270536-H: COMMUNICATION CABLE TRAYS (16114-H)

Related Sections

Basis Guideline: N/A
- 260500-H – “Supplemental Common Work Results for Electrical”
- 260533-H – “Supplemental Electrical Materials and Methods”
- 260800-H – “Supplemental Electrical Acceptance Test”
- 272000-H – “Supplemental Voice and Data Communications”
- 5.4.1 – “Requirements for Telecommunication Rooms in UMHHC Facilities”

For an explanation of the use of these guidelines, see “Design Guidelines for UMHHC Facilities”

All major buildings shall be designed with cable tray systems for data/communication/telephone/auxiliary system wiring. All such wiring must be for power-limited systems only, and in accordance with NEC Sections 725, 760, 800 and 820. All cables shall be rated for at least 150 volts and shall be listed as resistant to spread of fire. Do not install any non-power limited systems wiring in the cable trays.

The tray system will be routed through the corridors to the communication rooms. The overall tray system shall also comply with the specific requirements of NEC Section 318.

Standards:

Cable Tray Design Requirements

For additional details on tray design requirements see Sections 272000-H, and SBA-C-H. The items below supplement the information in 260533-H.

1. Provide access to and working clearance around, all trays to allow later installation of additional cables when required.
   a. Twelve inch minimum above tray and 18” minimum on one side of tray is required.
   b. Route conduits from communication outlets into tray so working clearances are maximized (i.e., group conduits entering tray from working clearance side of tray.) Note: To achieve this accessibility, trays shall normally be placed below all piping, duct work, VAV boxes sprinkler mains and like systems. They shall however not inhibit the removal or replacement of ceiling tiles.
   c. If HVAC ducts, VAV boxes, and like systems by necessity will violate the 12” vertical working clearance, these crossing shall only be at 90-degrees to path of tray; and that maximum width of said duct, VAV box (or like system) shall not exceed 3'-0”.

2. Normally trays should be routed through all major corridors to the communication rooms.

3. When trays pass through fire/smoke walls, install three inch or four inch conduit sleeves. The number of sleeves shall equal, or exceed, total cross-sectional area of tray. These sleeves shall be extended, offset, and braced as necessary to allow cable pulling through the sleeves without damage to cable, or excessive installation labor.

4. Cable tray sections shall be provided in Communication Rooms to allow routing of cables from backboard to backboard and from backboards to above relay racks, etc. If tray sections must cross, maintain a minimum of 12” from top of one tray to bottom of one above.

5. Cable tray size shall be selected so as to provide needed spare capacity, noted in Section 260500-H, and meet fill limits defined in NEC Section 392, tables 392-9. A/E should assume one 1/2” diameter cable equivalent per communication/data outlet plus all contractors supplied cabling. Minimum communication cable tray size shall be 12” wide.

6. Cable tray installations shall meet OSHA regulations 29 CFR 1910.305(a) (3) and 1910.399 and NEMA Publication VE 2-2000.

7. All cable tray penetrations through fire-rated walls shall be fire stopped. Installation shall be by certified fire stop contractors.
**Cable Splicing**

No splices shall be made in tray. If a splice must be made, install a junction box on outer rail of tray. Make splice in box and label box with system/cable designation. The patient TV antenna system and patient telemetry system are the only exception to this requirement. **Note:** No splices of telecommunication cables (Type 5E and like) shall be made between outlet and backboards in telecommunication rooms.

**“Drops into Tray”**

In general all conduits routed to the tray shall be horizontal. No cables or conduits shall enter from below or from directly above. The only exception might be the wiring in the communication room.

**Proximity to Other Systems/Equipment**

The side rails shall not be cut or modified to allow installation of other equipment, structural members, etc. Design ceiling space to allow full tray to be installed with needed working clearances.

Do not route any equipment vertically through tray area. Also tray should be spaced from other systems with high temperature, or high current equipment by at least a 12” spacing.

**Support**

Tray shall be supported independently from the finish ceiling system and any mechanical equipment.

**Grounding**

All raceways to tray shall be bonded to the tray using bonding bushings and #12 wire from bushing to tray. All tray sections shall be bonded together. **Note:** If raceway is not continuous to the outlet box, and/or the outlet box is not metallic, grounding of the raceway is not a requirement of these guidelines.

**Fittings**

All horizontal, vertical bends and offsets shall be factory fabricated with continuous side rails and consistent rung spacing on open trays.

Enclosed trays shall have hinged covers with captive-screw fasteners. Enclosed trays are normally only needed in buildings/areas with open plenum returns (i.e., Med Inn Building and the Medical Professional Building on the main hospital campus, have open-plenums).

**Power Trays**

If an A/E sees a need for a cable tray system, to route power wiring...either 600 volt or medium voltage, this shall be reviewed and approved in writing, by UMHHC Electrical Engineer. We have not used trays in this manner and need to review necessity before preparing any design documents. Any such applications shall include instruction to fire wrap cables.

**Special Tray Clearances>Loading**

Where clearances are tight or cable loadings are high, A/E shall investigate use of only tray systems that have integral support systems (i.e., do not require “UNISTRUT hangers”) and have capabilities for easy expansion.