

SECTION 05421 - ENGINEERED LIGHT GAGE METAL TRUSS SYSTEM

PART I - GENERAL

1.01 SECTION INCLUDES

- A. Engineered light gage metal trusses.
- B. Cold-formed steel framing accessories.

1.02 REFERENCES

- A. AISI SG-671 - Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 1986 (with 1989 Addendum and 1990 Errata).
- B. ASTM A 370 - Standard Test Methods and Definitions for Mechanical Testing of Steel Products; 1996.
- C. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated by the Hot-Dip Process; 1996.
- D. AWS D1.3 - Structural Welding Code - Sheet Steel; 1989.
- E. FS TT-P-645 - Primer Paint, Zinc Molybdate, Alkyd Type; Revision B, 1990.

1.03 PERFORMANCE REQUIREMENTS

- A. Design system components in accordance with AISI reference; provide for movement of components due to thermal variations without damage, failure, or excessive stress on components.

1.04 SUBMITTALS

- A. See Project Manual.
- B. Product Data: Manufacturer's descriptive literature for each item of cold-formed metal framing and each accessory specified this section.
- C. Shop Drawings:
 - 1. Indicate special components and installations not fully dimensioned or detailed in product data.
 - 2. Indicate in placing drawings number, types, location, sizes, spacings, and gages of framing members.
 - 3. Indicate details of supplemental strapping, bracing, splices, bridging, and accessories required for installation. members and adjacent products
- D. Manufacturer's Instructions: Printed installation instructions for each item of cold-formed metal framing and each accessory specified in this section.
- E. Design Data: Calculations for loadings and stresses, bearing seal and signature of professional engineer registered in the State in which the Project is located.
- F. Mill Certificates for each type structural framing member, indicating the following information:
 - 1. Bare metal thickness of steel, measured to 1/1000 inch.

2. Yield strength of steel.
 3. Tensile strength of steel.
 4. Total elongation of steel in 2 inch gage length.
 5. Chemical analysis of steel.
 6. Thickness of galvanized coating, measured to 1/1000 inch.
- G. Design Criteria: As indicated on the contract drawings, listed under trusses.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide bracing for shop assembled units to prevent racking.
- B. Handle and lift shop assembled units in accordance with manufacturer's recommendations to prevent damage or distortion.
- C. Store shop assembled units in accordance with manufacturer's recommendations to prevent damage or distortion.

PART II - PRODUCTS

2.01 COMPONENTS

- A. Load Bearing Members: Cold-formed to indicated sizes, profiles, and thicknesses of mill-certified steel conforming to ASTM A 653/A 653M, minimum G60/Z180 coating, and as follows:
 1. Shapes: Indicated on shop drawings.
 2. Size: Indicated on shop drawings.
 3. Gage: Indicated on shop drawings.
- B. Miscellaneous Framing Components: For each type framing indicated, supply required or indicated items, including, but not limited to blocking, clip angles, shoes, reinforcements, purlins, fasteners, and anchors.
- C. Primer: Zinc-rich primer for galvanized surfaces conforming to FS TT-P-645.

2.02 FABRICATION

- A. Shop fabricate from cold formed steel components in accordance with shop drawings, using templates to ensure consistent component placement and alignment of components, and to maintain specified tolerances.
- B. Field fabrication of trusses is strictly prohibited.
- C. Shop fabrication of other cold formed steel framing components into assemblies prior to erection is permitted; fabricate assemblies in accordance with shop drawings and to specified tolerances.
- D. Fastening of components by welding, screw fasteners, or bolting is permitted; fasten components in accordance with shop drawings.
- E. Perform welding, if indicated, in accordance with AWS D1.3.

2.03 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances: Steel for cold-forming:
 - 1. Nominal 20 gage members:
 - a. Minimum bare metal thickness: 0.0329 inch.
 - b. Maximum design thickness: 0.0346 inch.
 - 2. Nominal 18 gage members:
 - a. Minimum bare metal thickness: 0.0428 inch.
 - b. Maximum design thickness: 0.0451 inch.
 - 3. Nominal 16 gage members:
 - a. Minimum bare metal thickness: 0.0538 inch.
 - b. Maximum design thickness: 0.0566 inch.
- B. Truss Assemblies: Fabricate to tolerances of maximum variation from plumb, level, or true to line of 1/8 inch in 10 feet.
- C. Perform tests for mill certificates in accordance with ASTM A 370.

PART III - EXECUTION

3.01 EXAMINATION

- A. Verify that bearing surfaces and substrates are ready for construction activities of this section.
- B. Verify that rough-in utilities are in correct locations.
- C. Installer's Examination:
 - 1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
 - 2. Transmit two copies of installer's report to Architect within 24 hours of receipt.
 - 3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
 - 4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.02 INSTALLATION

- A. Field Welding: In accordance with AWS D1.3, and the following:
 - 1. Connections: Fillet, flat, plug, butt, or seam.
 - 2. Minimum steel thickness for welded connections: 18 gage.
- B. Field Fastening: Use minimum 2 fasteners per connection, unless otherwise indicated.

- C. Install metal truss system in accordance with manufacturer's instructions and shop drawings.
 - 1. Place components at spacings indicated on shop drawings, with indicated bracing and bridging.
 - 2. Install web stiffeners at reaction points if indicated on shop drawings.
- D. Touch up damaged coating surfaces; use specified zinc-rich primer.
- E. Installation Tolerances:
 - 1. Variation from Level: Maximum 1/8 inch (3 mm) in 10 feet (3050 mm).
 - 2. Variation from True Plane: Maximum 1/8 inch (3 mm) in 10 feet (3050 mm).
 - 3. Variation from True Position: Maximum 1/4 inch (6 mm).
 - 4. Variation of Member from Plane: Maximum 1/8 inch (3 mm).

END OF SECTION