SECTION 17010
LOW VOLTAGE INSIDE PLANT PATHWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Facilities Management Design and Construction Guide, apply to this Section.

B. When included as a part of this specification, the following contain related requirements:

1. Division 16 Section “General Electrical Requirements”.
2. Division 16 Section “Basic Electrical Materials and Methods”.
3. Division 16 Section “Raceways and Boxes”.
4. Division 16 Section “Cable Trays”.
5. Division 16 Section “General Telecommunications Infrastructure Requirements”.
6. Division 16 Section “Equipment Rooms, Telecommunications Rooms, and Service Entrances”.
7. Division 16 Section “Backbone Cabling”.
8. Division 16 Section “Customer-Owned Outside Plant”.

1.2 SUMMARY

A. This Section includes pathways used for low voltage communications cabling.

1.3 DEFINITIONS

A. Telecommunications Pathways: A cable distribution system consisting of raceways, cable trays, racks and ladders; conduits; distribution rings and mechanical cable supporting devices.

1.4 SUBMITTALS

A. Product Data: Include data on features, ratings, and performance for each component specified.

B. Shop Drawings: Include dimensioned plan and elevation views of each individual component. Show equipment assemblies, method of field assembly, and workspace requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Low Voltage Cable Supports:

1. B-Line.
2. Chatsworth.
3. Erico.
4. Homaco.
B. Surface Raceway:
   1. Hubbell.
   2. Ortronics.
   3. Panduit.
   4. Siemon.
   5. Tyton/Hellerman.

C. Cable Trays: Comply with Division 16 Section “Cable Trays”.

D. Conduits and Raceways: Comply with Division 16 Section “Raceways and Boxes”.

2.2 SYSTEM REQUIREMENTS

A. General: Coordinate the features of materials and equipment so they form an integrated system. Match components and interconnections for optimum future performance.

2.3 CABLE MANAGEMENT

A. Cable Trays: Comply with Division 16 Section "Cable Trays."

B. Raceways and Boxes: Comply with Division 16 Section "Raceways and Boxes."

C. Backboards: 3/4-inch, A/C rated, interior-grade, fire-retardant-treated plywood, painted white.

D. Distribution Rings:
   1. Wall Mounted 6-Inch D-Rings: 2-inch, 4-inch, or 6-inch as indicated on drawings.

E. Cable Bundling Hardware:
   1. Reusable Velcro cable ties.

F. J-Hooks:
   1. 2-inch or 4-inch, J-hooks designed to support Category 6 cables with attached wire-retaining clip to secure cables.

G. Surface-Mount Boxes: Used for mounting standard devices, available in standard, deep, and extra deep versions.
   1. Color: Match the color of the raceway and faceplate.

2.4 NON-METALLIC SURFACE RACEWAY

A. Non-metallic surface raceway shall be utilized in dry interior locations only as covered in Article 352, Part B, of the NEC, as adopted by the NFPA, and as approved by the ANSI. The raceway system shall consist of raceway, appropriate fittings, and accessories to complete installation per electrical and telecommunications drawings.

B. Surface raceway for secondary pathways shall be a one-piece design, 1-inch wide, 0.6-inch deep. Panduit No. LDP5 type or approved equivalent.
C. Surface raceway for primary pathways shall be two-piece base and cover design, 4.1 inches wide, 2.70 inches deep. Panduit type TE-70 surface raceway base and cover or approved equivalent.

D. All surface raceway shall have tamper-resistant characteristics. The raceway shall be manufactured of rigid PVC compound. The raceway and all system components shall be UL Listed and exhibit nonflammable, UL Listed up to 600V and CSA certified up to 300V and self-extinguishing characteristics, tested to comparable specifications of UL94V-0. The raceway shall be off-white in color.

E. Use manufacturer's recommended fittings to connect two pieces of raceway, transition raceway to various types of walls, ceilings, and conduits. The fittings shall provide a means for connecting to the raceway and shall be capable of maintaining a 1-inch minimum cable bend radius. The fittings shall match the color of the raceway. They shall overlap the raceway to hide uneven cuts.

2.5 SURFACE-MOUNT BOXES

A. Surface-mount boxes shall be used for mounting standard devices and shall be available in standard, deep, and extra deep versions. They shall be available in off-white, electrical ivory, and white and shall match the color of the raceway and faceplate.

2.6 SURFACE METALLIC RACEWAY

A. Surface Metal Raceway: Sheet metal channel with fitted cover, suitable for use as a continuous surface metal raceway.

B. Size: As shown on the drawings.

C. Finish: Factory-finished, ivory color, unless otherwise noted.

D. Fittings and Raceway Bodies: Manufacturer's recommended fittings including bases, covers, connecting covers, raceway dividers, flexible sections, adapters, tees, elbows (including combination, flat, internal, external, inverted, 45, 90), connectors (including box, panel, offset, adjustable), internal and external couplings for joining raceway sections, clips (including divider clips, wire clips, ground clips, support clips, cover clips), fittings (including blank end fittings, entrance end fittings, tap-off fittings, take-off fittings), bushings, a full complement of device mounting brackets and plates, and all other components to make the system work.

E. Raceway Supports: Manufacturer's recommended fastening devices.

2.7 WIREWAY

A. Wireway: NEMA Type 1; gray, steel.

B. Fittings and Wireway Bodies: Manufacturer's recommended fittings including 45 and 90 degree flat, vertical inside and outside elbows, tee and cross fittings, couplings for joining sections of wireway, reducers, hangers, end blanks, closing plates, wire retainers, flanges, barriers, transition fittings to adapt to other conduits or raceways, and all other components to make the system work.

C. Wireway Supports: Manufacturer's recommended fastening devices.
2.8 CABLE BUNDLING PRODUCTS

A. Reusable, adjustable, cable straps, capable of withstanding fastening to wall with screws or equipped with snap-and-button fasteners.

B. With or without cinch ring as applicable.

C. Color: Black.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 J-HOOK INSTALLATION

A. Provide nylon ties around J-hooks to secure cable.

B. Strategically place J-hooks to aid in routing at corners and at changes in height.

C. Use 2-inch J-hooks to support cable in primary pathways. Provide a second J-hook for each J-hook installed only when the quantity of outlets served from that primary pathway exceeds 10 cables.

D. J-hooks used to support cable in secondary pathways can be 1-5/8 inches. Provide a second J-hook for each J-hook installed only when the quantity of outlets served from that secondary pathway exceeds 10 cables.

E. Where multiple J-hooks are installed, place J-hooks back-to-back if possible; otherwise, stack J-hooks one above the other.

F. Install J-hooks at 4-5 foot intervals. Unevenly space J-hooks to avoid standing waves on the cable.

3.3 INSTALLATION

A. Route cables in a direct path between the termination points. Neatly arrange cables in cable trays and in communication closets. Provide “D” rings spaced a maximum of 12” on center to support cables run on the face of any plywood wall.

B. Plan cable installation and cable routes such that the capacity of the conduit and cable tray is used most efficiently. Fill conduits and sleeves to maximize capacity and to minimize cross-over of future cable installations.

END OF SECTION 17010