

Section -LIGHTING SYSTEM (Rev.07)

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8.1

General

LIGHTING SYSTEM INSTALLATION WORKS

In accordance with the specified installation instructions as shown on manufacturer's drawings or as directed by Employer, Contractor shall unload, erect, install, test and put into commercial use all the electrical equipment included in the contract. Equipment shall be installed in a neat, workmanship manner so that it is level, Plumb Square and properly aligned and oriented. Tolerances shall be as established in manufacturers drawing or as stipulated by Purchaser.

All apparatus, connections and cabling shall be designed so as to minimize risk of fire or any damage which will be caused in the event of fire. All Lighting accessories mentioned in Clause 6.7 shall be supplied and erected as a part of Lighting System Installation works. Cost of Erection, Foundation & Civil Works of the above accessories and Lighting Poles are to be included in the Cost of the erection of Lighting system, no extra payment shall be made on account of the same.

Further, lighting control in GIS Hall has to be done in staggered way for the minimum basic illumination. Further separate switchboard shall be provided to have enhanced lighting for each bay.

8.2

Conduit System

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- (i) Contractor shall supply, store and install conduits required for the lighting installation as specified. All accessories/fittings required for making the installation complete, including but not limited to pull out boxes (as specified in specification ordinary and inspection tees and elbow, check nuts, male and female bushings (brass or galvanized steel), caps, square headed make plugs, nipples, gland sealing fittings, pull boxes, conduits terminal boxes, glands, gaskets and box covers, saddle terminal boxes, and all steel supporting work shall be supplied by the Contractor. In case of false ceiling surface conduiting is permissible however all down run conduits will be concealed in wall below the false ceiling. The conduit fittings shall be of the same material as conduits. Separate Conduit should be laid for Communication purpose .The contractor shall also supply & install 20 mm PVC conduit and accessories for telephone wiring and LAN Cabling wherever feasible, telephone and LAN cabling can be laid in the same conduit.
- (ii) In case of false Ceiling surface conduiting (GI Pipe) is permissible under the ceiling.
- (iii) All unarmored cables/wires shall run within the conduits from lighting panels to lighting fixtures, receptacles. etc.
- (iv) Size of conduit shall be suitably selected by the contractor.

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- (v) Conduit support shall be provided at an interval of 750 mm for horizontal runs and 1000 mm for vertical runs.
- (vi) Conduit supports shall be clamped-on spacer plates or brackets by saddles or U-bolts. The spacer plates or brackets in turn, shall be securely fixed to the building steel by welding and to concrete or brick work by grouting or by nylon raw plugs. Wooden plug inserted in the masonry or concrete for conduit support is not acceptable.
- (vii) For directly embedding in soil, the conduits shall be coated with an asphalt-base compound. Concrete pier or anchor shall be provided wherever necessary to support the conduit rigidly and to hold it in place.
- (viii) For long conduit run, pull boxes shall be provided at suitable intervals to facilitate wiring.
- (ix) Conduit shall be securely fastened to junction boxes or cabinets, each with a lock nut inside and outside the box.
- (x) Conduits joints and connections shall be made through water-tight and rust proof by application of a thread compound which insulates the joints. White lead is suitable for application on embedded conduit and red lead for exposed conduit.
- (xi) The entire GI conduit system (if used) shall be embedded, electrically continuous and thoroughly grounded. Where slip joints are used, suitable bounding shall be provided around the joint to ensure a continuous ground circuit.
- (xii) Conduits and fittings shall be properly protected during construction period against mechanical injury. Conduit ends shall be plugged or capped to prevent entry of foreign material.

8.3

Wiring

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- i) The scope also includes wiring from nearest Lighting/Sub-Lighting Panel to the Controlling Switch/MCB/Lighting Fixtures.
- ii) Wiring shall be generally carried out by PVC insulated wires in conduits. All wires in a conduit shall be drawn simultaneously. No subsequent drawing of wires is permissible.
- iii) Wires shall not be pulled through more than two equivalent 90 deg. bends in a single conduit run. Where required, suitable junction boxes shall be used.
- iv) Wiring shall be spliced only at junction boxes.
- v) For lighting fixtures, connection shall be teed off through suitable

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round conduit or junction box, so that the connection can be attended without taking down the fixture.

- vi) Maximum two wires can be terminated to each way of terminal connections.
- vii) AC and DC wiring should run through the separate conduits. Similarly Communication & LAN cables shall run in separate conduit than that of AC & DC Conduits.

8.4 Lighting Panels

- i) The lighting panels shall be erected at the locations to be finalized during detailed engineering.
- ii) Suitable foundations/supporting structures for all outdoor type lighting panels shall be provided by the Contractor.
- iii) The Sub lighting Panel shall be provided where independent switch of fixtures are required.

8.5 General Requirements for Cabling Work

- i) Each cable run shall be tagged with number that appears in the cable schedules. Cables shall be tagged at their entrance and/or exit from any piece of equipment, junction or pull box, floor opening etc.
- ii) The tag shall be made up of aluminum with the number punched on it and securely attached to the cable by not less than two turns of G.I. wire. Cable tags shall be rectangular in shape for power cables and circular shape for control cables.
- iii) Location of cables laid directly under ground shall be indicated clearly by cable marker made of galvanized iron plate embedded in concrete block.
- iv) The location of underground cable joints if any shall be clearly indicated with cable marker with an additional inscription "cable joint".
- v) The marker, which is a concrete block, shall project 150 mm above ground and shall be spaced at an interval of 30 meters and at every change of direction. It shall also be located on both sides of the road or drain crossing.
- vi) Road crossing of cables through suitable size of GI pipe/Hume pipe as required at site.

8.6 Foundation & civil works

- i) Foundation for street lighting poles and panels shall be done by the

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Contractor.

- ii) All final adjustment of foundation levels, chipping and dressing of foundation surfaces, setting and grouting of anchor bolts, sills, inserts and fastening devices shall be carried out by the Contractor including minor modification of civil works as may be required for erection.
- iii) Any Cutting of masonry/concrete work, which is necessary shall be done by the Contractor at his own cost and shall be made good to match the original work.