SECTION 16500

LIGHTING

# GENERAL

## DESCRIPTION

### This section includes materials and installation of lighting fixtures.

## RELATED WORK SPECIFIED ELSEWHERE

### Section 16010: General Electrical Requirements.

## SUBMITTALS

### Submit shop drawings in accordance with the General Conditions.

### Submit manufacturer’s catalog data including complete catalog number, photometric data, and descriptive literature.

### Submit pole dimensions, anchor bolt details, wind loading data, materials, and finish.

## MEASUREMENT AND PAYMENT

### Payment for the work in this section shall be included as part of the lump-sum bid amount stated in the Proposal.

# MATERIALS

## GENERAL

### Furnish lighting fixtures of the type indicated in the drawings, complete with lamps, sockets, wiring, and mounting hardware.

### The use of a manufacturer’s name and model or catalog number in the drawings is for the purpose of establishing the standard of quality, photometrics, and general appearance desired only. Products of other manufacturers will be considered in accordance with the General Conditions, provided they are the cataloged and manufactured products of such manufacturers. Custom designed and/or fabricated fixtures will not be considered.

### Provide one spare light fixture for each type for no additional costs to the DISTRICT.

## LAMPS

### **LED:** Rough service type, 125 volts, of the type and wattage shown in the drawings. The DISTRICT requires LED lighting for all lighting fixtures.

## STEEL POLES

### Steel pole shaft shall consist of round tapered steel possessing a minimum yield strength of 46,000 psi per ASTM A 500, Grade B.

### Design poles, including handholes and luminaires, for a minimum yield safety factor of 1.5 when subjected to a sustained wind velocity of 100 mph and wind gusts of 130 mph. In addition, limit the deflection to 5% of pole length under these conditions.

### Equip with handhole of sufficient size to permit the pulling and splicing of wires and grounding of the pole. Provide a grounding lug accessible through the handhole to accept a ½-inch diameter copper conductor. Equip handhole with a cover.

### Aluminum pole shaft shall be a seamless extruded tube of aluminum alloy (6063-T4 for tapered poles and 6063-T6 for nontapered poles) or from square extruded 6063-T6 aluminum alloy.

### Provide poles with weather proof duplex outlets where shown on the drawings.

### Poles shall be fabricated to withstand seismic requirements Section 16012 of contract specifications.

## LIGHTING CONTROLS

### Provide Combination Lighting Contactors:

#### Rated at 600 Volts, 30 amps, with electrically activated mechanically held number of poles as shown on the drawings, and housed in NEMA 12 enclosure.

#### Combination Lighting Contactor as manufactured by Square D Class 8903, ASCO switch 917/918 series or equal.

#### Provide additional devices such as selector switches, circuit breakers, control power transformers, fuses, time clocks, etc as shown on the drawings.

### Photocell (if required by the design drawings)

#### Provide cadmium sulphide hermetically sealed cell, fully temperature compensated, with time delay of at least 15 seconds to prevent false switching.

#### Photocell as manufactured by Tork Time Controls 2100 Series or equal.

### SCADA Remote Control

#### If SCADA control of outdoor lights is required, mechanically latched contactors shall be used to insure that the state of the lights remains during a power failure.

### Local and Remote control shall support the following:

#### momentary contacts to change the state of each group of lights

#### status points provided to the SCADA system to provide the state of each groups of lights

#### dry output contact from the Photocell to be connected to SCADA system

#### support, as a minimum two groups of outdoor lights.

#### Photocell output with required auxiliary interposing relays shall be such that it can be either active or inactive (local switch). If active, it shall send a pulse to turn the lights on and a pulse to turn the lights off (photocell shall not override the ability to operate the lights using either the local control or SCADA control. As an alternative, if there is a SCADA system, a dry contact can be provided to the SCADA system that indicates that it is either night or day (either a form C contact output or closed indicates night and open indicates day). The SCADA system will use this input to determine if the lights are to be turned on or off.

### SCADA interface.

#### SCADA interface shall be provided to accept two dry contacts from the SCADA system that will turn the lights on or off. The dry contact shall be a pulse with a maximum of 500 Milliseconds off to on to off. One contact shall be used to turn the light on the other shall be used to turn the lights off

#### SCADA interface and local control buttons shall be such that either device shall be able to turn the lights on or off

# EXECUTION

## INSTALLATION

### Install lighting fixtures as close as possible to the locations shown in the drawings, making adjustments only for the purpose of avoiding interferences.

### Install lighting fixtures plumb and level, with fixture surfaces parallel and perpendicular to walls and other major structures.

### Install continuous rows of fixtures straight and true and equip with joining straps, couplings, and nipples as recommended by the manufacturer.

### Support long LED lighting fixtures at two points minimum from structural elements which are capable of carrying the total weight. Mount fixtures rigidly with no rocking action.

### Provide pendant stem-mounted fixtures with swivel hangers. Stem shall be one piece without coupling and shall be finished the same color as the canopy and the fixture, unless otherwise noted.

**END OF SECTION**