SECTION 16139
CABLE TRAYS

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.

1.2 SUMMARY
A. This Section includes cable tray accessories.
B. Related Sections include the following:
   1. Division 16 Section "Basic Electrical Materials and Methods".
   2. Division 17 Section “General Telecommunications Infrastructure”.

1.3 SUBMITTALS
A. Product Data: Include data indicating dimensions and finishes for each type of cable tray indicated.
B. Operation and Maintenance Data: For cable trays to include in operation, and maintenance manuals.

1.4 QUALITY ASSURANCE
A. Source Limitations: Obtain cable tray components through one source from a single manufacturer.
B. Comply with NFPA 70.

1.5 COORDINATION
A. Coordinate layout and installation of cable trays and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Cable Management Tray
      a. Cablofil.
      b. GS Metals Corp.
2.2 MATERIALS AND FINISHES

A. Protect steel hardware against corrosion by galvanizing according to ASTM B 633 or cadmium plating according to ASTM B 766.

B. Fabricate cable tray products with rounded edges and smooth surfaces.

C. Sizes and Configurations: Where multiple types of cable tray are specified below, refer to drawings for specific requirements for types, materials, sizes, and configurations.
   1. Cable Management Tray:
      a. Steel
      b. 2-inch by 4-inch mesh pattern.
      c. Depth: 4-inches, unless otherwise indicated on Drawings.
      d. Width: as indicated on drawings. Widths not commercially available shall be custom fabricated or increased in width to the next commercially available size at the Contractor’s option.
      e. Hangers: side rail hangers or trapeze hangers as indicated.
      f. Finish:
         1) Black Flex-E-Coat or equal inside telecommunications room and exposed areas.
         2) Electroplated zinc galvanized above ceilings and in concealed areas.

2.3 CABLE TRAY ACCESSORIES

A. Fittings: Tees, crosses, risers, elbows, drop outs, covers, and other fittings as indicated, of same materials and finishes as cable tray.

B. Cable tray supports and connectors, including bonding jumpers, as recommended by cable tray manufacturer.

C. Cutter: Utilize factory recommended flush-cutting bolt cutters for fabricating and installing Cable Management Tray.

2.4 SOURCE QUALITY CONTROL

A. Perform design and production tests according to NEMA VE 1.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CABLE TRAY INSTALLATION

A. Remove burrs and sharp edges from cable trays.

B. Fasten cable tray supports securely to building structure as specified in Division 16 Section "Basic Electrical Materials and Methods," unless otherwise indicated.
C. Install expansion connectors where cable tray crosses building expansion joint. Space connectors and set gaps according to NEMA VE 1.

D. Make changes in direction and elevation using standard and factory fittings. Custom fittings shall be required and factory fabricated.

E. Make cable tray connections using standard and factory fittings. Custom fittings shall be required and factory fabricated.

F. Locate cable tray to allow access for future cable additions and changes.

G. Seal and firestop all penetrations through fire and smoke barriers.

H. Workspace: Install cable trays with sufficient space to permit access for installing cables, 6 inches minimum.

I. Locate cable tray to allow access for future cable additions and changes.

J. Workspace: Install cable trays with sufficient space to permit access for installing cables.

K. Where physical discontinuity is necessary, cables shall be mechanically supported over the discontinuity by alternate means (including hangers, brackets, hooks, distribution rings, etc.) Support cable on 2 foot centers at a minimum, and at intersections, and transitions. The supporting mechanisms shall be sufficiently spaced to support the weight of the cable. The ends of the cable tray or rack shall be electrically bonded using manufacturer-specified hardware between any physical discontinuities.

L. System shall be grounded in accordance with the NEC. Where manufacturer’s hardware is not available, bonding shall be accomplished utilizing a #6 AWG green insulated bonding conductor attached with paint-penetrating threaded screw and lug to each end of the cable tray.

M. Provide an end plate fitting at each free end of a cable tray run.

N. Cable tray shall be trapeze-hung from threaded rod to structure according to detail drawings. Cable tray wall-hung may be allowed where necessary and shall utilize factory wall-mount brackets if required. See Drawings for other mounting requirements.

O. Mount vertical wall mounted cable management tray to plywood walls utilizing manufacturer provided wall-angle brackets. Modify brackets as required to provide 4-inch spacing of cable ladder from plywood wall. Touch-up any marks on the cable ladder from plywood wall. Touch-up any marks on the cable ladder with matching gray paint. Refer to detail drawings for mounting heights.

3.3 CONNECTIONS

A. Ground cable trays according to manufacturer’s written instructions.

B. Tighten electrical connectors and terminals according to manufacturer’s published torque-tightening values. If manufacturer’s torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:
1. After installing cable trays, test for compliance with requirements.
2. Perform the following electrical test and visual and mechanical inspections:
   a. Visually inspect each cable tray joint and each ground connection for mechanical continuity.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer, that ensure cable tray is without damage or deterioration at time of Substantial Completion.

END OF SECTION 16139