SECTION 16139

CABLE TRAYS FOR COMMUNICATIONS/DATA WIRING

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. Underwriter's Laboratories, Inc. certified No. E80034; National Electrical Code 318; NEMA class 12C (100#/ft./12 ft.).

B. The cable tray system components shall be certified by UL.

1.2 DESCRIPTION

A. Complete or wall mounted aluminum cable tray system and necessary accessories shall be provided as shown on plans. Install entire cable tray system in accordance with all local governing codes.

1.3 SUBMITTALS

A. Submittal drawings, in the form of 8 ½" x 11" catalog cut sheets, shall be provided for the following items: cable trays, fittings, accessories and load data.

PART 2 - PRODUCTS

2.1 MATERIALS - Aluminum

A. Aluminum cable trays shall be ventilated ladder type construction with widths and depths as indicated on the drawings. The ladder tray shall be supported from one (1) aluminum splice connector, installed inside the inner portion of the main spine members.

2.2 DOUBLE TIER WALL RACK LADDER TRAY - Aluminum Only

A. Aluminum Wall Rack Double Tier tray shall be constructed of one (1) 1.5"x2.75" rectangular extruded aluminum tube to which ½" square box beam (type C standard) rungs are attached on 6 inch (mm) centers. These cross rungs shall emanate from one side (top of the spine only) and also vertically from the bottom of the spine to form two tiers of cable tray, one above the other and shall be bent up at their ends to a height of 6 inches (mm) to an open sided, ladder type assembly. The tray must not have continuous side rails. Tray shall be mounted by fastening the spine directly to the wall in accordance with manufacture's specifications.

2.3 FITTINGS

A. Splice Connectors - Aluminum. Sections of Double Tier Wall Rack and all other fittings shall be joined by using one (1), two bolt, 4 inch (102mm) long, rectangular splice connector which telescope about the spine of the tray. Splice connectors shall allow for thermal expansion/contraction of the tray system. The splice connectors shall be provided with a vertical hole to accept

a 1/2 inch (12mm) threaded rod (furnished by others) which is used to support the tray in an overhead application. In addition, steel splice connectors shall be installed with the seam up and shall have holes to accommodate mounting configurations associated with horizontal and vertical pivot connectors.

B. Quick Tee and Quick Cross Connectors. Horizontal and Vertical quick connect items shall be used for all 90 degree elbows. Quick Tees and Crosses shall have factory installed splice connector(s) welded to the component assembly.

C. Horizontal and Vertical Pivot Connectors - Angle tray connections to be field installed with Horizontal and Vertical pivot connectors. Fittings and shall telescope about the spine in a similar manner as the above splice connectors with top or side mounted pivot plates.

D. Tray Inserts / Tray Covers - Aluminum, as well as other accessories shall be constructed of compatible material and design. Inserts and covers shall be field installed and rigidly secured by means of self-tapping screws.

2.4 CONSTRUCTION

A. Double Tier Wall Rack rungs must pass through sections of spine and be staked in place, not screwed or welded. Each tray length shall consist of one tubular rectangular shaped spine member. All fittings and accessories to be constructed of aluminum and manufactured for use with the cable tray system.

2.5 SUPPORTS

A. Each Double Tier Wall Rack ladder tray section shall be supported on maximum 12 foot centers by one .50 inch (12mm) piece of threaded rod which passes through the vertical hole in each of the splice connectors and fastened directly to each piece of spine by one .50 inch (12mm) nut and washer on both the top and bottom sides of each piece spine. When shorter spans are required, then a 5/8 inch (16 mm) diameter hole should be drilled through the top and bottom walls of each piece of spine at support points only, and a single .50 inch (12mm) threaded rod should be inserted, through each spine member, also using a .50 inch (12mm) nut and washer on both the top and bottom sides of the spine. All mounting material shall be furnished and installed by others.

2.6 WARNING SIGNS

A. Lettering: 1-1/2-inch- (40-mm-) high, black letters on yellow background with legend "WARNING! NOT TO BE USED AS WALKWAY, LADDER, OR SUPPORT FOR LADDERS OR PERSONNEL."

B. Materials and fastening are specified in Division 16 Section "Electrical Identification."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with recommendations in NEMA VE 2. Install as a complete system, including all necessary fasteners, hold-down clips, splice-plate support systems, barrier strips, hinged horizontal and vertical splice plates, elbows, reducers, tees, and crosses.

B. Remove burrs and sharp edges from cable trays.

C. Fasten cable tray supports to building structure.

1. Place supports so that spans do not exceed maximum spans on schedules.
2. Construct supports from channel members, threaded rods, and other appurtenances furnished by cable tray manufacturer. Arrange supports in trapeze or wall-bracket form as required by application.
3. Support bus assembly to prevent twisting from eccentric loading.

D. Install expansion connectors where cable tray crosses building expansion joint and in cable tray runs that exceed dimensions recommended in NEMA VE 1. Space connectors and set gaps according to applicable standard.

E. Make changes in direction and elevation using standard fittings.

F. Make cable tray connections using standard fittings.

G. Seal penetrations through fire and smoke barriers per specification requirements.

H. Sleeves for Future Cables: Install capped sleeves for future cables through firestop-sealed cable tray penetrations of fire and smoke barriers.

I. Workspace: Install cable trays with enough space to permit access for installing cables.

J. After installation of cable trays is completed, install warning signs in visible locations on or near cable trays.

K. For the benefit of Owner’s cable installers, cables shall be fastened on horizontal runs with cable clamps or cable ties as recommended by NEMA VE 2. Clamps shall be tightened only enough to secure the cable, without indenting the cable jacket. Cable ties shall be installed with a tool that includes an automatic pressure-limiting device.

L. On vertical runs, cables shall be fastened to tray every 18 inches (457 mm). Intermediate supports shall be installed when cable weight exceeds the load-carrying capacity of the tray rungs.

M. Ground cable trays according to manufacturer's written instructions.

N. Install an insulated equipment-grounding conductor with cable tray, in addition to those required by NFPA 70.

3.2 FIELD QUALITY CONTROL

A. Correct sharp corners, protuberances in cable tray, vibration, and thermal expansion and contraction conditions, which may cause or have caused damage.
B. Verify that there is no intrusion of such items as pipe, hangers, or other equipment that could damage cables.

C. Remove deposits of dust, industrial process materials, trash of any description, and any blockage of tray ventilation.

D. Visually inspect each cable tray joint and each ground connection for mechanical continuity. Check bolted connections between sections for corrosion. Clean and retorque in suspect areas.

E. Check for missing or damaged bolts, bolt heads, or nuts. When found, replace with specified hardware.

F. Perform visual and mechanical checks for adequacy of cable tray grounding; verify that all takeoff raceways are bonded to cable tray.

G. Report results in writing.

END OF SECTION