SECTION 26 09 23
LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Contracting Requirements and Division 01 General Requirements apply to this Section.

1.02 SUMMARY

A. This Section includes the following lighting control devices:
   1. Time switches.
   2. Indoor occupancy sensors.
   3. Lighting contactors.
   4. Emergency bypass relays.

B. Related Sections include the following:
   1. Division 26 Section "Wiring Devices" for wall-switch occupancy sensors, and manual light switches.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated. Include wiring diagrams and ratings.

B. Field quality-control test reports.

C. Operation and Maintenance Data: For each type of product to include in operation, and maintenance manuals.

1.04 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.01 TIME SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Intermatic, Inc.
   2. Paragon Electric Co.
   3. Square D; Schneider Electric.
   4. Tork.

B. Electronic Time Switches: Electronic, solid-state programmable units with alphanumeric display; complying with UL 917.
   1. Contact Configuration: SPDT or DPDT as shown on the drawings.
   2. Contact Rating: 20-A ballast load, 120/240-V ac.
   3. Programs: 1 or 2 channels as shown on the drawings; each channel shall be individually programmable. Separate scheduling for each day of the week and holidays, manual override.
   4. Battery Backup: For schedules and time clock.

2.02 INDOOR OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Hubbell Lighting.
   2. Leviton Mfg. Company Inc.
   3. Sensor Switch, Inc.
   4. Watt Stopper

B. General Description: Ceiling-mounting, solid-state units with a separate relay unit.
   1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
   2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
   3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac.
   4. Mounting:Sensor: Suitable for mounting in any position on a standard outlet box.
   5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
   6. Bypass Switch: Override the on function in case of sensor failure.
   7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; keep lighting off when selected lighting level is present.

C. PIR Type: Ceiling mounting; detect occupancy by sensing a combination of heat and movement in area of coverage. Watt Stopper CI-200 or equal to detect occupancy in a circular area up to 1200 sq. ft. Watt Stopper CI-200-1 or equal to detect occupancy in a circular area up to 500 sq. ft.

D. Ultrasonic Type: Ceiling mounting; detect occupancy by sensing a change in pattern of reflected ultrasonic energy in area of coverage. Watt Stopper WT-1105 or equal to detect occupancy in a circular area up to 1100 sq. ft. Watt Stopper WT-605 or equal to detect occupancy in a circular area up to 600 sq. ft.

E. Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage.
   1. Sensitivity Adjustment: Separate for each sensing technology.
   2. Detection Coverage: Watt Stopper DT-300 or equal to detect occupancy in a circular area up to 1000 sq. ft.

2.03 LIGHTING CONTACTORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. ASCO.
   2. Cutler-Hammer Products.
   3. GE Industrial Systems.
   4. Square D; Schneider Electric.

B. Description: Electrically operated and mechanically held (equal to ASCO 917 Series) or electrically held (equal to Square D LG Series) as shown on the drawings, complying with NEMA ICS 2 and UL 508.
   1. Current Rating for Switching: Number of poles and ratings are as indicated. Coordinate rating of each unit with type of load served, including tungsten filament type and inductive type loads.
   2. Enclosure: NEMA 1 enclosure, factory finished with hinged doors and latch.Comply with NEMA 250.
   3. Provide with control as indicated on the drawings, matching the NEMA type specified for the enclosure.

2.04 EMERGENCY BYPASS RELAY

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Lighting Control and Design, Inc.
   2. Bodine.

B. Description: Normally closed, electrically held relay, arranged for wiring in parallel with manual or automatic switching contacts, complying with UL 924, Bodine GTD 20 or Bodine GTD 20A as shown on the drawings.
   1. Voltage Rating: universal 120/277 V.
   2. Current Rating: 20 Amp fluorescent, incandescent and HID.

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.

3.02 WIRING INSTALLATION

A. Wiring within Enclosures: Comply with NECA 1.

B. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.

3.03 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

3.04 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
   2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

3.05 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit occupied conditions.

END OF SECTION 26 09 23