

SECTION 26 27 26
WIRING DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wall switches
- B. Wall dimmers
- C. Receptacles
- D. Device plates
- E. Floor box service fittings
- F. Poke-through service fittings
- G. Occupancy sensors
- H. Automatic light switches

1.2 REFERENCES

- A. NEMA 5-WD 1 - Wiring Devices
- B. NEMA WD 6 - Wiring Devices – Dimensional Specifications

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3-years of experience.

1.5 ALLOWANCES

- A. Provide for twenty additional receptacles as directed in field.
 - 1. Allowance includes purchase, delivery, and installation of box, receptacle cover plate, wire, and 100 feet of conduit for each receptacle.

1.6 WARRANTIES

- A. Occupancy sensor manufacture shall provide 5-year warranty on parts and labor.

PART 2 PRODUCTS

2.1 WALL SWITCHES

- A. Single Pole Switches shall be 20-amps, 120/277 volts, industrial, heavy duty, specification grade, back and side wired, toggle type, and ground screw.
 - 1. Switches may be single poles, double pole, three-way, four-way, indicator type, locator type, key type, and pilot lighted as shown on the plans.
 - 2. Switches for normal lighting shall be ivory color and switches for emergency lighting shall be red color.
 - 3. The Pilot light in pilot light switches shall be lit when the load is on.
- B. Manufacturers
 - 1. Hubbell
 - 2. Leviton
 - 3. Pass & Seymour
 - 4. Substitutions: Under provisions of Section 01 60 00
- C. Time Delay Light/Fan Switch
 - 1. Penn Ventilator Model Airminder AM-12
 - 2. Substitutions: Under provisions of Section 01 60 00

2.2 WALL DIMMERS

- A. Manufacturers
 - 1. Lutron
 - 2. Eaton
 - 3. Copper
 - 4. Wattstopper
 - 5. Leviton
 - 6. Substitutions: Under provisions of Section 01 60 00
- B. Description: UL Listed, low voltage dimmers for LED lights, type as indicated on Drawings or Schedule.
- C. Device Body: Ivory plastic with buttons (All ON, Half ON, Raise, Lower, All Off)
- D. Voltage: 24 volts supplied by room controller
- E. Power Rating: Match load shown on Drawings.

2.3 RECEPTACLES

- A. Receptacles shall be 20 amps, 125 volts grounding type, industrial, specification grade, back and side wired, and with ground screw.
 - 1. Receptacles shall be single, duplex, quaderplex, GFCI, and surge protected as shown on the plans.
- B. General convenience receptacles shall be ivory color, receptacles supplied by branch circuits via emergency generator backed panels shall be red color, receptacles for communication systems equipment (computers) shall be gray color, and receptacles controlled automatically shall be green in color.
- C. Heavy-duty special receptacle outlets for dryers, kiln, and ranges as specified on the plans.
- D. Surge protected receptacles shall be UL 1449 listed (second edition), shall have metal minimum of four metal oxide varistors protecting phase-neutral, phase-ground, and neutral-ground.
 - 1. These receptacles shall have power-on indicator light and damage alert light or sound features.
- E. Manufacturers
 - 1. Hubbell
 - 2. Leviton
 - 3. Pass & Seymour
 - 4. Substitutions: Under provisions of Section 01 60 00

2.4 WALL PLATES

- A. Decorative Cover Plate: Stainless steel type 302 satin finished, non-magnetic.
- B. Weatherproof Cover Plate: Cast type, UL listed for wet and damp locations.
 - 1. Sierra
 - 2. Hubbell
 - 3. Leviton
 - 4. Pass & Seymour
 - 5. Substitutions: Under provisions of Section 01 60 00

2.5 POKE-THROUGH FITTINGS

- A. Manufacturers
 - 1. Hubbell
 - 2. Steel City
 - 3. Leviton
 - 4. Pass & Seymour
 - 5. Substitutions: Under provisions of Section 01 60 00
- B. Description: Assembly comprising service fitting, poke-through component, firestops and smoke barriers, and junction box for conduit termination.

- C. Fire Rating: Code requirement
- D. Service Fitting
 - 1. Type: Pedestal or Flush
 - 2. Housing: Satin aluminum
 - 3. Device Plate: Stainless steel
 - 4. Substitutions: Under provisions of Section 01 60 00

2.6 TIME CLOCKS

- A. Manufacturers
 - 1. Intermatic
 - 2. Paragon
 - 3. Tork
 - 4. Substitutions: Under provisions of Section 01 60 00
- B. Enclosure: NEMA ICS 2 Type as required to meet conditions of installation unless indicated on the Drawings.
- C. Time clocks to be a 7-day 24-hour day clock skipping with minimum 12-hour carryover.

2.7 PHOTOCELL SWITCH

- A. Manufacturers
 - 1. Intermatic
 - 2. Paragon
 - 3. Tork
 - 4. Substitutions: Under provisions of Section 01 60 00

2.8 OCCUPANCY SENSORS

- A. Occupancy Sensors shall be Dual Technology, Ultrasonic, and Passive Infrared.
- B. Sensors shall be UL, ceiling mounted, Class 2 devices, 24 volts DC, and 360 degrees, with LED indicators.
- C. Occupancy Sensors' power packs shall be UL listed, mounted above ceiling and directly above the Sensors.
- D. Provide power packs rated at 20 amps, 125/277 volts on the primary side and 24 volts DC on the secondary side with self-contained transformer and relay.
- E. Connections from Sensors to the power packs shall be Class 2 wiring at 24 volts DC.
- F. Power packs shall be capable of controlling multi Sensors and connections to multi light switches (dual-level switching).
- G. Occupancy Sensors shall have an auxiliary contact/relay for control of HVAC system.
- H. Occupancy Sensors shall have adjustable time delay with settings at 5, 10, 20, and 30 minutes.
 - 1. Initial factory settings shall be at 30 minutes.
- I. Each Occupancy Sensor shall cover minimum area of 1000 square feet.
 - 1. Spaces larger than 1000 square feet shall have multiple numbers of occupancy sensors.
- J. Occupancy Sensors shall have adjustable sensitivity feature.
- K. Manufacturer of the Occupancy Sensors shall provide minimum five-year full-unlimited warranty for materials and labor.
- L. Occupancy Sensors shall be fail-safe: upon failure of the Occupancy Sensors, the lighting in the controlled area shall be capable of being turn ON and OFF by the wall mounted light switches.
- M. Occupancy Sensors shall be complete system with Sensors, Power Packs, and interconnected wiring.
- N. Manufacturers
 - 1. Wattstopper, Model DT-300 Series
 - 2. Hubbell, Model ATD2000CRP Series
 - 3. Cooper OMC-DT Series

4. Substitutions: Under provisions of Section 01 60 00

2.9 AUTOMATIC LIGHT SWITCHES

- A. Automatic light switches shall be Dual Technology, Ultrasonic, and Passive Infrared.
- B. Automatic light switches shall be combination of light switch and occupancy sensor.
- C. Automatic light switches shall be UL, wall mounted, ivory color with LED indicators.
- D. Automatic light switches shall have choice of "auto-on or manual-on" operation.
- E. Automatic light switches rated at 20 amps, 125/277 volts.
- F. Automatic light switches must be compatible with all electronic ballasts.
- G. Automatic light switches shall have adjustable time delay with settings at 5, 10, 20, and 30 minutes.
 - 1. Initial factory settings shall be at 30 minutes.
- H. Automatic light switches shall have adjustable sensitivity feature.
- I. Manufacturer of the Automatic light switches shall provide minimum five-year full-unlimited warranty for materials and labor.
- J. Automatic light switches shall be fail-safe: upon failure of the device's sensors, the light switch shall be fully operational and be able to shut the lights on and off manually.
- K. Device shall have vandal-resistant sensor lens.
- L. Manufacturers
 - 1. Watt Stopper, Model DW-100-1 Series
 - 2. Hubbell, Model AD1227711 Series
 - 3. Cooper OSW-DT Series
 - 4. Substitutions: Under provisions of Section 01 60 00

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify conditions under provisions of Section 01 31 00
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and completely covered by wall plates.
- D. Verify floor boxes are properly adjusted.
- E. Verify branch circuit wiring installation is complete, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Provide extension ring to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Install wall dimmers to achieve full rating specified and indicated after de-rating for ganging as instructed by manufacturer.
- E. Do not share neutral conductor on load side of dimmers.
- F. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.
- G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- I. Provide one GFCI receptacle, minimum, in janitorial closets, adjacent to roof mounted equipment and pad mounted air conditioning equipment.
- J. Any receptacle within eight feet of a sink shall be a GFCI type.

- K. Receptacles on science work islands and adjacent to locker room shower and drying areas shall be GFCI type.
 - L. When plans or the code specifies GFCI, use only GFCI receptacles.
 - 1. Do not protect "down stream" receptacles with GFCI receptacles.
 - 2. Receptacles in one continuous multi-outlet surface raceway may be protected by one GFCI receptacle installed in the multi-outlet surface raceway.
 - M. Do not install receptacles and/or switches in-group toilets.
 - 1. Light shall be controlled from the nearest custodial space by a toggle switch with pilot light.
 - N. Switches in classroom and teachers workrooms for exhaust fans and contactors, shall have a pilot light.
 - O. Do not use push-in connections on any device.
 - P. Switches not within sight of what they control shall be a switch with a pilot light.
- 3.4 INTERFACE WITH OTHER PRODUCTS
- A. Coordinate locations of outlet boxes provided under Section 26 27 16 to obtain mounting height specified and indicated on Drawings.
 - B. Install wall switch 44" to center above finished floor.
 - C. Install convenience receptacle 20" to center above finished floor.
 - D. Install convenience receptacle 6" above backsplash of counter.
 - E. Install dimmer 44" to center above finished floor.
 - F. Install telephone jack 18" to center above finished floor.
 - G. Install telephone jack for wall telephone 44" to center above finished floor.
 - H. Install outdoor receptacles 60" to center above finished grade.
- 3.5 FIELD QUALITY CONTROL
- A. Inspect each wiring device for defects.
 - B. Operate each wall switch with circuit energized and verify proper operation.
 - C. Verify that each receptacle device is energized.
 - D. Test each receptacle device for proper polarity.
 - E. Test each GFCI receptacle device for proper operation.
- 3.6 ADJUSTING
- A. Adjust devices and wall plates to be flush and level.

END OF SECTION