SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.02 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 METAL CONDUIT AND TUBING

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. AFC Cable Systems, Inc.
   2. Allied Tube & Conduit; a Tyco International Ltd. Co.
   3. Electri-Flex Co.
   4. Wheatland

B. Rigid Steel Conduit: ANSI C80.1.

C. IMC: ANSI C80.6.

D. EMT: ANSI C80.3.

E. FMC: Zinc-coated steel.

F. LFMC: Flexible steel conduit with PVC jacket.

G. Fittings: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
   1. Fittings for EMT: Galvanized steel, set-screw or compression type.

2. Metal conduit fittings: UL 514, galvanized iron or galvanized steel threaded fittings. Conduit.
3. Liquid-tight flexible conduit fittings: Galvanized steel, bearing the UL label.

2.02 NONMETALLIC CONDUIT AND TUBING

A. Rigid (RNC): NEMA TC 2, Type 40-PVC, unless otherwise indicated.

B. Fittings for RNC: NEMA TC 3; match to conduit or tubing type and material.

2.03 METAL WIREWAYS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1for indoor and 3R for outdoor installation, unless otherwise indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type.

E. Finish: Manufacturer's standard enamel finish.

2.04 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel two-piece construction with snap-on covers.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Thomas & Betts Corporation.
b. Wiremold.
c. Hubbell

B. Fittings and Accessories: Furnish fittings for end feeds, blank ends to close ends, clips, side and end transition connectors, elbows, couplings, and all other fittings and accessories required for a complete installation.

C. Fittings for Wiring Devices: Provide covers, housing and mounting brackets to facilitate installation of the wiring devices (receptacles, switches, circuit breakers, and similar devices) in the surface metal raceway. Type of devices, locations and spacing are shown on the drawings.

2.05 BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

B. Junction Boxes in Metal Stud Partitions: Galvanized pressed steel boxes with blank cover plates. Minimum size 4-11/16 inches square by 1-1/2 inches deep.

C. Cast-Metal Pull, Outlet and Device Boxes: NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.

D. Metal Floor Boxes: Cast or sheet metal, rectangular. Furnish cast iron boxes for slab on grade outlets. Furnish with compatible accessories, including gaskets, flush floor plates, device mounting plates and covers.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Telephone/Data Outlets: Provide 4 inch square box with a single gang device plate. Plate material shall match material and finish of the switch and receptacle plates, unless otherwise indicated.

G. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
   1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

H. Cabinets:
   1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
   2. Hinged door in front cover with flush latch and concealed hinge.
   3. Key latch to match panelboards.
   4. Metal barriers to separate wiring of different systems and voltage.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
   1. Exposed Conduit: Rigid steel conduit, IMC.
   2. Concealed Conduit, Aboveground: Rigid steel conduit, IMC, EMT.
   3. Underground Conduit: RNC, Type 40-PVC, direct buried.
   4. Connection to Vibrating Equipment (Transformers or Motor-Driven Equipment): LFMC.
   5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Comply with the following indoor applications, unless otherwise indicated:
   1. Exposed, Not Subject to Physical Damage: EMT.
   2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
   3. Connection to Vibrating Equipment (Transformers and Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
   4. Boxes and Enclosures: NEMA 250, Type 1.

C. Minimum Raceway Size: 1/2-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.02 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches from parallel runs of steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

F. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

G. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

H. Install pull wires not less than 200-lb tensile strength in empty raceways.

I. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed lighting fixtures, equipment subject to vibration and for transformers and motors.

J. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

K. Set metal floor boxes level and flush with finished floor surface.

L. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.03 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 26 05 33