

STRUT SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

- A. Continuous slot, bolted metal framing channels and all associated fittings and hardware.
- B. Trapeze type supports for cable tray, conduit, pipe and other similar systems.
- C. Use of bolted metal framing as a surface metal raceway.

1.2 DEFINITIONS

- A. ASTM: American Society for Testing and Materials
- B. MFMA: Metal Framing Manufacturers Association
- C. NEC: National Electric Code
- D. UL: Underwriters Laboratories
- E. NFPA: National Fire Protection Association

1.3 SUBMITTALS

- A. Submit drawings of strut and accessories including clamps, brackets, hanger rods, and fittings.
- B. Submit manufacturer's product data on strut channels including, but not limited to, types, materials, finishes, gauge thickness, and hole patterns. For each different strut cross-section, submit cross sectional properties including Section Modulus (S_x) and Moment of Inertia (I_x).

1.4 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of bolted metal framing of the types required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. MFMA Compliance: comply with the latest revision of MFMA Standards Publication Number MFMA-3, "Metal Framing".
- C. NEC Compliance: comply with the latest revision NFPA 70 - Article 352 "Surface Metal Raceways and Surface Nonmetallic Raceways".
- D. UL Compliance: comply with UL "Standard for Surface Metal Raceway and Fittings", UL 5.
- E. Strut channels shall have the manufacturer's ID, trade name, strut style and date of manufacture or equivalent tracking method, stamped in the channel for identification. Material certification sheets must be made available by the manufacturer upon request.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with these specifications, strut systems to be installed shall be as manufactured by ERICO, Inc. [or engineer approved equal].

2.2 REFERENCES

- A. ASTM A109 - Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
- B. ASTM A123 - Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip.
- C. ASTM A240/A - Standard Specification for Heat-Resisting Chromium and Chromium Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels
- D. ASTM A570 - Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
- E. ASTM A635 - Standard Specification for Steel and Strip, Heavy-Thickness coils, Carbon, Hot-Rolled
- F. ASTM A653 - General Requirements for Steel Sheet, Zinc-Coated Galvanized by the Hot-Dip Process
- G. ASTM A682 - Standard Specification for Steel, Strip, High-Carbon, Cold-Rolled, General Requirements For
- H. ASTM A924/A – General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- I. ASTM B117- Standard Practice for Operating Salt Spray (fog) Apparatus
- J. ASTM B633 - Specification for Electro-deposited Coatings of Zinc on Iron and Steel
- K. ASTM D522 - Standard Test Method for Mandrel Bend Test of Attached Organic Coatings
- L. ASTM D523 - Standard Test Method for Specular Gloss
- M. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
- N. ASTM D3451 - Standard Practice for Testing Polymeric Powder and Powder Coatings
- O. MFMA- Metal Framing Standards Publication, MFMA-3 1999

2.3 STRUT CHANNELS AND COMPONENTS

- A. General: Strut shall be 1-5/8 inches wide in varying heights and welded combinations as required to meet load capacities and designs indicated on the drawings.
- B. Materials and Finish: Material and finish specifications for each strut type are as follows:
 - 1. Yellow Chromate ('Cal-Gold', CG): Strut shall be made from steel meeting the minimum mechanical properties of ASTM A570, Grade 33 and shall be electro-galvanized after fabrication in accordance with ASTM B633. Gold colored zinc dichromate is applied over the zinc. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A635, Structural Quality. All fittings and hardware shall be zinc plated in accordance with ASTM B633 (SC3 for fittings, SC1 for threaded hardware).
 - 2. Aluminum: Strut shall be manufactured of extruded aluminum alloy 6063-T6. All fittings and hardware shall be zinc plated according to ASTM B633, SC1 for indoor use only or aluminum alloy 5052-H32. For outdoor use, all fittings and hardware shall be stainless steel Type 304 [Type 316]. [Fittings shall be hot dip galvanized after fabrication in accordance with ASTM 123 with stainless steel Type 304 [Type 316] hardware.]
 - 3. Powder Coated: Strut shall be made from steel meeting the minimum mechanical properties of ASTM A570 Grade 33, then polyester powder is applied electrostatically to the steel channel after fabrication and the strut is then baked. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A635, Structural Quality. All fittings and hardware shall be zinc plated in accordance with ASTM B633 (SC3 for fittings, SC1 for threaded hardware).
 - 4. Pre-galvanized Steel: Strut shall be made from steel meeting the minimum mechanical properties of ASTM A653, Grade 33, and mill galvanized in accordance with coating designation G90. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A635, Structural Quality. All fittings and hardware shall be zinc plated in accordance with ASTM B633 (SC3 for fittings, SC1 for threaded hardware).

5. Hot-dip Galvanized Steel: Strut shall be made from steel meeting the minimum mechanical properties of ASTM A570, Grade 33 and shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A635, Structural Quality, and hot-dip galvanized after fabrication in accordance with ASTM A123. All hardware shall be stainless steel Type 304 [Type 316]. All hot-dip galvanized after fabrication products must be returned to point of manufacture after coating for inspection and removal of all sharp burrs.
6. Stainless Steel: All strut, fittings and hardware shall be made of AISI Type 304 [Type 316] stainless steel as indicated.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install strut as indicated; in accordance with equipment manufacturer's recommendations, and with recognized industry practices.
- B. All nuts and bolts shall be tightened to the following values:

<u>Bolt Size</u>	<u>Torque (ft-lbs)</u>
1/4 - 20	6
5/16 - 18	11
3/8 - 16	19
1/2 - 13	50