SECTION 26 2726 - WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
A. Section 26 01 00: Common Work Results for Electrical
B. Section 26 05 26: Grounding and Bonding for Electrical Systems
C. Section 26 05 33: Raceways, Fittings, and Boxes
D. Section 26 27 19: Multi Outlet Assemblies
E. Section 26 27 23: Indoor Power Poles
F. Division 27: Communications

1.02 SUMMARY
A. This Section includes the following:
   1. Standard receptacles.
   2. Twist-locking receptacles.
   3. Receptacles with integral surge suppression units.
   4. Isolated-ground receptacles.
   5. Snap switches
   7. Solid-state fan speed controls.
   8. Special purpose receptacles
   9. Cord and plug sets.
   10. Coverplates
B. Related Sections include the following:

1.03 SUBMITTALS
A. Submit shop drawings and descriptive data in accordance with Section 260505 Electrical Submittals

1.04 COORDINATION
A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
   1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.01 RECEPTACLES – GENERAL REQUIREMENTS
A. Provide new receptacles at each outlet indicated on the drawings.
B. Provide all devices from one manufacturer.
C. Provide back and side wiring on all receptacles.
D. Provide one piece solid brass ground strap for all receptacles except GFCI receptacle.
E. Adhere to the following standards:
F. NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

2.02 STANDARD RECEPTACLES
A. Approved Manufacturers:
## 20A/125V Standard Receptacles

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<tr>
<th>Mfr.</th>
<th>Simplex</th>
<th>Duplex</th>
<th>GFI</th>
<th>IG</th>
<th>TVSS</th>
<th>Tamper Resistant</th>
<th>Weather Resistant GFI</th>
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### 2.03 Hospital-Grade Receptacles

#### A. Approved Manufacturers:

| 20A/125V Hospital Grade Receptacles
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### 2.04 Hazardous (Classified) Location Receptacles

#### A. Wiring Devices for Hazardous (Classified) Locations: Comply with NEMA FB 11 and UL 1010.

#### B. Provide suitable outlet box and fittings as specified in Section 26 05 33: Electrical Raceways and Boxes.

#### C. Approved manufacturers:

1. Cooper Crouse-Hinds.
2. EGS/Appleton Electric.
3. Killark; a division of Hubbell Inc.

### 2.05 Twist-Locking Receptacles

#### A. Provide size and NEMA configuration as indicated on the plans and/or equipment schedules.

#### B. Provide extra heavy duty, industrial specification grade receptacles.

#### C. Approved Manufacturers:

1. Cooper
2. Hubbell
3. Leviton
4. Pass & Seymour

#### D. Isolated-Ground, Single Convenience Receptacles, 125 V, 20 A:

1. Approved Manufacturers:
   a. Hubbell IG2310.
   b. Leviton 2310-IG.
   c. Pre-approved equal

2. Provide device with equipment grounding contacts connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation is integral to receptacle construction and not dependent on removable parts.

### 2.06 Special Purpose Receptacles

#### A. Provide industrial grade special purpose receptacles where identified on the plans.

#### B. Verify NEMA configuration of equipment plug prior to installing receptacle.
2.07 CORD AND PLUG SETS
A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.
   1. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.

2.08 SNAP SWITCHES – GENERAL REQUIREMENTS
A. Provide new switches at each switch indicated on the drawings.
B. Provide all devices from one manufacturer.
C. Comply with NEMA WD 1 and UL 20.
D. Switches, 120/277 V, 20 A
E. Approved manufacturers:

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<th>3-way</th>
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2.09 WALL-BOX DIMMERS
A. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
B. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.
C. Incandescent Lamp Dimmers: 120 V; control shall follow square-law dimming curve. On-off switch positions shall bypass dimmer module.
   1. 600 W; dimmers shall require no derating when ganged with other devices.
D. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.
E. Approved Manufacturers:
   1. Lutron Nova T-star
   2. Pre-approved equal

2.10 FAN SPEED CONTROLS
A. Modular, 120-V, full-wave, solid-state units with integral, quiet on-off switches and audible frequency and EMI/RFI filters. Comply with UL 1917.
   1. Continuously adjustable slider.
   2. Three-speed adjustable slider.

2.11 COMMUNICATIONS OUTLETS
A. Refer to Division 27 specifications
2.12 INTERIOR COVERPLATES

A. Provide coverplates for all wiring devices including receptacles, lighting, communications, voice/data, telephone and special purpose receptacles. Coordinate technology device plates with Division 17.

B. Single and combination types to match corresponding wiring devices.
   1. Plate-Securing Screws: Metal with head color to match plate finish.
   2. Material for Finished Spaces: Type 302 stainless steel with smooth finish.
   3. Material for Unfinished Spaces: Galvanized raised steel plate on surface mounted boxes.
   4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.13 EXTERIOR COVERPLATES

A. Exterior Coverplates: Provide new 2-gang, "while in use", weatherproof coverplates for outlets and switches as indicated on the Drawings. Provide weatherproof boots for all dropcords as indicated on the Drawings.
   1. Weatherproof switch coverplates: Cast aluminum or Lexan with cover and vinyl gasket for weatherproofing switch; or cast aluminum with lever and weatherproof gasket.
   2. Weatherproof receptacle coverplates: Cast aluminum or Lexan with cover and vinyl gasket for weatherproofing receptacle.
   3. Approved manufacturers:
      a. Red Dot 2CKD Series
      b. Leviton 5977-CL series
      c. Pass and Seymour WIU series
      d. Pre-approved equal
   4. Weatherproof receptacle coverplates: Stainless steel with locking cover, P&S #WPH-8L or pre-approved equal.
   5. Weatherproof boots: Yellow rubber, with overlapping design to seal out water and dirt. Rubber boot shall keep weatherproof seal intact when plug is used with wall mounted receptacles.

2.14 FINISHES

A. Device Color:
   1. Wiring Devices Connected to Normal Power System: Gray, unless otherwise indicated or required by NFPA 70 or device listing.
   3. TVSS Devices: Blue.
   4. Isolated-Ground Receptacles: As specified above, with orange triangle on face.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Coordination with Other Trades:
   1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
   2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
   3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
   4. Install wiring devices after all wall preparation, including painting, is complete.
B. Conductors:
1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
   a. Cut back and pigtail, or replace all damaged conductors.
   b. Straighten conductors that remain and remove corrosion and foreign matter.
   c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

C. Device Installation:
1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. Use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

D. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

E. Dimmers:
1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers’ device listing conditions in the written instructions.

F. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.02 SPECIFIC REQUIREMENTS FOR RECEPTACLES

A. Provide GFCI type receptacles for all 15 and 20 amp 120 volt receptacles installed in the following locations:
1. Exterior locations, including rooftops.
2. Locations within 6 feet of domestic water outlet (sink, hose connection)
3. Wet locations.
4. Bathrooms
5. Garages
6. Crawl Spaces
7. Laundry areas
8. Receptacles serving electric water coolers, drinking fountains, hand wash fountains
B. Where GFCI receptacles are indicated and/or required, provide GFCI receptacles devices for each receptacle. Do not use the load-side protection feature on GFCI receptacles to protect downstream standard receptacles in lieu of individual protection.

C. Where Surge Protective Receptacles (TVSS) are indicated, provide TVSS receptacles for each receptacle. Do not use the load-side protection feature on the receptacles to protect downstream standard receptacles in lieu of individual protection.

3.03 IDENTIFICATION
A. Where engraved or labeling of coverplates is indicated on the plans, comply with Section 26 05 53 Identification for Electrical Systems.

3.04 FIELD QUALITY CONTROL
A. Perform tests and inspections and prepare test reports.
   1. In healthcare facilities, prepare reports that comply with recommendations in NFPA 99.
   2. Test Instruments: Use instruments that comply with UL 1436.
   3. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:
   1. Line Voltage: Acceptable range is 105 to 132 V.
   2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
   3. Ground Impedance: Values of up to 2 ohms are acceptable.
   4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
   5. Using the test plug, verify that the device and its outlet box are securely mounted.
   6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 26 2726