

SECTION 26 2726 WIRING DEVICES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles: Single, duplex, twist-lock, ground-fault circuit interrupters (GFCI), and tamper resistant (TR).
 - 2. AC Wall Switches: Single- and double-pole, three- and four-way, maintained and momentary, pilot light and lighted toggle.
 - 3. Device Wall Plates.
 - 4. Service/Power Poles and Multi-Outlet Assemblies.
 - 5. Emergency Power Off Buttons

1.02 DEFINITIONS

- A. GFCI: Ground-fault circuit interrupter.
- B. IG: Isolated Ground
- C. PIR: Passive Infrared.
- D. RFI: Radio Frequency Interference
- E. SPD: Surge Protective Device
- F. USB: Universal Serial Bus
- G. TR: Tamper Resistant

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Division 01 and Division 26 Section "General Electrical Requirements".
- B. Product data for the following products:
 - 1. Provide manufacturer's catalog information specifically marked to indicate which devices are being furnished, and showing dimensions, colors, and configurations for all devices, including, but not limited to: Receptacles, AC wall switches, cover plates, power poles, and multi-outlet assemblies.
- C. Shop drawings for:
 - 1. List of legends and description of materials and process used for pre-marking wall plates.
- D. Field quality-control test reports.
- E. Operations and Maintenance Data:
- F. Warranty: Special warranties specified in this Section.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated cover plate from a single manufacturer and through one source. Where practical and possible, obtain all wiring devices and associated cover plates from a single manufacturer and one source.
- B. Materials shall be manufactured by companies that have been specializing in the products specified in this Section, for a minimum of 10 years.
- C. Electrical Components, Devices, and Accessories:
 - 1. Listed and labeled as defined in NFPA 70, Article 100, by an NRTL as defined by OSHA in 29 CFR 1910.7, and that are acceptable to authorities having jurisdiction.
 - 2. Marked for intended use.
- D. Comply with NFPA 70.

1.05 COORDINATION

- A. Receptacles for Equipment Furnished by Owner or Under Other Divisions or Contracts: Match plug configurations.

PART 2 PRODUCTS AND MATERIALS

2.01 GENERAL

- A. Wiring devices are defined as single discrete units of electrical distribution systems, such as convenience receptacles, switches, special purpose receptacles, and similar, which are intended to carry, but not use electrical energy. Install wiring devices as required by the Specifications and where indicated on the Drawings.

2.02 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Receptacles and Switches:
 - a. Cooper Wiring Devices.
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Mfg. Company Inc.
 - d. Pass & Seymour/Legrand; Wiring Devices Div.
 - 2. Multioutlet Assemblies:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Wiremold Company (The).
 - 3. Service/Power Poles:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Pass & Seymour/Legrand; Wiring Devices Div.
 - c. Square D/Groupe Schneider NA.
 - d. Thomas & Betts Corporation.
 - e. Wiremold Company (The).
 - 4. Emergency Power Off Buttons:
 - a. GE Industrial.
 - b. Square D/Groupe Schneider NA.
 - c. Eaton.
- B. In other Part 2 articles below, where lists of manufacturers and device catalog numbers are included, the following additional requirements apply to product selection:
 - 1. Additional Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers listed in individual articles below, in addition to those listed in Paragraph "Manufacturers" above.

2.03 FINISHES

- A. Color:
 - 1. Wiring devices connected to normal power systems: Gray devices. Cover plates: Stainless Steel.
 - 2. Wiring devices connected to UPS power: Red device. Cover plates: Red and engraved with "UPS POWER" with white filler in the engraving. Engrave the panelboard designation and circuit number serving the emergency device into the cover plate.
- B. Manufacturer's model numbers listed are to establish the quality of the wiring devices. Coordinate the proper suffixes in order to provide the correct color as specified above.

2.04 CONVENIENCE RECEPTACLES:

- A. The catalog numbers listed below are generally for 20A rated devices. Where 15A rated devices are indicated on the Drawings or required for circuit rating limitations, provide receptacles equivalent to those specified for 20A, but rated for 15A.
- B. Duplex convenience receptacles: Heavy Duty Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, smooth nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Duplex</u>	<u>Single</u>
Cooper	5362	5351
Hubbell	5352A	HBL5361
Leviton	5352	5261
Pass & Seymour	5362	5361

- C. Duplex convenience receptacles: Commercial Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, smooth nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Duplex</u>
Cooper	CR20
Hubbell	BR20
Leviton	CR20
Pass & Seymour	CR20

- D. Duplex tamper resistant convenience receptacles: Commercial Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, smooth nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Duplex</u>
Cooper	TRCR20
Hubbell	BR20TR
Leviton	TBR20
Pass & Seymour	TR20

- E. Duplex weather resistant convenience receptacles: Heavy Duty Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, smooth nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Duplex</u>
Cooper	TWR270
Hubbell	5362WR
Leviton	WBR20
Pass & Seymour	WR5862

- F. Duplex weather resistant convenience receptacles: Commercial Specification grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, smooth nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Duplex</u>
Cooper	WRBR20
Hubbell	5362WR
Leviton	WBR20

- Pass & Seymour WR20TRW
- G. Twist-Locking type receptacles: NEMA L5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding.

<u>Manufacturer</u>	<u>Single</u>
Cooper	L520R
Hubbell	HBL2310
Leviton	2310
Pass & Seymour	L520-R

2.05 GFCI RECEPTACLES

- A. Ground fault circuit interrupter type receptacles: **Specification Grade** UL listed and labeled complying with UL 943, Class A and NEMA WD-1-1.10, 125V, 20A, trip at 4-6mA within 0.025 second, and feed-thru type with integral heavy duty NEMA 5-20R receptacle arranged to protect receptacles down stream on the same circuit.

<u>Manufacturer</u>	<u>[Specification Grade]</u>	<u>[Hospital Grade]</u>
Cooper	VGf2	VGfH20
Leviton	T7899-H	6898-HG
Pass & Seymour	2095	2095HG

- B. Ground fault circuit interrupter type weather-resistant receptacles: **Specification Grade** UL listed and labeled complying with UL 943, Class A and NEMA WD-1-1.10, 125V, 20A, trip at 4-6mA within 0.025 second, and feed-thru type with integral heavy duty NEMA 5-20R receptacle arranged to protect receptacles down stream on the same circuit.

<u>Manufacturer</u>	<u>[Specification Grade]</u>	<u>[Hospital Grade]</u>
Cooper	WRVGf20	N/A
Leviton	W7899	N/A
Pass & Seymour	2095TRWR	N/A

2.06 SPECIAL/MISCELLANEOUS DEVICES

- A. Special purpose receptacles: Grounding type, UL listed with NEMA configurations as indicated below or on the Drawings.

<u>Manufacturer</u>	<u>Dryer 14-30R</u>	<u>Range 14-50R</u>	<u>Switch/Receptacle</u>	<u>Clock 5-15R</u>
Cooper	1257	1258	--	TR775
Leviton	278	279	5225	5261-CH
Pass & Seymour	3864	3849	671	S3733

2.07 SWITCHES

- A. The catalog numbers listed below are generally for 20A rated devices. Where 15A rated devices are indicated on the Drawings or required for circuit rating limitations, provide switches equivalent to those specified for 20A, but rated for 15A.
- B. Switches: Heavy Duty Specification grade, rated for 120/277V, 20A, back and side wired, and UL listed and labeled.

<u>Manufacturer</u>	<u>1 Pole</u>	<u>2 Pole</u>	<u>3 Way</u>	<u>4 Way</u>
Cooper	AH1221	AH2221	AH3221	AH4221
Hubbell	1221	1222	1223	1224
Leviton	1221-2	1222-2	1223-2	1224-2
Pass & Seymour	CSB20AC1	CSB20AC2	CSB20AC3	CSB20AC4

- C. Switches: Commercial Specification grade, rated for 120/277V, 20A, back and side wired, and UL listed and labeled.

<u>Manufacturer</u>	<u>1 Pole</u>	<u>2 Pole</u>	<u>3 Way</u>	<u>4 Way</u>
Cooper	CSB120	CSB220	CSB320	CSB420
Hubbell	DS120	DS220	DS230	DS330
Leviton	CSB1-20	CSB2-20	CSB3-20	CSB4-20
Pass & Seymour	CS20AC1	--	CS20AC3	--

- D. Pilot Light switches: 20A, single pole switch with **red** neon lighted handle. Toggle shall be illuminated when the switch is in the "ON" position.

<u>Manufacturer</u>	<u>1 Pole</u>	<u>2 Pole</u>	<u>3 Way</u>
Cooper	AH2221PL	AH222PL	AH2223PL
Hubbell	HBL1221PL	HPL1222PL	HBL1223PL
Leviton (120V)	1221-PLX	1222-PLX	1223-PLX
Leviton (277V)	1221-7PLX (277V)	1222-7PLX	1223-7PLX
Pass & Seymour	PS20AC1-XSL	PS20AC2-XSL	PS20AC3-XSL

2.08 COVER PLATES

- A. Damp Location Weatherproof Receptacle Cover Plates: UL-listed Wet Location (cover closed, not in use); die-cast, gasketed (factory-installed) self-closing covers, for **horizontal or vertical** mounting **as indicated**:

Manufacturer	Horizontal	Vertical
Cooper	1966	966
Hubbell	RW51020	RW51040
Leviton	4990	4978
Pass & Seymour	4511	4512

- A. Wet Location Weatherproof Receptacle Cover Plates (Outlet Box Hood): NEMA 3R weather resistant recessed or flush mount, die cast aluminum lockable cover. Configure cover for **horizontal** mounting of receptacle or as indicated otherwise. Back box must be suitable for conduit connections. Coordinate back box with wall depth.

Manufacturer	Horizontal
Thomas & Betts	CKMU
Eaton	WIUMV-1
Hubbell	WP26MH
Leviton	IUM1H-GY

- B. Damp and Wet Location Weatherproof switch cover plates: Fabricated of cast aluminum or cast zinc, sealed water-tight and UL listed for wet locations.

Manufacturer	1 Gang	2 Gang
Appleton	FSK	--
Raco	5100 Series	--
Steel City	SW Series	--

- C. Other locations: Single and combination types to match corresponding wiring devices and manufacturer of wiring devices specified herein.
1. Plate securing screws: Metal with head color to match finish plate.
 2. Material for Finished Spaces: **Brushed stainless steel Type 302.**
 3. Material for Unfinished Spaces and surface mounted wiring devices: Galvanized steel.
 4. Masonry walls and oversized wall openings: Jumbo size plates with same material as indicated above.

2.09 SERVICE/POWER POLES

- A. Service/Power Poles: **Steel with white enamel finish** raceway, internal barrier to separate power conductors from communications cables, ceiling trim plate, carpet/tile floor plate as required for floor material, a minimum of (2) pre-wired duplex receptacles connected to a junction box on the top of the pole, removable plate with knockouts for (2) telephone jacks and (2) data jacks, and a "pop-off" cover, removable without tools. Power poles shall be at least 6 inches taller than the ceiling but not less than 8'-6" tall.

Manufacturer	[Extruded Aluminum]	[Steel]	[Polycarbonate]
Hubbell	HBL PP10A	--	--
Pass & Seymour	--	--	--
Square D	--	--	--
Thomas & Betts	--	--	--
Wiremold	AMDTP-4 Series	SMDTP-4 Series	--

2.10 EMERGENCY POWER OFF BUTTONS

- A. Push Button Operators: 30MM, watertight/oiltight, heavy duty, 600V maximum ac/dc, 10A continuous, momentary, non-illuminated, shrouded push button operator. Provide with 1 normally open and 1 normally closed contact block.

Manufacturer	Red Button
Schneider	9001KR1RH13
GE Industrial	CR104PBG91R3
Eaton	10250T5021

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install all wiring devices plumb, level, and square with building lines. Wiring device bodies shall extend to the finished surface of the walls, ceiling or floor, as applicable, without projecting beyond them.
- C. Connect wiring devices by wrapping conductors around screw terminals. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- D. Connect wiring device grounding terminal to branch circuit equipment grounding conductor and bond to metal outlet box. Exception: Do not bond grounding terminals of isolated ground receptacles to the outlet box.
- E. Install devices shown on wood trim, cases or other fixtures symmetrically and, where necessary, set with the long dimensions of the plate horizontal, or ganged in tandem.
- F. Unless dimensioned otherwise, install wiring devices a minimum of 24 inches from the closest edge of any sink.
- G. Install switches with OFF position down.
- H. Install cover plates on all switches, receptacles, and blank outlets.
- I. Locate wiring devices so that the cover plate does not have to be cut to be installed.
- J. Where devices are shown near wall openings, coordinate location if corner guards are to be installed so that cover plates do not require cutting.
- K. Install cover plates after the wall has been finished (painted, wall paper, etc).
- L. Install device boxes in brick or block walls such that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.

- M. Provide safety-type, tamper-resistant receptacles in all areas where receptacles are mounted less than 5'-6" AFF and are easily accessible to children.
- N. Provide engraved nameplate on emergency off buttons.
- O. Provide ground fault circuit interruption capability for all 120V receptacles 50A or less and all 208/240V receptacles 100A or less in code required locations. Locations include, but are not limited to: bathrooms, kitchens/food prep areas, exterior locations and within 6' of sinks. Interruption capability can be achieved via a GFCI circuit breaker or a GFCI receptacle.
- P. Provide type and quantity of normally open and/or normally closed contacts for emergency off buttons to meet the sequence of operations shown.
- Q. Install wiring devices shown back-to-back on a common wall offset a minimum of 12" horizontally to reduce sound transmission between rooms.

3.02 GENERAL

- A. Outlets are only approximately located on the small scale Drawings. Use great care in the actual location by consulting the various large scale detailed Drawings used by other Division trades, and by securing definite locations from the **Architect**.
- B. Do not use multi-conductor circuits, with a shared neutral, for any GFCI receptacle circuit. Provide a separate neutral conductor with all GFCI receptacle circuits.
- C. Provide twist-locking type receptacles or other special type receptacles **where indicated** on the Drawings.

3.03 EXAMINATION

- A. Verify existing conditions prior to beginning work.
- B. Verify that outlet boxes are installed at proper height and are flush with the finished surface.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that floor boxes are adjusted properly and are flush with the finished surface.**
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.04 PREPARATION

- A. If required, provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from in and around outlet boxes.

3.05 MOUNTING HEIGHTS

- A. Coordinate locations of outlet boxes provided under Division 26 Section "Common Work Results for Electrical".
- B. Unless noted otherwise, install wiring devices at mounting heights indicated in the Electrical Symbols Legend on the construction drawings.
 - 1. Receptacles:
 - a. General:
 - 1) Unless indicated otherwise, install vertically with the ground slot mounted at the **top**.
 - 2) Where Installed horizontally, install neutral slot mounted at the **top**.
 - b. Above counters:
 - 1) Mount **vertically**.
 - c. Mechanical and electrical equipment rooms and janitors closets:
 - 1) Mount **horizontally**.
 - d. Garages:
 - 1) Wet location: Mount horizontally.
 - 2) Other locations: Mount **vertically**.
 - e. Weatherproof exterior receptacles:

- 1) **Mount** horizontally.
- f. GFCI receptacles: Same as general receptacles.
- g. Isolated ground receptacles: Same as general receptacles.
- h. SPD receptacles: Same as general.
- i. Concrete Block Walls: Dimensions above may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom or top of boxes, as applicable, are at block joints.
2. Switches:
 - a. Above counters: Same as for receptacles.
 - b. Concrete Block Walls: Dimension may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom of boxes are at block joints.
 - c. Walls with wainscoting: 6 inches minimum above wainscoting, but not exceeding 48 inches above finished floor.
3. Multi-outlet assemblies:
 - a. **As indicated on the Drawings.**
4. Telephone/Data Outlet Boxes:
 - a. General: Match mounting height of adjacent wiring device listed above.
5. Emergency Power Off Buttons and Break Glass Operators:
 - a. General: Match requirements of switches listed above.
 - b. Wall-mounted telephone: 40 inches above finished floor.

3.06 IDENTIFICATION

- A. Label all devices fed down stream of GFCI protected receptacles as "GFCI PROTECTED".
- B. Comply with Division 26 Section "Identification for Electrical Systems."
 1. Receptacles and Switches: Identify panelboard and circuit number from which served, using:
 - a. Adhesive film label, but with letter/number height of 1/4 inch, on face of plate.
 - b. Adhesive Film Label with Clear Protective Overlay, but with letter/number height of 1/4 inch, on face of plate, for exterior and damp/wet locations.

3.07 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. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
- D. Test all wiring devices for electrical continuity and proper polarity of connections.
- E. Test each GFCI receptacle device for proper operation.
- F. Correct wiring devices incorrectly installed.
- G. Repair or replace all damaged items or damaged finishes at no expense to the Owner.

3.08 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.09 CLEANING

- A. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION