tube Light Fitting..)

The work involves rectification of fault(if any exists), installation of Tube Light Fittings of different types / ratings and making necessary terminations. Supply of all materials like screw, etc. are in the scope of the contracting agency. Tube Light Fittings shall be issued by VSP free of cost.

11. BOQ Item No: G13 (Installation of Calling Bell..)

The work involves rectification of fault(if any exists), Supply & installation of Calling Bells of different types and making necessary terminations. Supply of all materials like screw etc., are in the scope of the contracting agency. Calling Bells shall be either issued by VSP free of cost or payment shall be made if contractor is asked to supply.

12. BOQ Item No: G14 (Installation of MCBs/ Isolators..)

The work involves rectification of fault(if any exists), installation of MCB / Isolator of different types / rating and making necessary terminations. Supply of all materials like din-channels, lugs, screw, bolt & nut etc. are in the scope of the contracting agency. Isolator / MCB shall be issued by VSP free of cost.

13. BOQ Item No: G15 (Supply and installation of seasoned wood switch boards..)

The work involves supply and fixing of seasoned wood switch boards of plank thickness 10 mm, in place of damaged ones or new fixing with required cuttings for switches, sockets etc.

While replacing the existing switch board removal of the switches, sockets etc. are included in the scope of work.

Relevant supply BOQ item will be operated for the items supplied and installed by the contracting agency.

Relevant installation BOQ item will be operated for the items supplied by VSP free of cost.

14. BOQ Item No: G16 (Attending to voltage fluctuation..)

The work involves identification of fault and isolation of fault so as to avoid voltage fluctuations.

Part H. Renovation works in Public buildings & Residential Units:

1. BOQ Item No: H1 (Revisioning of MCB DBs)

The work involves opening, removing, cleaning of contact terminals, checking proper functioning of MCBs, Isolators and ELCBs and putting them back into service position after making all the connections to original. Replacement of defective MCBs, Isolators, ELCBs and screws, nuts, bolts, lugs etc., is included in the scope of work. Necessary new terminations should be done using proper lugs in place of damaged terminals. MCBs, Isolators and ELCBs will be supplied by VSP free of cost. Proper shutdown is to be taken before starting of the work.

2. BOQ Item No: H2 (Re-visioning of isolators etc.. in junction boxes...)

The work involves cleaning and re-visioning of electrical installations at the Junction boxes of stair case areas of residential units. Replacement of defective terminal connectors / strips and screws, nuts, bolts, lugs etc., is included in the scope of work. Necessary new terminations should be done using proper lugs in place of damaged terminals. Terminal connector / strips will be supplied by VSP free of cost.

3. BOQ Item No: H3 (Revisioning of MCB distribution box etc., including junction ...)

Cleaning and tightening of contact terminals, checking proper functioning of MCCB/ MCBs. Replacement of defective spares, knobs, screws, nuts, bolts, lugs etc., is included in the scope of work. Necessary new terminations should be done using proper lugs in place of damaged terminals. MCBs will be supplied by VSP free of cost.

4. BOQ Item No: H 4 & H 5 (General Cleaning of)

The work involves cleaning of light fitting with dry marking cloth / cleaning agent in their existing position. The scope includes cleaning of Reflectors, grills, tube / lamp etc. Grills, tube / lamps shall be removed & cleaned and these components shall be re-fixed to their original position. After cleaning, the fitting shall be in working condition.

Part I. Painting of street light poles, kiosks, Electrical panels etc. and Repair of Kiosks:

The Painting work shall generally be carried out in accordance with IS:1477(Parts I & II)

The paints to be used on the work shall conform to the following Indian standards -

Aluminium Paint	IS: 2339
Synthetic Enamel paint	IS: 2932
Red-oxide paint	IS: 2074

All the parts / surface to be painted shall be cleaned of dust, oil, rust etc. and is to be made smooth for taking new paint. After proper cleaning of rust, grease, dust etc., the equipment shall be shown for inspection. Every stage of painting activity shall be subjected for inspection.

After painting of PTL, SOR, DOR, SHM, Flood light poles, the numbering of poles shall be done with the help of stencil or by free hand neatly by using black enamel paint on the pole above coping. The numbering shall follow the sequence code of sub-station number followed by SLDB switch number followed by kiosk number and then by serial number of the pole. The size of the letter / number shall be legible and as directed by Engineer / his Representative. Numbering is to be done at no extra cost to VSP.

1. BOQ Item No: I 1(Painting of street light poles)

The work involves scrapping of PTL / SOR / DOR / SHM / Flood light poles with wire brush, emery paper to remove existing loose paint, rust etc., cleaning and painting with two coats of red oxide and two coats of aluminium paint / synthetic enamel paint of shade as directed by Engineer / his Representative.

2. BOQ Item No: I 2 (Scrapping and painting of cement concrete coping)

The work involves scrapping of cement concrete coping of various street light poles with wire brush, emery paper to remove existing loose paint, dirt and other unwanted material etc., cleaning and painting with one coat primer and two coats of synthetic enamel paint in double shades as directed by Engineer / his Representative.

3. BOQ Item No: I 3 (Scrapping and painting of LILO box doors)

The work involves scrapping of LILO box door on both sides with wire brush, emery paper to remove existing loose paint, dirt and other unwanted material etc., cleaning and painting with two coats of red oxide and two coats of synthetic enamel paint of shade as directed by Engineer / his Representative. Contractor has to take all necessary precautions while painting LILO box door cover as electrical connections are in LILO box.

4. BOQ Item No: I 4 (Painting of Kiosk top hood/ panel)

The work involves scrapping of Kiosk top hood with wire brush, emery paper to remove existing loose paint, dirt and other unwanted material etc., cleaning and painting of Kiosk top hood with one coat appropriate epoxy primer and two coats of epoxy paint of shade as directed by Engineer / his Representative. Contractor has to take all necessary precautions while painting Kiosk top hood as electrical connections are in the Kiosk.

5. BOQ Item No: I 5 (Painting of LT Kiosks excluding top hood)

The work involves scrapping of kiosk outer shell (excluding top hood, LT switch gear and supporting frame) with wire brush, emery paper to remove existing loose paint, dirt and other unwanted material etc., cleaning and painting with two coats of red oxide and two coats of synthetic enamel paint of shade as directed by Engineer / his Representative. Synthetic enamel paint is to be applied by spray painting. Measurement shall be for only net painted area excluding laps / holes / recesses / projections etc. Contractor has to take all necessary precautions while painting Kiosk top hood as electrical connections are in the Kiosk.

6. BOQ Item No: I 6 (Repairs of LT Kiosks)

(i) Minor Repairs

The work involves repair / replacement of door hinges, aldrops, locking system etc., and welding(continuous welding). All the materials like hinges, aldrops, locking system, welding electrodes, tools like welding machine etc., are included in the scope of contracting agency.

(ii) Major Repairs

The work involves repair / removing / replacement of damaged portions of Kiosk and welding(continuous welding) with CRCA sheet of 2.0 mm thickness. All the materials including CRCA sheet, welding electrodes and tools like welding machine etc. shall be supplied by the contractor.

(iii) Replacement of Top Hood

The work involves removing damaged top hood, supplying CRCA sheet of 3.15 mm thickness, and welding (continuous welding) or mounting the top hood with nuts and bolts. The top hood shall be fabricated to suit the panel at site. All the materials including welding, painting materials, electrodes, hardware, tools like

welding machine, tackles etc., shall be supplied by the contractor. The CRCA Sheet shall be cleaned and painted with one coat of appropriate epoxy primer and two coats of epoxy paint of shade as directed by Engineer / his Representative. Contractor has to take all necessary precautions while fixing the top hood. Wherever the above paint is damaged while fixing at site, touch up painting shall be done with epoxy based paint.

7. BOQ Item No: I 7, I 8 (Rectification/ replacement of PTL poles, single outreach poles etc..)

The work involves removal of damaged pole, replacement and installation of pole supplied by VSP free of cost as directed by Engineer / his Representative. The scope of work includes replacement of PTL / SOR / DOR / Flood light / SHM pole by removal of the defective / damaged pole by excavating and installation of another pole in the place shown by Engineer / his Representative by necessary excavation, coping masonry and all enabling works. The transportation of all the material like pole, pipes etc. is in the scope of the Contracting agency.

Curing of concrete coping and clearing of debris at site and return of material removed from site like pole, pipes, LILO box etc. to TA department. Store is in the scope of contracting agency.

All the material like 18 SWG GI wire of required lengths, lugs, earthing bolts, cement, sand, metal chips, paints, fabrication etc. required for this work except pole and GI pipes shall be supplied by the contractor. Painting of the coping with one coat of primer and two coats of enamel paint of required colour and is also included in the scope of work. Outer surface of pole embedded in the concrete foundation and coping shall be painted with two coats of black bituminous paint.

Earth electrodes for individual pole/ LILO box earthing shall consist of 20 mm diameter and 1500 mm long galvanized MS rods vertically driven in the ground having 40 mm x 40 mm x 5 mm galvanized MS angle welded to the top for connecting to the earth stud provided in the pole base by means of 2 Nos. of 16 Sq. mm stranded GI wire.

Removing and re-fixing of fittings, supply & installation of the new LILO boxes and making necessary wiring connections shall be made against the relevant items of the BOQ and payment shall be made accordingly.

8. BOQ Item No: I 9 (Strengthening of street light poles)

The work involves strengthening of street light poles by chipping the concrete coping, supply, fabrication and erection 2 Nos. of MS plates by continuous welding to pole (as per the drawing enclosed to the specification), rebuilding of coping, painting of welded plates, coping as directed by Engineer / his Representative.

Painting of exposed metal portions like pole, LILO box and welded plates with two coats of red-oxide and two coats of anticorrosive bituminous paint.

Rebuilding of coping with 1:2:4 concrete and finishing with 10 mm thick plastering of 1:4 to the original shape of the coping.

Curing of the repaired portions and disposal of all the debris are in the scope of the contracting agency.

Supply of all materials like MS plates, paints, cement, sand, metal chips etc., as per the drawing are included in the scope of work.

9. BOQ Item No: I 10, I 11 (Supply & installation of LILO box)

The work involves supply, disconnection, removal, installation of LILO box and re-termination of cables.

The contracting agency has to supply new box of MS sheet of 2.0 mm thick / Poly propylene with necessary Bus bars / termination strips, porcelain fuse cut-out of suitable size / rating as directed by the Engineer / his Representative. The dimensions, size and shape of the new LILO boxes as directed by the Engineer / his Representative. The new MS LILO box is to be painted with 2 coats of the red oxide and 2 coats of enamel paint of the colour and shade as directed by the Engineer / his Representative. Supply of all the materials required for replacement and necessary coping work including LILO boxes, cement, and sand, metal chips, paints, lugs, washers etc., and tools and tackles are included in the scope of work.

Curing of the repaired portions and disposal of all the debris are in the scope of the contracting agency.

10. BOQ Item No: I 12 (Repair of LILO box door hinges)

This work involves repair / modification / fixing of LILO box door hinges by welding hinges to the LILO box as directed by Engineer / his Representative. Supply materials like hinges, screws, bolts, nuts, welding electrodes etc. and tools and tackles like welding machine etc. are in the scope of the contracting agency. In case, hinge(s) is / are missing or damaged in the LILO box, the same shall be supplied by contractor and fixed at no extra cost to VSP.

11. BOQ Item No: I 13 (Supply and installation of LILO box doors)

The work involves supply / fixing of LILO box doors of various sizes as directed by Engineer / his Representative.

The door cover to be of MS sheet of 2.0 mm minimum thickness. The door will be fixed to the door hinge with galvanized nut & bolt of suitable size or welded and the door shall have locking facility. Scope of work also includes painting of new LILO box door with 2 coats of the red oxide and 2 coats of enamel paint of the colour and shade as directed by the Engineer / his Representative.

12. BOQ Item No: I 14 (Numbering of street light pole with black enamel paint)

The work involves numbering of PTL, SOR, DOR, SHM, Flood light poles etc., the numbering of poles shall be done with the help of stencil or by free hand neatly by using black enamel paint on the pole above coping. The numbering shall follow the sequence code of sub-station number followed by SLDB switch number followed by kiosk number and then by serial number of the pole. The size of the letter / number shall be legible and as directed by Engineer / his Representative.

Part J. Miscellaneous works

1. BOQ Item No: J 1 (Supply and installation of Switch Fuse Unit)

The work involves supply / replacement / installation of Switch Fuse Unit with necessary modifications. All the required tools and tackles are in the scope of contracting agency. Materials required for carrying out modifications shall be issued by VSP free of cost. Switch Fuse Unit supplied and installed by contracting agency, supply and installation BOQ items will be operated accordingly. Installation of Switch Fuse Unit supplied by VSP free of cost, installation BOQ item will be operated.

2. BOQ Item No: J 2 (Supply and replacement of selector switches for instruments like Voltmeter, Ammeter etc..)

The work involves supply / replacement / installation of selector switches for instruments like Voltmeter, Ammeter etc. of suitable rating, type as directed by Engineer / his Representative. Selector switch supplied and installed by contracting agency, supply and installation BOQ items will be operated accordingly. Installation of selector switch supplied by VSP free of cost, installation BOQ item will be operated.

3. BOQ Item No: J 3 (Supply & replacement of indication lamps / lamp sets)

The work involves supply / replacement / installation of lamp / lamp set (complete set comprising of 1 holder, 1 lamp, top cover etc.) for indication in LT panel boards as directed by Engineer / his Representative. Neon lamp / lamp set supplied and installed by contracting agency, supply and installation BOQ items will be operated accordingly. Installation of Neon lamp / lamp set supplied by VSP free of cost, installation BOQ item will be operated.

4. BOQ item No: J 4 to J 7 (Rewinding of ...)

The work involves dismantling, removal of old winding, rewinding and re-assembling the wall mounted fans / motor etc. Removal of the fan / motor from site and installation after rewinding / repairs is included in the scope of the item. Where ever required replacement of connectors / clamps / Bolts & nuts / washer / split pin is included in the scope of the contracting agency.

The scope includes use of required standard gauge (same gauge as the original winding). Super enamel insulated high purity copper wire of not less than class-F insulation. Insulating and heating the winding of the fan / motor for drying of insulation, testing of the motor for insulation resistance, re-assembling the fan / motor to its original position. Insulating materials lead wires and other materials used in repair should not be below class-F. After heating the core for removal of moisture, winding shall be done, winding should be varnished. After varnishing, Winding shall be dried by heating. After that one coat of air drying varnish shall be applied on winding. The winding insulation resistance shall be tested after rewinding with 500V Megger and shall be run in all speeds and tested for no abnormal sound. The scope includes overhauling like bearing cleaning, applying new grease to bearing etc., removal and re-fixing of motor complete with necessary connections and alignment with pump set.

Copper wires removed from winding will become the property of the contractor.

5. BOQ Item No: J 8 (Supply and installation of bearings..)

The work involves removing the old damaged bearings with proper bearing puller, cleaning of the bearing housing with cleaning agent, supplying / fixing new double sealed metal ball bearing of standard makes after proper lubrication and reassembling of the fan / motor, testing the fan / motor for satisfactory performance. Wherever bushes / shaft are worn out, necessary modification like metal building, machining/ turning the shaft etc. for fixing of bearings is to be carried out. Installation of fan / motor at site after repairs is included in the scope of this item.

6. BOQ Item No: J 9 (Supply and installation of earth strips..)

The work involves supply / installation of earth strips of various sizes as directed by Engineer / his Representative. Supply of clamps, all hardware etc., and scaffolding etc., needed for fixing of vertical, horizontal portions of earth strip/ wire at all heights are under the scope of contractor.

7. BOQ Item No: J 10 (Supply and installation of epoxy painted Junction Box)

The work involves supply / installation of junction box as directed by Engineer / his Representative. Junction box to be supplied shall be dust & vermin proof Wall/ structure mounted type made out of 2 mm thick CRCA sheet with one coat appropriate epoxy primer and two coats of epoxy paint of shade as directed by Engineer / his Representative. The box is to be fabricated so as to suit the requirements of site for mounting on the wall / structure and for mounting bus bars, fuse cut outs, din channels, neutral link, provision for cable/ conduit entry etc. The box shall have detachable gland plates of bolted type at top and/ or bottom and earth bolts at two sides and the door shall be hinged type with heavy duty hinges and with 'kiosk' type key / pad locking facility. All metal joints shall be provided with rubber gasket. Payment shall be made based on the measurements of outer faces of the box only and Internal parts like clamps etc., required for mounting electrical / hardware, overlap areas etc., shall not be considered for payment.

8. BOQ Item No: J 11 (Laying of concrete foundation...)

The work involves laying / providing of concrete(1:3:6) foundation up to 0.28 Cu. M for new Junction box / electrical distribution board of various sizes. Supply of all materials like cement, sand, metal, hardware like grouting bolts, nuts, bending of GI pipes for incoming and outgoing cables etc., tools, materials for shuttering etc., are included in the scope of work.

The GI pipes and base channel to be mounted shall be supplied VSP free of cost.

9. BOQ Item No: J 12 (Making new earth pits)

The earth pits should be made as per IS-3043. The GI pipe should be of class-B, 40 mm diameter.

10. BOQ Item No: J 13 (Supply & Installation of MCCBs)

Supply/ replacement/ installation of MCCBs with necessary modifications. All the required tools and tackles are in the scope of Contractor. Materials required for carrying out modifications shall be issued by VSP free of cost.

Part K. Energy meter readings

1. BOQ Item No: K1(Taking Energy meter readings..)

There are around 3851 dwelling units and about 103 commercial establishments (shops, cell towers, schools, temples etc.) in Ukkunagaram township Sector 6 to 12 etc. All these units have been provided with energy meters for measuring energy consumption.

The work involves taking Energy meter readings every month for commercial establishments and once in every four months for dwelling units. In a given month, total energy meter readings that are to be taken comes to approx. 1050.

At the beginning of every month a schedule for taking meter readings that are due in that month is to be prepared by the contractor / his representative as per the directions of the Engineer. Job orders are to be obtained by the contractor / his representative as per the schedule approved by the Engineer.

Contractor / his representative is to meet Engineer / his representative daily to report the progress with respect to said schedule and also to submit such other reports as sought by the later. Contractor is to arrange for data entry in the computer and has to mobilize required resources to obtain at least 60 meter readings on any given day. Though normally energy meter readings are to be taken during the normal working days in the general shift timings as followed by VSP, the contractor is to mobilize for taking the readings during other times and other than working days also as per the directions of the Engineer / his representative.

While taking meter readings, the energy meter reading along with other details is to be entered in the energy meter card available with the occupant

concerned and the status of the meter is also to be observed such as meter board hanging, meter seal broken, glass broken, meter not working etc. For meter not working cases, relevant observations like meter disc not moving, number set problem etc. are to be recorded clearly in the relevant column of the reports. If any meter tampering cases are noticed, the same should be brought to the notice of the Engineer / his representative immediately with all the relevant details.

All efforts are to be put in to minimize the door-lock cases like sticking door-lock slips, attempting at other probable timings etc. as per the directions of the Engineer / his representative.

Payment shall be made only to the actual readings that are taken including that of Not-working meter as per the report submitted by the contractor / his representative to the Engineer or his representative by 25th of every month. No extra payment shall be made for door-lock cases, vacant units, check reading cases, submission of reports etc. No claim what so ever on this account shall be entertained and decision of the Engineer is final and binding on both the parties.

2. BOQ Item No: K2 (Feeding reading in the on line system..)

The readings are to be fed by the contractor in the on-line system provided by VSP.

Part M. Providing Man-Days

1. BOQ Item No: M1(Providing man power)

Carrying out miscellaneous Jobs of various trades through semi-skilled and un-skilled manpower along with necessary tools of the trades for working at all levels etc., as directed by Engineer / his Representative.

Tenderer may note that the rates mentioned herein shall remain firm until further revision by VSP. on the basis of minimum wages Act,1936 for contract labour (the rates indicated include the wages notified in the relevant gazette, minimum wages including weekly-off wages, PF contribution from contractor, Labour license and W.C. Insurance, GPA insurance, Safety appliances, Minimum common tools & tackles, Annual leave with wages, Holiday wages and Retrenchment Compensation and contractor's profit and overheads). Any changes made in the rates by the tenderer shall not be taken into cognizance.

(i) Skilled

Skilled man power with knowledge in the areas of work like Diesel Generators, Circuit Breakers etc.,

(ii) Semi-Skilled

2nd class mason, 2nd class carpenter or assistant carpenter, 2nd class blacksmith, 2nd class painter, experienced electrician, fitter for bending bars for reinforcement, tinkar, sawer, glassier, brick moulder, pot tile turner, brick and lime kiln man, assistant fitter

(iii) Un-skilled

Mazdoor, gang mazdoor, thatchar mukkadam, peon, sweeper, bhisthee, scavenger, watch man, security guard.