SECTION 260536 - CABLE TRAYS

PART 1 - GENERAL

SECTION INCLUDES:

A. Continuous, rigid, welded steel or stainless steel wire mesh cable management system.

B. Cable tray systems are defined to include, but are not limited to, straight sections, supports and accessories.

1.2 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUMMARY

A. Related Sections include the following (2004 edition):
1. Section 26 05 13 - Medium-Voltage Cables.
2. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
3. Section 26 05 23 - Control-Voltage Electrical Power Cables.
4. Section 26 05 33 - Raceway and Boxes for Electrical Systems.
5. Section 27 05 28.36 - Cable Trays for Communications Systems.
6. Section 27 10 00 - Structured Cabling.
7. Section 28 05 13 - Conductors and Cables for Electronic Safety and Security.
8. Section 28 05 28.36 - Cable Trays for Electronic Safety and Security.

B. References:
1. IEC 61537 (2001) – Cable Tray Systems and Cable Ladder Systems for Cable Management
2. NEMA VE 1-2002/CSA C22.2 No. 126.1-02 – Metal Cable Tray Systems
3. ANSI/NFPA 70 (2005) – National Electrical Code (NEC)
4. TIA 569-A (1998) – Commercial Building Standard for Telecommunications Pathways & Spaces
5. ASTM A 510 - Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
6. ASTM A 380 – Specification for Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems
7. ASTM B 633 – Specification for Electrodeposited Coatings of Zinc on Iron and Steel
8. ASTM A 123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
9. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality

1.4 SUBMITTALS

A. Comply with requirements of Section 01330 – Submittal Procedures.

B. Product Data: Submit manufacturer's product data sheets for cable tray indicating dimensions, materials, and finishes, including UL Classification and NEMA/CSA Certification.

C. Shop Drawings: Submit shop drawings indicating materials, finish, dimensions, accessories, layout, supports, splices, and installation details.

D. Design Calculations: Verify loading capacities for supports.

E. Coordination Drawings: Include floor plans and sections drawn to scale. Include scaled cable tray layout and relationships between components and adjacent structural and mechanical elements. Data presented on these drawings are as accurate as preliminary surveys and planning can determine. Field verification of all dimensions, routing, etc., is directed.

F. Factory-certified test reports of specified products, complying with IEC 61537, NEC, and NEMA VE 1/CSA C22.2 No. 126.1.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain cable tray components through one source from a single manufacturer.

B. Approval and Labeling: Provide cable trays and accessories specified in this Section that are approved and labeled.
   1. The Terms "Classified" pertaining to cable trays (rather than "Listed") and "Labeled": As defined in NFPA 70, Article 100, including painted trays.
   2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

C. Comply with NFPA 70, *National Electrical Code, Article 392: Cable Trays*; provide UL Classification and labels.

D. Comply with IEC 61537, Cable Tray Systems and Cable Ladder Systems for Cable Management.

E. Comply with NEMA VE 1/CSA C22.2 No. 126.1, *Metal Cable Tray Systems*, for materials, sizes, and configurations; provide cCSAus Certificate and labels.

F. Provide ETL test documentation showing cable compression/deformation testing.

1.6 COORDINATION

A. Coordinate layout and installation of cable tray with other installations.
   1. Revise locations and elevations from those indicated as required to suit field conditions and as approved by the Architect.
   2. Storage and Handling: Avoid breakage, denting and scoring finishes. Damaged products will not be installed. Store cable trays and accessories in original cartons and in clean

dry space; protect from weather and construction traffic. Wet materials will be unpacked and dried before storage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with requirements, provide products by the following:

A. MonoSystems, Inc., 4 International Dr., Rye Brook, NY 10573. Phone: (914) 934-2075. Fax: (914) 934-2190. Website: www.monosystems.com

2.2 MATERIALS AND FINISHES:

A. Cable Tray Materials: select one of the following:
1. [Carbon steel wire, ASTM A 510, Grade 1008. Wire welded, bent, and surface treated after manufacture.]

B. Cable Tray Finishes:
1. Finish for Carbon Steel Wire after welding and bending of mesh; select one of the following:
a. [Electrodeposited Zinc Plating: ASTM B 633, Type III, SC-1.]
b. [Hot-Dip Galvanizing After Fabrication: ASTM A 123.]
c. [Powder-Coated Trays – UL classified]
1) [Black powder-coated surface treatment over Electrodeposited Zinc Plating using ASA 61 black polyester coating.]
2) [Custom Color Powder-Coated surface treatment over Electrodeposited Zinc Plating. Contact MonoSystems for color information.]

C. Cable tray will consist of continuous, rigid, welded steel wire mesh cable management system, to allow continuous ventilation of cables and maximum dissipation of heat, with UL Classified splices where tray(including UL Classified painted tray) acts as Equipment Grounding Conductor (EGC).

D. Provide splices, supports, and other fittings necessary for a complete, continuously grounded system.

1. Mesh: 2 x 4 inches (50 x 100 mm).

2. Straight Section Lengths: 118 inches (3,000 mm).

3. Wire Diameter: Design includes varying wire sizes to meet application load requirements; to optimize tray strength; and to allow tray to remain lightweight.

4. Fittings: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions and Item 2.3.

5. Cable Tray Size:

a. Depth: Cable tray depth will be (2, 4, or 6 inches):

b. Width: Cable tray width will be 3, 6, 8, 10, 12, 20, or 24 inches

c. Length: Cable tray section length will be 118 inches (3000mm) unless otherwise shown on drawings.

d. Fill Ratio: Cable tray may be filled to total fill capacity per NEC. Minimum 20% spare capacity recommended to accommodate future cabling changes or additions.

2.3 CABLE TRAY SUPPORTS & ACCESSORIES

A. Fittings/Supports: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions. Place supports so that support span does not exceed that shown on the drawings.

1. **Splices**, including those approved for electrical continuity (bonding), as recommended by cable tray manufacturer. Select one of the following splicing methods, if applicable:

a. UL Classified JN1 Joint fitting: Straight couplings

b. UL Classified Speed Splice: No hardware required]

c. UL Classified JN2: Non-radiused horizontal fittings

d. UL Classified JN3: Radiused horizontal fittings

2. **Accessories:** As required to protect, support, and install a cable tray system. Select from the following accessories, if applicable:

a. MM-CVR Covers, of same material and finish as cable tray; with optional cover clips.*

b. MM-DIV-STR Divider Strips, of same material and finish as cable tray*
1) STR2, 2 inch (50mm) high
2) STR4, 4 inch (100mm) high
3) STR6, 6 inch (150mm) high

c. [Cable Routing Accessories:]
1) MM-DRP Dropout: Bolt to tray*

d. [Support Accessories:]

1) MS-400-12- Trapeze type support channel (included tray hold-down clips)*

2) MM-HNG-TRZ Trapeze support clips. Clips onto the sides of the mesh tray.

3) *MM-HNG-CCH* Center Support Hanger.*

4) MM-BRK Wall mounted tray support (included tray hold-down clips)*

e. MM-GI-1/0-14 Grounding Lug

2.4 EQUIPMENT GROUNDING CONDUCTOR FUNCTION & GROUNDING

A. UL Classified cable trays (including painted tray) may act as Equipment Grounding Conductors.

1. Use UL Classified splicing methods to ensure cable tray is electrically continuous and bonded as recommended by MonoSystems.
   a. Ground cable trays at end of continuous run.
   b. Ground continuous cable tray runs every 60 feet.

2. Test cable tray system per NFPA70B, Chapter 18 to verify grounding less than 1 ohm.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of cable trays. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install cable tray level and plumb according to manufacturer's written instructions, Coordination Drawings, original design, and referenced standards.

1. Cutting: Field-fabricate changes in direction & elevation by cutting & bending cable tray.
   a. Cut cable tray wires in accordance with manufacturer’s instructions.
   b. Cable tray wires must be cut with side-action bolt cutters with offset head (MM-ACC-BTC) to ensure integrity of protective galvanic layer.
   c. Remove burrs and sharp edges from cable trays.

END OF SECTION 260536