

SECTION 15060

NON-METALLIC STRUT, PIPE HANGERS AND SUPPORT SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. The work covered under this section consists of furnishing all necessary labor, supervision, materials, equipment, and services to completely execute the non-metallic support system for piping and other components as detailed in the drawings, and described in this specification.
- B. Continuous slot, fiberglass framing channels and all associated fittings and hardware.
- C. Trapeze type supports for pipe, conduit, and other similar systems.

NOTE: Non-metallic hangers and supports have requirements in addition to standard metal materials. For general work details not specifically covered by this section, reference section 15140- Pipe Hangers and Supports.

1.02 REFERENCES

- A. ASTM A167- Standard specification for Stainless and Chromium-Nickel steel plate, sheet and strip.
- B. ASTM D4385 – Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products.
- C. ASTM D635 – Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
- D. ASTM E84 - Test method for Surface Burning Characteristics of Building Materials.
- E. ASTM F569 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- F. AISI – American Iron and Steel Institute
- G. UL94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
- H. MSS SP-69 - Manufacturers Standardization Society: Pipe Hangers and Supports- Selection and Application

1.03 QUALITY ASSURANCE

- A. The manufacturer shall be regularly engaged in supplying non-metallic support systems for the types required, and whose products have been in satisfactory use in similar service.
- B. The manufacturers name and part number shall be marked on all FRP framing channels. The product should be color-coded or otherwise indicate the material type.

1.04 SUBMITTALS

- A. Submit product data and test methods for non-metallic support systems. Data to include, but not limited to: Material, load ratings and temperature ranges, corrosion resistance, approvals, flame and smoke ratings, and dimensional information.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material carefully to avoid breakage and scoring finishes. Do not install damaged equipment.
- B. Store material in original cartons and in clean dry space; protect from construction traffic.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with these specifications, the non-metallic strut, pipe hangers and supports shall be as manufactured by Cooper B-Line, Inc [or engineer approved equal].

2.02 GENERAL

- A. Materials - The materials to be used are as follows
 - 1. Polyester resin fiberglass: Fiber reinforced fire retardant polyester thermosetting resin. Material shall have a maximum Flame Spread Index rating of 25 in accordance with ASTM E84; flammability shall meet UL 94 VO and shall conform to the self-extinguishing requirements of ASTM D635.
 - 2. Vinyl ester resin fiberglass: Fiber reinforced fire retardant vinyl ester thermosetting resin. Material shall have a maximum Flame Spread Index

rating of 25 in accordance with ASTM E84, flammability shall meet UL 94 VO and shall conform to the self-extinguishing requirements of ASTM D635.

3. Glass reinforced polyurethane: Fiber reinforced fire retardant polyurethane thermoplastic resin, 40% glass reinforced.
 4. Stainless steel: AISI type 316 meeting the requirements of ASTM A167.
- B. Ultraviolet resistance: All materials shall have means of providing UV resistance.

2.03 PIPE HANGERS

- A. Clevis hangers shall be glass-reinforced polyurethane, B-Line BFP3104, for support of piping up to 6 inches. Clevis hangers shall be glass reinforced polyester or vinyl ester for support of piping from 8 inch to 12 inch. Provide insulation for hot piping to limit the surface temperature at the hanger to 120 F.

2.04 STRUT CHANNELS AND TRAPEZE SUPPORTS

- A. All strut channels shall be polyester [vinyl ester] resin manufactured by the pultrusion process. The reinforcing material shall consist of unidirectional roving, continuous mat and special spun roving in the channel lips for additional pull out strength. All surfaces shall have a synthetic surface veil to ensure a UV resistant resin rich surface.
- B. Strut shall be designed to accept both non-metallic or stainless steel hardware and accessories.
- C. Strut shall conform to the requirements of ASTM D4385 for Levels III and IV.
- D. Strut shall be 1-5/8" wide in varying heights, combinations and contain hole patterns as required to meet load capacities and designs indicated on the drawings.
- E. The manufacturers name and part number shall be marked on the strut to indicate the product series and material used.

2.05 STRUT FITTINGS AND ACCESSORIES

- A. Molded strut fittings shall be glass-reinforced polyurethane.
- B. Non-metallic pipe clamps shall be glass-reinforced PPO with type 316 stainless steel hardware, B-Line BFV2000 series. Include additional stop-lock kit for vertical applications.

- C. Two-hole pipe clamps shall be glass reinforced polyester, B-Line BFP-2400 series.
- D. Non-metallic U-Bolts shall be glass reinforced polyurethane, B-Line BFV501.
- E. Channel nuts shall be glass-reinforced polyurethane [316 stainless steel], B-Line BFV-228 [N228-SS6L] for 3/8-inch hardware, BFV-225 [N225-SS6L] for 1/2 inch hardware.
- F. All threaded hardware shall be type 316 stainless steel [glass reinforced polyurethane]. Note manufacturers recommended torque for mating hardware (such as non-metallic channel nuts).

2.06 BRACKETS

- A. Strut brackets shall be polyester [vinyl ester] resin fiberglass with type 316 stainless steel rivets, B-Line BF*-409 or BF*-494 series.
OR
- A. All brackets shall be stainless steel type 316 [304]. B-Line series B409, B494 or similar.

2.07 BEAM CLAMPS

- A. Beam clamps shall be glass reinforced polyurethane. Setscrew shall be 316 stainless steel meeting the requirements of ASTM F593 Group 2, S4.

2.08 CONTINUOUS CONCRETE INSERTS

- A. Concrete inserts shall be polyester or vinyl ester fiberglass manufactured by the pultrusion process. B-Line series BF*-22I. Inserts shall be provided with removable Styrofoam insert.

PART 3 EXECUTION

3.01 FIELD CUTTING AND DRILLING

- A. Repair all field cuts with resin to seal all exposed fibers, B-Line brush on acrylic resin RSK-010. Exposed fibers absorb moisture and will accelerate the deterioration of the material.

NOTE: Appropriate protective clothing and respiratory protection should be worn when field cutting or grinding fiberglass.

3.02 HARDWARE TORQUE

- A. Follow manufacturers torque requirements for any non-metallic hardware, noting that the recommended torque is significantly less than the torque for steel hardware.
- B. When bolting through the side of strut channels, provide a spacer to prevent wall compression, B-Line BFPUC650.

3.03 SUPPORT SPACING

- A. Support spacing for strut trapezes or single rod hangers shall be calculated for each assembly. The load rating for each assembly is based on the lowest rated component: upper attachment, rod, nuts, hanger, or other components.
- B. Spacing shall not exceed maximum recommended support spacing for piping. Contact pipe manufacturer for maximum hanger spacing for non-metallic piping. Metal pipe hanger spacing is given in the Manufacturers Standardization Society SP-69, Table 3.
- C. Beam loading for strut trapezes shall conform to manufacturers published load data for the operating temperature. Consideration for deflection shall be given.

NOTE: The strength and corrosion resistance of non-metallic materials are temperature sensitive. Please note the temperature ranges of the areas that the supports are to be installed.

END OF SECTION