

SECTION 16135

CABLE TRAYS

Throughout this document you will find these 'specifier notes' or links to specific electronic resources to better serve your needs. If you have any questions or comments, please contact your local Cooper B-Line sales representative, email blineus@cooperindustries.com or call (618) 654-2184.

Cooper B-Line is now offering BIM content for the Flextray family of products in the Revit© format. To download the Flextray families and our other available products, click [here](#)

PART 1 GENERAL

1.1 SUMMARY

- A. Work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, tests and services to completely execute a complete wire basket cable tray system (Product) as described in this specification and as shown on the drawings.
- B. Wire basket cable tray systems are defined to include, but are not limited to straight sections of continuous wire mesh, field formed horizontal and vertical bends, tees, drop outs, supports and accessories.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM) International:
 - 1. ASTM A1011 / A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
 - 2. ASTM A123 / A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A510 - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
 - 4. ASTM A513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
 - 5. ASTM A580 – Standard Specification for Stainless Steel Wire
 - 6. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
 - 7. ASTM A641 / A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
 - 8. ASTM A653 / A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 9. ASTM D769 - Standard Specification for Black Synthetic Iron Oxide

- B. National Electrical Manufacturers Association:
 - 1. NEMA FG 1 - Fiberglass Cable Tray Systems.
 - 2. NEMA VE 1 - Metal Cable Tray Systems.
 - 3. NEMA VE 2 - Cable Tray Installation Guidelines.
- C. NFPA 70: National Electrical Code (2008)
- D. ANSI/TIA-568-C.0 – Generic Telecommunications Cabling for Customer Premises
- E. ANSI/TIA-569-B – Commercial Building Standard for Telecommunications Pathways and Spaces

1.3 DRAWINGS

- A. The drawings, which constitute a part of these specifications, indicate the general route of the wire basket cable tray systems. Data presented on these drawings is as accurate as preliminary surveys and planning can determine until final equipment selection is made. Accuracy is not guaranteed and field verification of all dimensions, routing, etc., is required.
- B. Specifications and drawings are for assistance and guidance, but exact routing, locations, distances and levels will be governed by actual field conditions. Contractor is directed to make field surveys as part of his work prior to submitting system layout drawings.

1.4 QUALITY ASSURANCE

- A. All cable and 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 or owner's representative.
- B. Supply all equipment and accessories new and free from defects.
- C. Supply all equipment and accessories in compliance with the applicable standards listed in Part 1.2 of this section and with all applicable national, state and local codes.
- D. All items of a given type shall be the products of the same manufacturer.
- E. Zinc plated wire basket cable tray shall be classified by Underwriters Laboratories (UL).
- F. Wire basket cable tray shall be of uniform quality and appearance.
- G. Comply with the National Electrical Code (NEC), as applicable, relating to construction and installation of cable tray and cable channel systems (Article 392, NEC).
- H. Comply with NFPA 70B, "Recommended Practice for Electrical Equipment Maintenance" pertaining to installation of cable tray systems.

1.5 SUBMITTALS

- A. Submittal Drawings: Submit drawings of wire basket cable tray and accessories including connector assemblies, clamp assemblies, brackets, splice plates, splice bars, grounding clamps and hold-down plates showing accurately scaled components. Indicate wire basket cable tray dimensions, support points, and finishes.
- B. Product Data: Submit manufacturer's data on wire basket cable tray system including, but not limited to, types, materials, finishes and inside depths.
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under references. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual routing of cable tray and locations of supports.

1.7 QUALIFICATIONS

Include the following paragraph if a list of manufacturer is not included or when substitutions are allowed to define applicable requirements. [] denotes a variable or choice

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum [] years of documented experience, and with service facilities within [] miles of Project.

1.8 PRE-INSTALLATION MEETINGS

- A. Convene a minimum of [] week(s) prior to commencing work of this section.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Ship and store wire basket cable tray system equipment in its original packages and in a clean, dry space to prevent damaging from weather, construction traffic or foreign matter. All handling performed in accordance with manufacturer's recommendations. Provide protective coverings during construction.
- B. Deliver wire basket cable tray systems and components carefully to avoid breakage, bending and scoring finishes. Do not install damaged equipment.
- C. Replace at no expense to Owner, equipment or material damaged during storage or installation as directed by the Architect.

PART 2 PRODUCTS

NEMA VE 1 Class designation, indicated in the following specifications for metal cable tray, is support span in feet (meters) plus working load designation.

Working Load Designation:

A - 50 pounds per foot (74.4 kg/m).

B - 75 pounds per foot (111.6 kg/m).

C - 100 pounds per foot (148.8 kg/m).

For example, Class 20C applies to cable tray required to span 20 feet (6090 mm) between supports while supporting cable static weight between 75 and 100 pounds per foot (111.6 and 148.8 kg/m).

Consult NEMA VE 1 for additional information and safety factors.

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with these specifications, wire basket cable tray systems to be installed shall be as manufactured by the following:
 - 1. Cooper B-Line. 509 West Monroe Street, Highland, IL, 62249, USA. Phone:(618) 654-2184 or email blineus@cooperindustries.com
 - 2. Engineer approved equivalent

[Click here](#) to download complete Flextray wire basket cable tray system catalog.

2.2 WIRE BASKET CABLE TRAY SECTIONS AND COMPONENTS

[] denotes a variable or choice

- A. Provide wire basket cable tray of types and sizes indicated with connector assemblies, clamp assemblies, connector plates, splice plates and splice bars. Construct units with rounded edges and smooth surfaces; in compliance with applicable standards; and with the additional construction highlighted in Section 2.2
- B. All straight section longitudinal wires shall be constructed with a continuous top wire safety edge. Safety edge must be kinked and T-welded on all tray sizes.
- C. Wire basket cable tray shall be made of high strength steel wires and formed into a standard 2 inch by 4 inch wire mesh pattern with intersecting wires welded together. All mesh sections must have at least one bottom longitudinal wire along entire length of straight section.
- D. Wire basket cable tray sizes shall conform to the following nominal criteria:
 - 1. Straight sections shall be furnished in standard 118.3 inch lengths.
 - 2. Wire diameter shall be 0.196" (5mm) minimum on all mesh sections (minimum size of 4.5mm on stainless steel).
 - 3. Wire tray shall have a 1.5 inch usable loading depth by [4] [6] [8] [12] inches wide.

4. Wire basket cable tray shall have a 2 inch usable loading depth by [2] [4] [6] [8] [12] [16] [18] [20] [24] [30] [32] inches wide.
5. Wire basket cable tray shall have a 4 inch usable loading depth by [4] [6] [8] [12] [16] [18] [20] [24] [30] inches wide.
6. Wire basket cable tray shall have a 6 inch usable loading depth by [8] [12] [16] [18] [20] [24] inches wide.

[Click here](#) for an Excel based fill calculator when sizing your tray. [] denotes a variable or choice

- E. In order for a system to be approved as an equipment ground conductor (EGC), all splicing assemblies shall be UL Classified or CSA approved as an EGC. When using powder coated wire mesh cable tray as an EGC, the paint must be completely removed at all contact points of splice/ground bolt attachments.
- F. Material and Finishes: Material and finish specifications for [\[Carbon Steel Wire\]](#) [\[Pre-Galvanize Steel Wire\]](#) [\[Stainless Steel Wire\]](#) are as follows.
 1. Electro-Plated Zinc Galvanizing: Straight sections shall be made from steel meeting the minimum mechanical properties of ASTM A510, Grade 1008 and shall be electro-plated zinc in accordance with ASTM B633, Type III, SC-1.

Remember when installing wire basket cable tray in an under-floor environment, do not use electroplated zinc products to prevent 'zinc whiskers.'

2. Stainless Steel: Straight sections and accessories shall be made from AISI Type [\[304L\]](#) [\[316L\]](#) stainless steel meeting the minimum mechanical properties of ASTM A580.
3. Black Powder Coat: Straight sections shall be powder coated black with an average paint thickness of 1.2mils (30microns) to 3.0mils (75microns).
4. Pre-Galvanized Zinc: Straight sections shall be made from pre-galvanized steel meeting the minimum mechanical properties of ASTM A641.
5. Hot Dipped Galvanizing: Straight sections shall be made from steel meeting the minimum mechanical properties of ASTM A510, Grade 1008 and shall be hot dipped galvanized after fabrication in accordance with ASTM A123.
6. Black Oxide: Certain support accessories and miscellaneous hardware shall be manufactured with a black oxide finish in accordance with ASTM D769.

[Click here](#) to learn more about the American Society for Testing and Materials (ASTM) standards. [Click here](#) for more information on Flextray finishes and grounding requirements.

- G. All fittings shall be field formed from straight sections in accordance with manufacturer's instructions.
- H. Wire basket cable tray supports shall be center support hangers, trapeze hangers or wall brackets as manufactured by Cooper B-Line, Inc. [\[or engineer approved equal\]](#).

- I. Trapeze hangers or center support hangers shall be supported by ¼” inch or 3/8” inch diameter rods.
- J. Special accessories shall be furnished as required to protect, support and install a wire basket cable tray system.
- K. All bidders must be Flextray Certified Installer and provide documented proof.

To ensure a quality installation, Cooper B-Line suggests using a Flextray Certified Contractor. [Click here to learn more about this certification program.](#)

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Remove exposed abandoned cable tray, including abandoned cable tray above accessible ceiling finishes. Remove supports. Cut wire basket cable tray flush with walls and floors, and patch surfaces.
- B. Maintain access to existing wire basket cable tray and other installations remaining active and requiring access. Modify installation or provide access panel.
- C. Extend existing wire basket cable tray installations using materials and methods [compatible with existing electrical installations, or] as specified.
- D. Clean and repair existing wire basket cable tray to remain or to be reinstalled.

3.2 INSTALLATION

- A. Install wire basket cable tray in accordance with NEMA VE 2 to ensure that the cable tray equipment complies with the requirements of the NEC, applicable portions of NFPA 70B, and the National Electrical Contractors Association’s (NECA) ‘Guide to Quality Electrical Installations’ pertaining to general electrical installations practices.
- B. All trays should be supported using a minimum of ¼” All Threaded Rod (ATR).
- C. Special accessories shall be furnished as required to protect, support and install a wire basket cable tray system.
- D. Coordinate wire basket cable tray with other electrical work as necessary to properly interface installation of wire basket cable tray with other work.
- E. Support trays and fasten to structure. Install supports at each connection point, at end of each run, and at other points to maintain spacing between supports of [_____] feet ([_____] cm) maximum.

- F. Install firestopping in accordance with local and NFPA regulations to sustain ratings when passing wire basket cable tray through fire-rated elements.

Use the following paragraph for metal tray systems only.

- G. Ground and bond metal cable tray in accordance with NFPA 70, National Electrical Code, Article 392: Cable Trays.
 - 1. Provide continuity between wire basket cable tray components.
 - 2. Make connections to tray using mechanical, compression or exothermic connectors.
 - 3. If required, ground cable trays by mounting up to two [___] AWG bare copper wires to each wire basket cable tray section, bonded with a grounding clamp
- H. If required, install warning signs at [_____] feet ([_____] m) centers along wire basket cable tray, located to be visible.
- I. Provide sufficient space encompassing wire basket cable tray to permit access for installing and maintaining cables.

Be certain when deleting specifier notes that you also delete both rows of asterisks. If you have any comments or suggestions regarding this specification please contact your local Cooper B Line representative.

3.3 TESTING

- A. Test wire basket cable tray support systems to ensure electrical continuity of bonding and grounding connections, and to demonstrate compliance with specified maximum grounding resistance. See NFPA 70B, Chapter 18, for testing and test methods.
- B. Manufacturer shall provide test reports witnessed by an independent testing laboratory of the “worst case” loading conditions outlined in this specification and performed in accordance with the latest revision of NEMA VE-1.

END OF SECTION