SECTION 26 09 21
OCCUPANCY/VACANCY SENSORS
Design Standard

PART 1 GENERAL

1.1 PURPOSE

This design standard has the purpose of creating a consistent application of the lighting control requirements throughout the San Mateo County Community College District therefore achieving a standard of quality for maintenance, reliability, and operation throughout all renovation and new building projects.

PART 2 PRODUCTS

2.1 Design and specify occupancy sensors, combined occupancy sensors/wall switches, and/or automatic switches to sense the presence of human activity within the desired space and enable or disable the on/off manual lighting control function provided by local switches. Lighting control system shall be wireless or have wireless sensor capability.

A. Occupancy Sensors
   1. Passive Infrared Sensors:
      a. Sensor Function: Detects human presence in the floor area being controlled by detecting changes in the Infrared energy. Sensor detects small movements, i.e., when a person is writing while seated at a desk.
      b. Provide in small offices near door facing into office.
   2. Ultrasonic Occupancy Sensors:
      a. Sensor Function: Detects human presence in the controlled floor area by detecting Doppler shifts in 40kHz ultrasound created by sensor.
      b. Provide in restrooms.
   3. Dual Technology Sensors:
      a. General: Sensor has combined capability of passive infrared and ultrasonic sensors as described above.
      b. Provide in classrooms, lecture halls, labs and large offices.

B. Combined Occupancy Sensor/Wall Switches (“Sensor Switches”):
   1. Completely self-contained sensor system that fits into a standard single gang box. Internal transformer power supply, latching dry contact relay switching mechanism compatible with electronic ballasts, compact fluorescent, and inductive loads. Triac and other harmonic generating devices are not allowed.
   2. Provide in small offices (single occupant), storage and utility spaces.

C. Photocell:
   1. Closed loop photocell to control lighting in daylight zones. Able to operate as stand-alone device, but shall be compatible with lighting control system.

D. Upon detection of human activity by the detector, sensor initiates a time delay to maintain the lights on for a preset period of time. The detector shall have field adjustable time delay settings from 30 seconds to 30 minutes.

E. Factory set sensors for maximum sensitivity.

F. LED lamp built into sensor indicates when occupant is detected.

G. Provide zero cross relay control with sensors and sensor/switches; relay contacts close and open when AC voltage signal is at zero.

H. Where line voltage sensors and sensor/switches are used, provide to match voltage of controlled circuit.

I. Install occupancy sensors as directed by manufacturer's instructions.

J. If required, provide power packs for the sensor to control the number of circuits and/or switch legs within its area of coverage.
K. Sensor locations shall be coordinated with furnishings and equipment plans prior to installation.
L. Relocate sensors with ultrasonic technology to avoid being closer to HVAC diffusers and power packs than recommended by manufacturer.
M. Field set time delay for each device as noted below:
    1. Classrooms and Conference Rooms: 15 minutes.
    2. Restrooms: 15 minutes. 30 minutes if interlocked with the exhaust fan.
    3. Storage Rooms, Janitor's Closets, Single Stall Restrooms: 5 minutes.
    4. Offices: 15 minutes.
    5. All Other Spaces: 15 minutes.
N. Prior to applying dimming controls, maintain fluorescent lighting at full output for minimum of 100 hours. If this is not done, replace lamps and ballasts of affected luminaires at no cost to Owner.
O. All controls to be commissioned by factory representative in presence of commissioning agent. At a minimum, sensor location, aiming and timing settings to be field verified and adjusted as necessary to eliminate blind spots and maximize system performance.
P. Lighting system shall have lighting fixtures and control seamlessly integrated into a fully functioning system. All components to be compatible and installation of one component shall not void the warranty of any other components.

2.2 APPROVED MANUFACTURERS

A. Enlighted
B. Lutron
C. WattStopper

PART 3 EXECUTION

3.1 SUBSTITUTES ALLOWED?

Yes, if performance and quality equivalency can be evidenced.

3.2 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS

26 09 26 - Lighting Control Standard
26 50 00 – Lighting Design Standard

END OF SECTION