

SECTION 061753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

- A. Description:
 - 1. This section includes wood roof trusses, wood floor trusses, wood girder trusses, wood truss bracing, metal truss accessories.
- B. Related Documents and Standards:
 - 1. All referenced standards and cited publications shall be those specifically denoted within the applicable building code noted in the General Notes of the Construction Drawings.
 - 2. All Rough Carpentry work on this project shall confirm to the Construction Documents and applicable building code including referenced standards.
- C. Related Sections:
 - 1. Division 05 Specifications – Steel Construction.
 - 2. Division 06 Specifications - Wood

1.3 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
 - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
 - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Grade Marks: Identify all lumber and plywood by official grade marks.
 - 1. Lumber: Grade stamp to contain symbol of grading agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable, and condition of seasoning at time of manufacture.
- D. Source Limitations for Connector Plates: Obtain metal connector plates from a single manufacturer.
- E. Comply with applicable requirements and recommendations of the following publications:
 - 1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."

2. SBCA/TPI BCSI-B1 "guide for handling, installing, restraining and bracing of trusses."
3. SBCA/TPI BCSI-B7 "guide for handling, installing, & bracing of 3x2 & 4x2 parallel chord trusses."
4. SBCA/TPI BCSI-B3 "permanent restraint/bracing for trusses."

F. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

1.4 SUBMITTALS

- A. Product Data: For wood-preservative-treated lumber, fire-retardant treated lumber, metal-plate connectors, metal truss accessories, and fasteners.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Shop Drawings: Prepared by or under the supervision of a qualified professional engineer. Show fabrication and installation details for trusses. Shop drawings shall be sealed and signed by a Registered Design Professional licensed in the state in which the project is located.
1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
 2. Indicate sizes, stress grades, and species of lumber.
 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
 4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
 5. Show splice details and bearing details.
 6. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 7. Fabrication of trusses before shop drawings have been approved by the Architect is prohibited.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses to comply with all recommendations of SBCA/TPI BCSI-B1 "guide for handling, installing, restraining and bracing of trusses."
1. Deliver trusses to Project site banded in "sets". Unload to storage area using slings and lifting devices at indicated lift points. Trusses off-loaded from trucks or trailers by "dumping" or "rolling" shall be immediately rejected, marked, and removed from the Project site.
 2. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
 3. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
 4. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.6 COORDINATION

- A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

1.7 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
 - 1. Design Loads: As indicated on Construction Drawings.
 - 2. Maximum Deflection Under Design Loads:
 - a. Roof Trusses: Vertical deflection as indicated on Construction Drawings.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- A. See Rough Carpentry Specification in Division 06 – Wood.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. See Rough Carpentry Specification in Division 06 – Wood.

2.3 METAL CONNECTOR PLATES

- A. General: Fabricate connector plates to comply with TPI 1.

2.4 FASTENERS

- A. See Rough Carpentry Specification in Division 06 – Wood.

2.5 METAL TRUSS ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturer(s) noted in the Construction Drawings.
- B. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Construction Drawings.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 94 percent zinc dust by weight.

2.7 FABRICATION

- A. Fabricate trusses in accord with approved shop drawings and design computations.

- B. Fabricate trusses in permanent facility devoted principally to truss fabrication.
- C. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- D. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.
- E. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1.
 - 1. Position members to produce design camber indicated.
 - 2. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- F. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press. If truss is removed from jig to apply plate to reverse side, care shall be taken to prevent opening of joint.
- G. Each truss shall carry permanently affixed stamp of fabricator, indicating truss identification number with reference to shop and setting drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to SBCA/TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses as indicated in Shop Drawings, per requirements indicated in Construction Drawings, and no further than 24 inches o.c. Adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as indicated in Construction Drawings. Install fasteners through each fastener hole in truss accessories according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.
 - 1. Anchor trusses to girder trusses as indicated in Construction Drawings.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
 - 1. Install bracing to comply with SBCA/TPI BCSI requirements.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not cut or remove truss members.
- L. Restrict construction loads on roof and floor surfaces to prevent over-stressing of truss members.

- M. Replace wood trusses that are damaged or do not meet requirements.
 - 1. Do not alter trusses in field.

3.2 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

END OF SECTION 061753