

SECTION 27 13 00 - INTERIOR PATHWAYS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide all labor, materials, tools, and equipment required for the complete installation of work called for in the Contract Documents. This work is included in the data cable contract.

1.2 SCOPE

- A. This section includes minimum requirements for the following:
 - 1. Horizontal Pathways
 - 2. Backbone Pathways
- B. All surface raceway and sleeves will be provided by the Division 26 contract.
- C. Minimum composition requirements and installation methods for the following pathways:
 - 1. Cable hangers
 - 2. Inner Duct
 - 3. Pull Boxes

1.3 QUALITY ASSURANCE

- A. All pathways and associated equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner's Representative. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

1.4 SUBMITTALS

- A. Provide product data for the following:
 - 1. Cable Hangers

PART 2 - PRODUCTS

2.1 BOXES AND CABINETS

A. Outlet Boxes and Covers

1. Shall be galvanized steel, not less than 1-1/2" deep, 4" square or octagonal, with knockouts. Outlet boxes exposed to moisture, exterior, wet or damp locations shall be cadmium cast alloy complete with threaded hubs and gasketed screw fastened covers. Minimum box size shall be as indicated in Article 370 of the National Electrical Code for the conductors and devices installed. Boxes shall be approved for the environmental condition of the location where they will be installed.
2. Acceptable manufacturers:
 - a) Steel City
 - b) Raco
 - c) Appleton
 - d) Crouse Hinds

B. Pull and Junction Boxes

1. Shall be constructed of not less than 14 gauge galvanized steel with trim for flush or surface mounting in accordance with the location to be installed. Provide screw-on type covers. Boxes installed in damp or wet locations shall be of raintight construction with gasketed cover and threaded conduit hubs. In no case shall boxes be sized smaller than as indicated in Article 370 of the National Electrical Code for conduit and conductor sizes installed. Boxes shall be approved for the environmental condition of the location where they will be installed.
2. Acceptable manufacturers:
 - a) Hoffman
 - b) Keystone
 - c) Or equivalent
 - d) Flush floor junction boxes shall be recessed cover boxes designed for flush mounting in masonry. Provide checkered plate gasketed cover suitable for foot traffic. Make: O.Z. Gedney Type YR or approved equal.

C. Terminal and Equipment Cabinets:

1. Terminal and Equipment Cabinets shall be code gauge galvanized steel with removable endwalls. Fronts shall be of code gauge steel, flush or surface type (as indicated) with concealed trim clamps, concealed hinges, flush lock, and grey baked enamel finish. Boxes and front shall be U.L. listed and shall be minimum 35"H x 24"W x 6"D. Provide removable insulated plywood terminal board mounted on inside back wall of cabinet.

a) Acceptable manufacturer:

- (1) Square D "Mono-Flat"
- (2) Approved equal

2.2 SUPPORTING DEVICES

- A. Supports, support hardware and fasteners shall be protected with zinc coating or treatment of equivalent corrosion resistance using approved alternative treatment, finish or inherent material characteristic. Products used in outdoor applications shall be hot dipped galvanized.
- B. Provide clevis hangers, riser clamps, conduit straps, threaded c clamps with retainers, ceiling trapeze hangers, wall brackets and spring steel clamps as applicable.
- C. 14 gauge U-Channel systems with 9/16 inch diameter holes at a minimum of 1 7/8 inches on center in the top surface. Provide fittings and accessories that match and mate channel.
- D. Provide carbon steel or wedge or sleeve type expansion anchors, steel springhead toggle bolts and heat treated steel power driven threaded stud fastening equipment as required by construction types.
- E. Provide field fabricated supporting devices such as angles, channels, pipe supports, etc. All fabricated supports shall be of metal construction as called for in 2.1.
- F. Acceptable Manufacturers:
 - 1. Allied Tube
 - 2. American Electric
 - 3. B-Line
 - 4. Unistrut Diversified Products
 - 5. Cooper Industries
 - 6. Killark Electric Mfg. Co.
 - 7. O/Z Gedney
 - 8. Spring City Electrical Mfg. Co.
 - 9. Thomas & Betts Corporation

2.3 CABLE HANGERS

- A. Provide prefabricated, zinc coated, carbon steel or aluminum open top hangers designed specifically for Category 6a and Optical Fiber cable installations. **Cable rings are not acceptable.**
- B. Hangers shall have open top, rolled edges with a 2" or 4" diameter loop as cable quantities require.
- C. Provide beam clamps, rod fasteners, flange clips and brackets as job conditions require.
- D. Design Make: Caddy "CableCat Clip" series or Mono Systems "The Hook"

1. Acceptable Manufacturers: Approved equal

2.4 INNER DUCT

- A. Provide 1 1/4", smooth surface, heavy wall duct for all fiber optic cable runs.
- B. Acceptable Manufacturers:
 1. Dura - Line
 2. Arnco
 3. VikiMatic
 4. Endot Industries

PART 3 - EXECUTION

3.1 GENERAL

- A. Support raceways from building construction. Do not support raceways from ductwork, piping, or equipment hangers.
- B. Support outlet, pull, and junction boxes independently from building construction. Do not support from raceways.
- C. Install raceways parallel or perpendicular to building walls, floors and ceilings.
- D. Install raceways concealed except in the following areas:
 1. Communication equipment rooms
 2. Unfinished basements or crawl spaces
- E. Cut raceways square, ream ends to remove burrs, and bush where necessary.
- F. Coordinate all raceway runs with other trades.
- G. Do not install raceways adjacent to hot surfaces or in wet areas.
- H. Provide expansion fittings with external grounding straps at building expansion joints.
- I. Do not install conduit horizontally in concrete or block partitions.
- J. Arrange neatly to permit access to the raceway, outlet, pull, and junction boxes, and work installed by other trades.
- K. If it is necessary to burn holes through webs of beams or girders, call such points to the attention of the Owner's Representative and receive written approval both as to location and size of hole before proceeding with work. All holes shall be burned no larger than absolutely necessary.
- L. Core drill, sleeve, and fire stop all penetrations through existing floors.

- M. Support all raceways with malleable iron pipe clamps or other approved method. In exterior or wet locations, provide minimum 1/4" air space between raceway and wall. Secure raceway within 3 ft. of each outlet box, junction box, cabinet or fitting.
- N. All open raceways shall be installed a minimum of 6 in. away from any light fixture or other source of EMI (electro-magnetic interference).

3.2 BOXES AND CABINETS

- A. Consider location of outlets shown on drawings as approximate only. Study architectural, electrical, process piping, mechanical, plumbing, structural, roughing-in, etc., drawings and note surrounding areas in which each outlet is to be located. Locate outlet so that when fixtures, motors, cabinets, equipment, etc., are placed in position, outlet will serve its desired purpose. Where conflicts are noted between drawings, contact Owner's Representative for decision prior to installation.
- B. Outlet boxes in separate rooms shall not be installed "back-to-back" without the approval of the Owner's Representative.
- C. Outlet boxes shall be sized to accommodate the wiring device(s) to be installed.
- D. Outlet boxes installed in plaster, gypsum board or wood paneled walls shall be installed with raised plaster covers or raised tile covers.
- E. Outlet boxes installed in tile, brick or concrete block walls shall be installed with extra-deep type raised tile covers or shall be 3-1/2" deep boxes with square corners and dimensions to accommodate conductors installed.
- F. Surface ceiling mounted outlet boxes shall be minimum 4" square, 1-1/2" deep, galvanized sheet metal.
- G. Surface wall mounted outlet boxes shall be cast type boxes having threaded or compression type threadless hubs. Exterior boxes shall be cast type with threaded hubs and gasketed cover plates secured by non-ferrous screws.
- H. Install junction and pull boxes in readily accessible locations. Access to boxes shall not be blocked by equipment, piping, ducts and the like. Provide all necessary junction or pull boxes required due to field conditions and size as required by the National Electrical Code.

3.3 SUPPORTING DEVICES

- A. Hangers and Supports:
 - 1. Provide steel angles, channels and other materials necessary for the proper support of wall mounted cabinets, racks, panels etc.

2. Cabinets, large pull boxes, and cable support boxes shall be secured to ceiling and floor slab and not supported from conduits. Small equipment boxes, etc., as approved by Owner's Representative, may be supported on walls. Racks for support of conduit and heavy equipment shall be secured to building construction by substantial structural supports.

3.4 CABLE HANGERS

- A. Provide cable hangers 4' on center wherever cable tray or conduit is not present.
- B. Load hangers as recommended by the manufacturer. Provide hangers side by side on a common bracket where cable quantities require.
- C. Do not support cable from ceiling system tie wires or grid in fire rated systems.
- D. Provide a minimum of 1 spare hanger run in all corridors.
- E. Provide nylon cable ties to hold cable in hanger. Install at the completion of the cable installation.

END OF SECTION