

TremLock Truss Systems

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes pre-engineered, pre-fabricated light gauge cold formed steel framing elements. Work includes:
 - 1. Light Gauge Cold formed steel open web floor trusses.
 - 2. Light Gauge Cold formed steel roof trusses.
 - 3. Anchorage, bracing and bridging.
- B. Related work
 - 1. Drywall attachment
 - 2. Roofing, fascia, soffit

1.02 REFERENCES

- A. Reference standards:
 - 1. ASTM:
 - a. ASTM A653/A653M-94 "Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process."
 - b. ASTM A780-93a "Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings."
 - 2. American Welding Society (AWS)
 - a. AWS D1.1 "Structural Welding Code - Steel."
 - b. AWS D1.3 "Structural Welding Code - Sheet Steel."

1.03 PERFORMANCE REQUIREMENTS

- A. AISI "Specifications": Calculate structural characteristics of cold-formed steel truss members according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members, 1986 (1990)."
- B. Structural Performance: Design, engineer, fabricate and erect cold-formed steel trusses to withstand specified design loads within limits and under conditions required.
 - 1. Design Loads: As specified.
 - 2. Deflections: Live load deflection meeting the following (unless otherwise specified):
 - a. Floor Trusses: Vertical deflection less than or equal to 1/360 of the span.
 - b. Roof Trusses: Vertical deflection less than or equal to 1/240 of the span.
 - 3. Design framing systems to provide for movement of framing members without

damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors or other detrimental effects when subject to a maximum ambient temperature change (range) of 120°F (67°C).

1.04 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each type of cold-formed steel framing and accessory required.
- B. Submit shop drawings showing member, type, location, spacing, size and gage of members, method of attachment to supporting members and all necessary erection details. Indicate supplemental bracing, strapping, splices, bridging, accessories and details required for proper installation.
- C. Submit detailed floor truss and roof truss layouts.
- D. Submit truss drawings, sealed and signed by a qualified registered Professional Engineer, verifying truss' ability to meet local code and design requirements. Include:
 - 1. Description of design criteria.
 - 2. Engineering analysis depicting member stresses and truss deflection.
 - 3. Truss member sizes and gauges and connections at truss joints.
 - 4. Truss support reactions.
 - 5. Top chord, Bottom chord and Web bracing requirements.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabrication shall be performed by a cold-formed steel truss fabricator with experience designing and fabricating cold-formed steel truss systems equal in material, design and extent to the systems required for this Project.
 - 1. Cold Formed steel truss system installation shall be performed by an experienced installer approved by the steel truss system fabricator.
- B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code—Steel" and AWS D1.3 "Structural Welding Code—Sheet Steel."
 - 1. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."

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1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's unopened containers or bundles, fully identified by name, brand, type and grade. Exercise care to avoid damage during unloading, storing and erection.
- B. Store trusses on blocking, pallets, platforms or other supports off the ground and in an upright position sufficiently braced to avoid damage from excessive bending.
- C. Protect trusses and accessories from corrosion, deformation, damage and deterioration when stored at job site. Keep trusses free of dirt and other foreign matter.

1.07 PROJECT CONDITIONS

- A. During construction, adequately distribute all loads applied to trusses so as not to exceed the carrying capacity of any one joist, truss or other component.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Ultra-Span Truss Manufacturer
Tremco Incorporated
3735 Green Road
Beachwood, OH 44122

2.02 COMPONENTS

- A. System components: Aegis Metal Framing, LLC ULTRA-SPAN@ and POSI-STRUT@ light gauge steel floor truss and roof truss components.
- B. Provide manufacturer's standard steel truss members, bracing, bridging, blocking, reinforcements, fasteners and accessories with each type of steel framing required, as recommended by the manufacturer for the applications indicated and as needed to provide a complete light gauge cold formed steel truss system.

2.03 MATERIALS

- A. Materials:
 - 1. All component gauges: Fabricate components of structural quality steel sheet per ASTM A653 with a minimum yield strength of 40,000 psi.
 - 2. Bracing, bridging and blocking members: Fabricate components of commercial quality steel sheet per ASTM A653 with a minimum yield strength of 33,000 psi.

- B. Ultra-Span steel truss components: Provide sizes, shapes and gages indicated.

- 1. Design Uncoated-Steel Thickness: 20 ga., 0.0350 inch (0.91 mm).
- 2. Design Uncoated-Steel Thickness: 18 ga., 0.0460 inch (1.20 mm).
- 3. Design Uncoated-Steel Thickness: 16 ga., 0.0570 inch (1.52 mm).
- 4. Design Uncoated-Steel Thickness: 14 ga., 0.0730 inch (1.90 mm).

- C. Finish: Provide components with protective zinc coating complying with ASTM A653, minimum G60 coating.

- D. Fastenings:

- 1. Manufacturer recommended self-drilling, self-tapping screws with corrosion-resistant plated finish. Fasteners shall be of sufficient size and number to ensure the strength of the connection.
- 2. Welding: Comply with AWS D1.1 when applicable and AWS D1.3 for welding base metals less than 1/8" thick.
- 3. Other fasteners as accepted by truss engineer.

2.04 FABRICATION

- A. Factory fabricate cold-formed steel trusses plumb, square, true to line and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.
 - 1. Fabricate truss assemblies in jig templates.
 - 2. Cut truss members by sawing or shearing or plasma cutting.
 - 3. Fasten cold-formed steel truss members by welding, screw fastening or other methods as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to cold-formed steel truss component manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
- B. Care shall be taken during handling, delivery and erection. Brace, block or reinforce truss

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as necessary to minimize member and connection stresses.

- C. Fabrication Tolerances: Fabricate trusses to a maximum allowable tolerance variation from plumb, level and true to line of 1/8 inch in 10 feet (1:960) and as follows:
1. Spacing: Space individual trusses no more than plus or minus 1/8 inch (3mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Squareness: Fabricate each cold-formed steel truss to a maximum out-of-square tolerance of 1/8 inch (3mm).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine structure, substrates and installation conditions. Do not proceed with cold-formed steel truss installation until unsatisfactory conditions have been corrected.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION, GENERAL

- A. General:
 1. Erection of trusses, including proper handling, safety precautions, temporary bracing and other safeguards or procedures are the responsibility of the Contractor and Contractor's installer.
 2. Exercise care and provide erection bracing required to prevent toppling of trusses during erection.
- B. Erect trusses with plane of truss webs vertical and parallel to each other, accurately located at design spacing indicated.
- C. Provide proper lifting equipment suited to sizes and types of trusses required, applied at lift points recommended by truss fabricator. Exercise care to avoid damage to truss members during erection and to keep horizontal bending of the trusses to a minimum.
- D. Provide framing anchors as indicated or accepted on the engineering design drawing or erection drawings. Anchor trusses securely at bearing points.
- E. Install roof framing and accessories plumb, square, true to line and with connections

securely fastened, according to manufacturer's recommendations.

1. DO NOT cut truss members without prior approval of truss engineer.
2. Fasten cold-formed steel roof framing by welding or screw fastening, as standard with fabricator. Wire tying of roof framing is not permitted.
 - a. Comply with AWS requirements and procedures for welding, appearance and quality of welds and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to cold-formed roof framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
 - c. Install roof framing in one-piece lengths, unless splice connections are indicated.
 - d. Provide temporary bracing and leave in place until trusses are permanently stabilized.
- F. Erection Tolerances: Install trusses to a maximum allowable tolerance variation from plumb, level and true to line of 1/8 inch in 10 feet (1:960) and as follows:
 - a. Space individual trusses no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.03 OPEN WEB FLOOR TRUSS INSTALLATION

- A. Install perimeter joist track or belly band sized to match trusses. Align and securely anchor or fasten track to supporting structure at corners, ends and spacing indicated or as recommended by the manufacturer.
- B. Install trusses bearing on supporting framing, level, straight and plumb, adjust to final position, brace and reinforce.
 1. Install trusses over supporting framing with a minimum end bearing of 1-1/2 inches (38mm).
 2. Reinforce ends of trusses with web stiffeners, end clips, joist hangers, steel clip angles, steel-stud sections or as otherwise recommended by manufacturer.
- C. Space trusses not more than 2 inches (51 mm) from abutting walls, and as follows:
 1. Truss Spacing: 12 inches (305 mm).

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2. Truss Spacing: 16 inches (406 mm).
 3. Truss Spacing: 24 inches (610 mm).
 4. Truss Spacing: As indicated.
- D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists or another combination of connected joists where indicated.
- E. Install truss reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement or by other method recommended by joist manufacturer.
- F. Install bridging at ends of trusses and at intervals indicated. Fasten bridging at each truss intersection as follows:
1. Bridging: Cold-rolled steel channel, fastened to bottom flange of trusses.
 2. Bridging: Flat, steel-sheet straps of width and thickness indicated, fastened to bottom flange of trusses.
 3. Bridging: Combination of flat, steel-sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of trusses and secure solid blocking to joist webs.
- G. Secure trusses to load-bearing interior walls to prevent lateral movement of bottom flange.
- H. Install miscellaneous truss framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors and fasteners to provide a complete and stable joist-framing assembly.

3.04 ROOF TRUSS INSTALLATION

- A. Install, bridge and brace trusses according to manufacturer's recommendations and requirements of this Section.
- B. Space trusses as follows:
1. Truss Spacing: 16 inches (406 mm).
 2. Truss Spacing: 24 inches (610 mm).
 3. Truss Spacing: 32 inches (813 mm).
 4. Truss Spacing: 48 inches (1220 mm).
- C. Do not alter, cut or remove truss members or connections of truss members.
- D. Erect trusses with plane of truss webs plumb

and parallel to each other, align and accurately position at spacing indicated.

- E. Erect trusses without damaging truss members or connections.
- F. Align truss bottom chords with load-bearing studs or continuously reinforce track to transfer loads to structure. Anchor trusses securely at all bearing points.
- G. Install continuous bridging and permanent truss bracing per truss design requirements.
- H. Install necessary roof cross and diagonal bracing per design professional recommendations.

3.05 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanizing repair paint according to ASTM A 780 and the manufacturer's instructions.