**Microsoft WAW02**

Section 26 27 26

Particular Specification for Wiring Devices

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Project Number 20\_D065

WAW02-E-SP-027

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| 01 | 17/08/02020 | | Johna Clarke | | Gary O’Keefe | 50% Review |
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# General

## Summary

A. Section Includes:

1. Receptacles, receptacles with integral GFCI (RCD), and associated device plates.

2. Twist-locking receptacles and Cord Reels.

3. Receptacles with integral surge suppression units.

4. Wall-box motion sensors.

5. Snap switches and wall-box dimmers.

6. Wall-switch and exterior occupancy sensors.

B. Related Sections:

1. Section 26 05 00 - Common Work Results for Electrical

2. Section 26 05 53 - Identification for Electrical Systems

3. Section 26 08 00 Electrical Systems Testing and Commissioning

4. Section 26 08 13 Electrical Systems Pre-functional Checklists and Start-ups

5. Section 26 08 16 Electrical Systems Functional Performance Tests

## Definitions

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

E. TVSS: Transient voltage surge suppressor.

F. UTP: Unshielded twisted pair.

## Submittal Documentation and Requirements

A. Furnish documentation associated with this bid proposal and Contract including submittals, shop drawings, O&M manuals, and test reports as follows. These requirements are in addition to submittal requirements stated elsewhere and shall not deprive the Owner of rights under other provisions of the Contract Documents.

1. Submit six (6) hard copies of documentation for review.

2. Submit documents in portable document format (PDF).

3. Submit documents in AutoCAD – Latest version for Drawings and Microsoft Word (latest version) for text format when requested.

B. Provide a Compliance Review of the Specifications, Drawings and Addenda. The Compliance Review is a paragraph-by-paragraph review of the Specifications with the following information: “C”, “D” or “E” marked in the margin of the original Specifications and any subsequent Addenda.

1. “C”: Comply with no exceptions.

2. “D”: Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.

3. “E”: Exception, do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives.

C. Unless a deviation or exception is specifically noted in the Compliance Review, it is assumed that the Bidder is in complete compliance with the plans and Specifications. Deviations or exceptions taken in cover letters, subsidiary documents, by omission or by contradiction do not release the Bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review. Bidders may submit the latest state- of-the-art components and their standard control components in lieu of the specified items. The A/E and Owner will review deviations from the Specifications.

## Submittals

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for pre-marking wall plates.

C. Samples: One for each type of device and wall plate specified, in each colour specified.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For wiring devices to include in manufacturers' packing label warnings and instruction manuals that include labelling conditions.

## Quality Assurance

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer.

B. Electrical Components, Devices, and Accessories: CENELEC approved and CE marking Listed and labelled, per IEC 60364 European Committee for Standardization (CEN), European Committee for Electrotechnical Standardisation (Cenelec) or European Telecommunication Standards Institute (ETSI).

C. Comply with IEC 60364 - Low-voltage electrical installations.

D. Comply with I.S. 10101:2020 National Rules for Electrical Installations

## Coordination

A. Power sockets for Owner-Furnished Equipment: Match plug configurations.

1. Cord and Plug Sets: Match equipment requirements.

# Products

## Power Sockets

Description:

Socket outlets to have 2 or 3No. socket contacts as per the relevant Polish standard (Live, Neutral, Earth) which is designed to engage with the pins of a three-pin plug complying with the PN-IEC Standard.

A. Twin Convenience Power sockets, 230V, 13A.

B. Available manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electric

2. Legrand

3. Schneider

4. ELKO

5. ABB

6. Equal or approved

## GFCI (RCD) RECEPTACLES

* + 1. Description: CEE 7/7 Type F socket with 30mA RCD complying to EN 50075, EN61008.
    2. Twin Convenience Power sockets, 240V, 16A.
    3. Acceptable manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include the following:
       1. Eaton
       2. Legrand
       3. MK
       4. Cirkel
       5. Owner- approved equivalent.

## 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 LSZH HOFR sheath; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.

2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

## Cord Reels

A. Description: May be mounted overhead, on a wall or detached from the mounting bracket completely. The reel includes an adjustable cable stop and a circuit breaker that can be reset.

B. Colo Cord Reel:

1. Heavy duty retractable cord reel with 4 mm2 14-meter foot cord and RCD protected outlet cord ending, Reel Craft adhering to IS-EN 60309.

Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Nerderman C30 or equivalent

## Snap Switches

A. Comply with IS-EN 60898 - Electrical accessories - Circuit breakers for overcurrent protection for household and similar installations, and IS-EN 60947 - Low-voltage switchgear and control gear

B. Switches, 240V, 16A - 240V, 20A – 415V 32A

C. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

D. Pilot Light Switches, [16A] [20A]. Single pole, with neon-lighted handle, illuminated when switch is on.

Available Manufacturers: Subject to compliance with requirements.

1. Legrand

2. Schneider

3. ABB

4. Eaton Electric

5. Owner- approved equivalent.

E. Key-Operated Switches 240V, 16A- 240V, 20A Single pole, with factory-supplied key in lieu of switch handle.

1. Available Manufacturers: Subject to compliance with requirements., products that may be incorporated into the Work include, but are not limited to, the following:

a. Schneider

b. ABB.

c. Eaton

d. Legrand

e. Owner- approved equivalent.

F. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches 240V, 16A 240V , 20A; for use with mechanically held lighting contactors.

Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Legrand

2. Schneider

3. Eaton Electric

4. ABB

5. Owner- approved equivalent.

G. Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 240V, 16A 240 V, 20A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.

1. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Legrand

b. Schneider

c. Eaton Electric

d. ABB

e. Owner- approved equivalent.

## Wall-Box Dimmers

A. Description: Rotary type.

B. Rating: 600 watts minimum, larger size to accommodate load shown on Drawings.

C. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Legrand

2. Eaton Electric

3. MK

## Wall Plates

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head colour to match plate finish.

2. Material for Finished Spaces: Smooth, high-impact nylon.

3. Material for Unfinished Spaces: Galvanized steel.

4. Material for Damp Locations: Cast aluminium with spring-loaded lift cover, and listed and labelled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: IS-EN 60529 - Degrees of protection provided by enclosures (IP Code), complying with type IP67weather-resistant, die-cast aluminium with lockable cover.

## Finishes

A. Colour: Wiring device catalogue numbers in Section Text do not designate device colour.

1. Wiring Devices Connected to Normal Power System: As selected by A/E, unless otherwise indicated or required by IEC 60364 and I.S. 10101:2020 or device listing.

2. Wiring Devices Connected to Other Power Systems: Red smooth nylon for devices on emergency power circuit. Orange smooth nylon for isolated ground receptacles.

# Execution

## Installation

A. Comply with IEC 60364 and I.S.10101:2020 and all other relevant National Standards and local regulations, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to ensure 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 trowelled flush with the face of the wall.

4. Install wiring device covers after wall preparation, including painting, is complete.

C. 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 IEC 60364, Article 300, without pigtails.

4. Existing Conductors:

a. Cut back and pigtail or replace damaged conductors.

b. Straighten conductors that remain and remove corrosion and foreign matter.

c. Pig tailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace 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 [150 mm] in length.

5. When there is a choice, 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 4 mm2are installed on 16A 15- or 20-A circuits, splice 4 mm2 pigtails for device connections.

8. Tighten unused terminal screws on the device.

9. When mounting into metal boxes, remove the fibre or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Sockets Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. 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.

G. 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, multi-gang wall plates.

## Identification

A. Comply with Section IEC 60364, Identification for Electrical Systems.

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

## Field Quality Control

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with IEC 60364.

2. Test Instrument for Convenience Receptacles: Digital wiring analyser with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 380-440V

2. Percent Voltage Drop with 75 percent load: A value of 6 percent or higher is not acceptable.

3. Percent Voltage Drop in line with IEC 60364 table B.52.1)

4. Ground Impedance: Values of up to 5 ohms are acceptable.

5. GFCI Trip (RCD): Test for tripping values specified in IEC 60364, IS-EN 61008 and IS-EN 60309.

6. Using the test plug, verify that the device and its outlet box are securely mounted.

7. 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.