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SECTION 06180 - GLUE-LAMINATED TIMBER

**PART 1 GENERAL**

1.01 WORK INCLUDED

- A. Provide prefabricated Glue-Laminated wood beams for roof framing, including bridging, bracing and anchorages as shown on the Drawings and specified herein. Glued-Laminated Timber is hereby defined to include wood members fabricated from 1" or 2" nominal thickness lumber glued face-to-face with the grain of all laminates approximately parallel longitudinally.

1.02 REFERENCE STANDARDS

- A. Except as otherwise specified herein or shown on the Drawings, comply with the latest editions of all applicable codes and regulations including the applicable requirements of the following Reference Standards and Codes which are hereby made a part of this Section, as they relate to the Glue-Laminated wood beams:
1. National Design Specification for Wood Construction, Latest Edition.
  2. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
  3. ASTM A446 - Sheet Steel, Zinc Coated by the Hot-Dip Process, Structural Quality.
  4. AWWA - American Wood Preservers' Association.
  5. TPI - Truss Plate Institute.
  6. UL - Underwriters' Laboratories, Inc.
  7. AITC Timber Construction Manual, latest edition.
  8. National Design Specifications For Stress-Grade Lumber And Its Fastenings.
  9. American Wood Preservers Association AITC standards reference this sheet.
  10. Structural Glued-Laminated Timber ANSI/AITC A190.1 latest edition.

1.03 SYSTEM DESCRIPTION

- A. Design Roof Live and Dead Load: 20 psf live load on 10 psf superimposed dead load, and 30 psf snow load, with deflection limited to 1/240.
- B. Wind Load: 15 psf uplift
- C. Design: Conform to requirements of National Design Specification for Wood Construction.
- D. Wood Members Species and Appearance Grade: Southern Pine complying with AITC 110 Premium Appearance Grade. Comply with ANSI/AITC A190.1 and applicable lumber association standards cited therein for grades required to achieve glued-laminated timber requirements for allowable stress appearance, fabrication limitations and species.

- E. Camber: Except as otherwise indicated, fabricate horizontal load bearing members with a camber as shown on the drawings.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer: Provide factory-glued timber units, produced by an AITC licensed firm, qualified to issue the AITC "Quality Inspected" Mark. Factory mark each piece of glued-laminated timber with AITC Quality Inspected Mark. Place AITC Mark on timber surfaces that will not be exposed in completed work.
- B. Design of Prefabricated Glue-Laminated Timber: Perform design under direct supervision of Professional Engineer registered in the State of Maine and experienced in structural framing design of Glue-Laminated Wood Beams.
- C. Lumber Grading Agency: Southern Pine Inspection Bureau.

#### 1.05 REGULATORY REQUIREMENTS

- A. Conform to BOCA building code for loads and other governing load criteria.
- B. Conform to applicable code for fire retardant requirements.

#### 1.06 SUBMITTALS

- A. Submit shop drawings, design calculations including rated load capacity of connectors, certification of connector capacities and manufacturer's license to fabricate Glue-Laminated Timber utilizing the proposed connector system, product data, including wood preservative materials, all signed and sealed by a Professional Engineer registered in the State of Maine.
- B. Submit certification, indicating glued-laminated timbers comply with requirements of ANSI/AITC A190.1-latest edition.
- C. Indicate framing system, loads and cambers, bearing and anchor details, bridging and bracing, framed openings, erection plan and other pertinent details.
- D. Submit shop drawings showing full dimensions of each member. Indicate species and stress grade of lumber, type of glue, and other variables in required work. Unit Structures, LLC shall furnish four (4) sets of shop drawings for approval by the buyers approving agency. The contractor shall verify dimensions and be responsible for coordinating same.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Schedule delivery and installation of glue-laminated wood members to avoid extended on-site storage. Comply with AITC III-“Recommended Practice for Protection of Structural Glued-Laminated Timber during Transit, Storage and Erection.”
- B. Keep laminated wood members as dry as possible during all phases of construction. If jobsite storage is necessary, place members on blocking away from ponding water and cover with a waterproof covering which will not allow ultraviolet ray penetration.
- C. Do not leave members partially exposed due to potential sun bleaching. Do not allow moisture to accumulate inside wrapping. Do not remove wrapping on individually wrapped members until it will serve no useful purpose, including protection from the weather, soiling and damage from work of other trades. It is imperative that the field handling instructions sheet that comes with the material shipment be thoroughly reviewed before unloading.

## **PART 2 PRODUCTS**

### **2.01 ACCEPTABLE MANUFACTURERS**

- A. Glue-Laminated Timber shall be as manufactured by: Unit Structures, LLC, P.O. Box 669, Magnolia, AR 71754; Filler King Company, P.O. Box 185 Homedale. ID 83628; Timber Systems, 162 S. Saginaw, Lapeer, MI 48446, or other approved equal.
- B. Products of other manufacturers which meet the requirements of the Drawings and this Section may be accepted.

### **2.02 MATERIALS**

- A. Structural Lumber: Southern Pine Premium Appearance Grade. Comply with ANSI/AITC A190.1 and applicable lumber association standards cited therein for grades required to achieve glued-laminated timber requirements for allowable stress appearance, fabrication limitations and species. Provide sizes and shapes shown on plans. Final cross sections will be based on manufacturer’s standard widths and depths. Manufacturer to provide design values (stresses) to fulfill structural demand in accordance with applicable provisions of AITC 117 “Design, Standard Specifications for Structural Glued-Laminated Timber of Softwood Species.”
- B. Steel Connectors: Provide fabricated steel connections to join laminated to laminated, and laminated to supports exclusive of items embedded in concrete or welded to structural steel or connected to stud walls.
  - 1. Steel work to conform to A.I.S.C. Specifications.

2. Steel shall conform to ASTM A-36.
  3. Bolts shall conform to ASTM A-307.
  4. Shop paint fabricated steel with one coat of rust inhibitive primer. Bolts are not shop painted with primer.
- C. Fasteners: Galvanized for exterior, high humidity, and for treated wood locations, and plain finish elsewhere. Size and type to suit condition.
- D. Adhesives: Shall be wet-use (waterproof) complying with ANSI/AITC A190.1.
- E. Finish: Factory applied penetrating sealer or factory finished with (1) coat of manufacturer's standard color selection stain, Manufacturer will submit samples of finish for approval.

#### 2.03 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): Pressure treat lumber prior to gluing with Pentachlorophenol in mineral spirits in accordance with AITC 109 "Standard for Preservative Treatment of Structural Glued-Laminated Timber."

#### 2.04 FABRICATION

- A. Verify dimensions and site conditions prior to fabrication.
- B. Cut members accurately to length to achieve tight joint connections.

### **PART 3 EXECUTION**

#### 3.01 INSPECTION

- A. Verify that supports and openings are ready to receive Glue-Laminated Beams.
- B. Verify sufficient end bearing area.
- C. Beginning of installation means acceptance of existing conditions.

#### 3.02 PREPARATION

- A. Coordinate placement of bearing and support items.

#### 3.03 INSTALLATION

- A. Install Glue-Laminated Beams in accordance with manufacturer's instructions.
- B. Place beams true to line and level.
- C. Provide temporary bracing to hold beams in place until permanently secured. All members must be adequately braced until the complete structural system (all pertinent construction materials) has been installed.
- D. Place permanent bridging, bracing, and anchors to maintain beams straight and in correct position before inducing loads.
- E. Correction of minor misfits and a reasonable amount of cutting, reaming, redrilling or alignment with drift pins will be considered a legitimate expense of erection.

3.04 TOLERANCES

- A. Framing Members: The anchor bolt settings and/or bearing elevations must be held within 1/8" of the dimensions shown on the shop drawings.

\*\*\*END OF SECTION\*\*\*