

SECTION 27 11 23

COMMUNICATIONS CABLE MANAGEMENT AND LADDER RACK

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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](mailto:blineus@cooperindustries.com) or call (618) 654-2184.

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PART 1 GENERAL

1.1 SUMMARY

- A. Work covered in this section consists of the furnishing of all necessary labor, supervision, materials, equipment, and services to completely execute the cable runway system as described in this specification and as shown on the drawings.
- B. Work included in this section: Materials, equipment, fabrication, installation and tests in conformity with applicable codes and authorities having jurisdiction (AHJ) for the following:
  - 1. Cable runway
  - 2. Cable runway support systems.
  - 3. Cable runway accessories.
- C. Related Sections:
  - 1. Section 07 84 00 - Firestopping.
  - 2. Section 27 05 26 - Grounding and Bonding for Communications Systems.
  - 3. Section 27 05 29 - Hangers and Supports for Communications Systems.

1.2 REFERENCES

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List reference standards included within text of this section. Edit the following for Project conditions.

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- A. ASTM International:
  - 1. ASTM-Specification for Carbon Structural Steel.
  - 2. ASTM A1011- Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability (*Formerly ASTM A570*).
  - 3. Aluminum Association Alloy 6063 & 5052
  - 4. ASTM B633- Specification for Electro-Deposited Coatings of Zinc on Iron and Steel.
  - 5. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 6. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

- B. American National Standards Institute
  - 1. ANSI/TIA/EIA 568A – Commercial Building Telecommunications Cabling Standard.
  - 2. ANSI/TIA/EIA 569 – Commercial Building Standard for Telecommunications Pathways and Spaces.
  - 3. ANSI/TIA/EIA – 606-A Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, 2002.
  - 4. ANSI-J-STD – 607-A Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2002.
- C. National Electrical Manufacturers Association:
  - 1. NEMA FG 1 - Nonmetallic Cable Tray Systems.
  - 2. NEMA VE 1 - Metal Cable Tray Systems.
  - 3. NEMA VE 2 - Metal Cable Tray Installation Guidelines.
- D. NFPA 70, National Electrical Code
- E. BICSI – Telecommunications Distribution Methods Manual, 11<sup>th</sup> Edition, 2009

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To learn more about codes and standards please choose one of the following links.

[NEMA](#), [ANSI](#), [ASTM](#), [BICSI](#)

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### 1.3 QUALITY ASSURANCE

- A. Cable runway shall be classified by Underwriters Laboratories (UL).
- B. Cable runway shall be of uniform quality and appearance.
- C. 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 representative.
- D. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
- E. Supply all equipment and accessories new and free from defects.
- F. Supply all equipment and accessories in compliance with the applicable standards listed in Article 1.2 of this Section and with all applicable national, state and local codes.
- G. All items of a given type shall be the products of the same manufacturer.
- H. NEC Compliance: Comply with NEC, as applicable to construction and installation of cable runway and cable tray systems (Article 318, NEC).
- I. NFPA compliance Comply with NFPA 70B, “Recommended Practice for Electrical Equipment Maintenance” pertaining to installation of cable tray systems.

- J. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.

#### 1.4 DRAWINGS

- A. The drawings, which constitute a part of these specifications, indicate the general route of the cable runway 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.

#### 1.5 SUBMITTALS

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Only request submittals needed to verify compliance with Project requirements.

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- A. Submit product data on cable runway and supports. Product data to include, but not limited to materials, finishes, approvals, load ratings, and dimensional information.
- B. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- C. Shop Drawings: Indicate runway or tray type, dimensions, support points, and finishes.
- D. Product Data: Submit fittings and accessories.
- E. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

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[Click here](#) for to access the Cooper B Line design center which contains a complete selection of CAD files, technical papers, fill calculators and test results.

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#### 1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual routing of cable runway or tray and locations of supports.

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver cable runway systems and components carefully to avoid breakage, bending and scoring finishes. Do not install damaged equipment.
- B. Store cable runways and accessories in original cartons and in clean dry space; protect from weather and construction traffic.

## 1.8 QUALIFICATIONS

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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

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- 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.

## 1.9 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene a minimum of [ ] week(s) prior to commencing work of this section.

## PART 2 PRODUCTS

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

Available Support Spans: 8, 12, 16, and 20 feet (2440, 3660, 4870, and 6090 mm).

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.

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## 2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with these specifications, runway or 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](mailto:blineus@cooperindustries.com)
  2. Engineer approved equivalent.
  3. Substitutions: [Section 01 60 00 - Product Requirements] [Not Permitted].

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 [] denotes a variable or choice  
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- B. Product Description: Ladder type runway.
- C. Material: Aluminum.
- D. Finish: Bare aluminum or powder coat painted.
- E. Width: nominal [6][9][12][15][18][20][24][30][36] inches.
- F. Rung Spacing: 9” on center.
- G. Furnish manufacturer's standard clamps, hangers, brackets, splice plates, reducer plates, blind ends, barrier strips, connectors, and grounding straps.
- H. Covers: [Flanged,] [Non-flanged,] [solid] [ventilated] [flush] [raised] cover.

## 2.2 CABLE RUNWAY SYSTEMS

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[Click here](#) for a complete listing of all Cooper B Line cable runway products.  
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- A. General: Except as otherwise indicated, provide metal cable runways, of types, classes and sizes indicated with splice connectors, bolts, nuts and washers for connecting units.
- B. Runway Type: Material specifications for runway are as follows:
  1. C-Channel style runway: Runway shall be ladder type with [1-1/2 inch][2 inch] stringer height with mechanically fastened rungs. Stringer siderail shall be extruded from Aluminum Association Alloy 6063. All fabricated parts shall be made from Aluminum Association Alloy 5052.
  2. Rungs shall be spaced 9 inches on center. Rungs shall be mechanically fastened for easy removal, reinstallation, or replacement if necessary.
  5. Runway shall be [6][9][12][15][18][20][24][30][36] inches wide and 120 inches long, or as shown on drawings.

Or

6. [B-Line Catalog Number]

C. Finishes

1. Cable runway shall be [bare aluminum] [Flat Black powder coat]

a. FITTINGS AND ACCESSORIES

- i. General: All fittings, supports, splices, etc. for the runway system shall be installed to provide a complete assembly- including fasteners, hardware, and other items required to complete the installation as indicated on the drawings.
- ii. Subject to compliance with these specifications, runway or 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](mailto:blineus@cooperindustries.com)
  - 2. Engineer approved equivalent
  - 3. Substitutions: [Section 01 60 00 - Product Requirements] [Not Permitted].
- iii. Furnish manufacturer's standard clamps, hangers, brackets, splice plates, reducer plates, blind ends, barrier strips, connectors, and grounding straps.

3. EXECUTION

a. EXISTING WORK

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Delete this article when existing construction is not affected or there is none on project.

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

b. INSTALLATION

- i. Installation and configuration shall conform to the requirements of the ANSI/ EIA/TIA Standards 568A & 569, NFPA 70 (National Electrical Code), and applicable local codes.

- ii. Runway should be supported every [4][5][6][8] feet on center with 5/8 inch diameter threaded rod, or applicable support brackets or racks.
- iii. Install runway or metal cable tray in accordance with NEMA VE 2.
- iv. Support runway or tray and fasten to structure and finishes in accordance with Section 27 05 29. Install supports at each connection point, at end of each run, and at other points to maintain spacing between supports of [ ] ft ([ ] mm) maximum.
- v. Install expansion connectors [where recommended by manufacturer] [as indicated on Drawings].
- vi. Install firestopping in accordance with Section [07 84 00] [27 05 29] to sustain ratings when passing runway or cable tray through fire-rated elements.

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Use the following paragraph for metal runway or tray systems only. Edit to match runway or tray material; use copper grounding conductor for steel tray, aluminum grounding conductor for aluminum tray.

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- vii. Ground and bond metal cable tray in accordance with Section 27 05 26.
  - 1. Provide continuity between runway or tray components.
  - 2. Use anti-oxidant compound to prepare aluminum contact surfaces before assembly.
  - 3. Install 2 [ ] AWG bare [copper] [aluminum] equipment grounding conductor through entire length of runway or tray; bond to each component.
  - 4. Make connections to runway or tray using mechanical, compression or exothermic connectors.
- viii. Install warning signs at [50 feet (1500 mm)] [[ ] feet ([ ] mm)] centers along runway or cable tray, located to be visible.

END OF SECTION