

SECTION 26 09 23.01
EXTERIOR SITE LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

- A. IEEE C62.41.1 - IEEE Standard Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits; 2002 (Reaffirmed 2008).
- B. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 508 - Industrial Control Equipment; Current Edition, Including All Revisions.
- G. UL 773A - Nonindustrial Photoelectric Switches for Lighting Control; Current Edition, Including All Revisions.

1.02 SUMMARY

- A. This Section includes the following lighting control devices:
 - 1. Integrated, pre-wired lighting control panel including:
 - a. Outdoor photoelectric switches.
 - b. Lighting contactors/relays.
 - c. Digital astronomic time switch.
 - d. 0-4 hour adjustable timer.
 - e. 0-10 volt dimmer.
 - f. Override control switches and pilot lights.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.01 CONTROLLER

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2.02 OCCUPANCY SENSOR

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:
 - 1. RAB Lighting
 - 2. TORK
- B. Occupancy sensor requirements:
 - 1. IP65 rating
 - 2. Adjustable Sensitivity Settings: 30% - 100%
 - 3. Time Adjustment: 5 seconds to 12 minutes
 - 4. PIR Sensor technology
 - 5. Detection Zone / Angle: 40' diameter from 40' height / 180°

2.03 OUTDOOR PHOTOELECTRIC SWITCHES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following or equal:
 - 1. Intermatic
 - 2. TORK
- B. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.
- C. Light-Level Monitoring Range: 1.5 to 10 fc (16.14 to 108 lx), with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
- D. Time Delay: 15-second minimum, to prevent false operation.
- E. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.
- F. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

2.04 LIGHTING CONTACTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:
 - 1. ASCO Power Technologies, LP; a division of Emerson Electric Co.
 - 2. Eaton Electrical Inc.; Cutler-Hammer Products.
- B. Description: Electrically operated and mechanically held, combination type with nonfused disconnect, complying with NEMA ICS 2 and UL 508.
- C. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
- D. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
- E. 6 poles: Provide quantity of contactors required number of lighting circuits with minimum of 3 spare poles.

2.05 WASTE YARD OVERRIDE TIMER/DIMMER HOUR TIMER

- A. Description: Solid state, with SPST dry contacts rated for 1000VA to operate connected relay, contactor coils or microprocessor input; complying with applicable UL requirements.
- B. Timer activated daily at dusk for an adjustable interval of 0-3 hours.

- C. Waste yard flood lights to operate at full brightness for programmed interval, beginning at dusk.
- D. Activate 0-10V dimmer to reduce lighting level to approximately 10% of full brightness (adjustable).
- E. Controls for interval timer and 0-10V dimmer enclosed within lighting control panel.

2.06 ENCLOSURE

- A. Description:
 - 1. All components mounted and prewired as factory tested within NEMA 1 cabinet, with hinged cover and key lock to match panelboards.
 - 2. All control wiring to be #14 minimum and properly fused.

2.07 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.01 SENSOR INSTALLATION

- A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
 - 1. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

3.02 CONTROL PANEL INSTALLATION

- A. Mount adjacent to lighting power panel.

3.03 WIRING INSTALLATION

- A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch.
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations:
 - 1. Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.04 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
- B. Identify controlled circuits in lighting contactors.
- C. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- D. Label time switches, timers, relays, dimmers and contactors with a unique designation.

3.05 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
- B. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
- C. Operational Test: Verify operation of each lighting control device, and adjust time delays.
- D. Lighting control devices that fail tests and inspections are defective work.

END OF SECTION 26 09 23.01 26 09 23.01