

**DESCRIPTION**

This work shall consist of removing, furnishing and installing the maintenance lighting fixtures, the interior lighting fixtures for the various rooms in the towers, the receptacles and control switches in accordance with the contract documents and as directed by the Engineer.

**MATERIALS**

- A.** The Contractor shall submit the following documents:
- a. Catalog cuts, product specification/performance sheets
  - b. Wiring diagram and list of equipment to be furnished for approval prior to starting the work. Drawings showing locations, mounting details, conduit and wiring, with size and wire count, interconnecting between fixtures and devices.

**B. Fixture Outlet Boxes.** All outlet boxes shall be galvanized cast iron provided with gasketed covers and stainless steel fastening screws. All boxes shall have integral cast, threaded hubs. Each box shall have sufficient volume to accommodate the number of conductors in the box, in accordance with the requirements of the National Electrical Code. Boxes shall be not less than 38mm (1-1/2 inches) deep. Ceiling boxes shall not be less than 102 mm (4 inches) octagonal. Switch and receptacle boxes shall be approximately 102mm by 50mm (4" by 2"). Boxes for use outdoors shall be NEMA-4 and furnished with gasketed covers and stainless steel fastening screws.

**C. Receptacles.** Receptacles shall be U.L. listed, Nema 5-20R, 20 amps, 120-volt, three-wire grounding-type, with polarized tandem slots and U-shaped ground slot, unless otherwise indicated. Bodies shall be of brown LEXAN or similar compound supported by a mounting yoke having wall mounting ears. Contact arrangement shall be such that contact is made on two (2) sides of an inserted blade. Receptacles shall be side-wired, with two (2) screws per terminal (pole) for line connections, and the third grounding pole shall be internally connected to the grounding yoke.

Ground fault circuit interrupter receptacles installed for locations as required by the National Electrical Code or as indicated on drawings, shall have a built-in ground fault protection. Each receptacle shall be furnished with a "Test" push button and a "Reset" push button, completely factory tested, and shall have a trip threshold of 5 mA.

Weatherproof receptacles shall be mounted in a malleable cast iron NEMA 4 box approximately 102mm by 50 mm (4" by 2"), with a gasketed, weatherproof, cast aluminum cover plate and a self-closing cap over all receptacle openings.

**D. Wall Switches.** Wall switches shall be of the totally enclosed tumbler, 20-amp, 120-volt, quiet-type. Bodies shall be brown LEXAN or similar compound. Handles shall be brown. Wiring terminals shall be of the screw-type or of the solderless, pressure-type, having a suitable conductor release arrangement. Switches shall be rated as shown on the drawings, and shall be of the type indicated. Switches shall be "off" in the down position. Weatherproof switches shall be mounted in a gasketed, watertight cast iron NEMA 4 box and cover, approximately 102mm by 50 mm (4" by 2"), with all provisions to protect the switches from water entry.

**E. Fluorescent Ceiling Lights.** Fluorescent fixtures shall be U.L. listed, ceiling-type, surface-mounted, gasketed for use in damp locations, complete with 4-foot rapid-start, cool white, 40 watt fluorescent lamps, installed as indicated on drawings. Unless otherwise indicated in plans, the fixture

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housing shall be of extruded aluminum with cast aluminum end caps, finished inside and outside with baked enamel. The lens shall be high-impact resistant, prismatic, acrylic. The lens holder shall tightly hold the lens in place by means of cam latches. The lamp holders shall be of snap-in and pressure-lock type. Where the fixture is required with dimming usage, a full-range dimming ballast for 120 volts AC, and a specification-grade, full range, rotary dimmer as recommended by the dimming ballast manufacturer shall be furnished. The dimmer shall have positive on-off, knob, cover plate, and recessed box for wall-mounting. All fixtures shall be provided with rapid start, high power factor, low-temperature type ballasts capable of starting the lamps at -18 degrees Celsius.

**F. Incandescent vapor-tight Fixtures.** The incandescent fixture shall be U.L. listed and shall have socket and globe rated for 150-watt, 120-volt AC furnished with 100 watt rough-service rated lamps, and shall be vapor-tight, provided with joint gaskets to seal out dirt and moisture.

The fixture shall consist of a high strength, copper-free cast aluminum body, a heat resistant tempered glass globe, a cast aluminum globe guard, and gaskets for vapor-tight application. The fixture body and the globe guard shall have a dry powder polyester electro-deposited finish. Surface-mounted fixtures shall have cast iron back box with threaded hubs for cable or conduit termination.

**CONSTRUCTION DETAILS**

This work shall be in accordance with the applicable requirements of the latest edition of the following codes and standards:

1. National Fire Protection Association, National Electrical Code (NEC)
2. National Electrical Contractors Association, NECA 1, Standard Practices for Good Workmanship in Electrical Contracting

***Basis of Acceptance***

All shop drawings submitted shall follow the general guidelines and procedures given in the New York State Steel Construction Manual. No installation or rehabilitation work may take place until the shop drawings and procedures have been approved by the Engineer.

The work shall include, but not be limited to, the following:

1. Remove existing fixtures, components and appurtenances required for replacement and removal. All removed equipment shall become the properties of the Contractor and shall be properly disposed of away from the construction site.
2. Locate receptacles and install, as shown in plans. The location shall be easily accessible.
3. Install switches, as shown in plans. Where more than one switch is shown for one indoor outlet box, install the switches under one plate.
4. Install device plates with all four edges in continuous contact with the finished wall surfaces without the use of mats or similar devices. Install device plates vertically, with an alignment tolerance of 1.6 mm (1/16 inches).
5. Install fixtures on structural ceiling or structural supports, do not use conduit to support fixtures.
6. Install surface-mounted fixtures directly to the outlet box. Box shall be securely supported. Unless otherwise indicated on the drawings, flexible conduit between box and fixture is not acceptable.
7. Do not hang fixtures from chain hangers.
8. Carefully place all splices in outlet boxes or wiring gutters with no crowding.

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9. Pull wires such that no circuit, other than the one feeding the fixture, is pulled through a fluorescent fixture. Where fluorescent fixtures are mounted on an approved wiring channel, the channel may be used as a raceway.
10. Where aluminum is placed in contact with dissimilar metal, separate contact surfaces with a neoprene gasket.
11. Ground the light fixture body.
12. Test lighting fixtures for connection, in accordance with the wiring diagram and for proper operation.
13. Test the fixture body for continuity to the grounding system.

**METHOD OF MEASUREMENT**

This work will be measured for payment on a lump sum basis for each bridge.

**BASIS OF PAYMENT**

The lump sum price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.