SECTION 061300

HEAVY TIMBER CONSTRUCTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Round timber frame structural assemblies.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete for concrete foundations.

B. Section 05400 - Cold Formed Metal Framing.

C. Section 06100 - Rough Carpentry for related framing systems.

D. Section 06170 - Prefabricated Structural Wood.

E. Section 06175 - Wood Trusses.

1.3 REFERENCES

A. International Log Builders Association (ILBA): Log Span Tables for Floor Joists, Beams and Roof Support Systems.

B. US Green Building Council (USGBC): LEED v4.

C. US Dept of Agriculture Forest Service: Wood Handbook - Wood as an Engineering Material.

D. Timber Construction Manual, Herzog, Natterer, Schweitzer, Bolz, Winter.

E. American Institute of Timber Construction: AITC 108 - Standard for Heavy Timber Construction.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide engineered round timber structural assemblies meeting or exceeding code required design loads:
   1. For 1-2 unit housing, comply with ILBA Span Table Guidelines, and with design values database derived from destructive testing at the United States Department of Agriculture Forest Products Lab in Madison, WI.
   2. For commercial and institutional construction, comply with manufacturer's structural engineering data.
   3. Deflection limits shall not exceed 1/360 for floor/ceiling systems with wallboard finishes and 1/240 for roof systems with wood ceiling finishes.

B. Delegated Design: Provide structural engineering shop drawings for timber construction, prepared by a professional engineer licensed in the jurisdiction of the Project site and engaged by the supplier of timbers.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used.
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Provide detailed shop drawings including materials, connections and relationship with adjacent construction. Include small diameter timber beams, columns, branched columns and trusses with engineered connection points using wood and steel connectors and fasteners. Shop drawings shall be stamped by a professional engineer licensed in the jurisdiction of the Project.

D. Sustainable Design Submittals: Submit manufacturer's documentation of materials which contribute to USGBC LEED Credits for the following categories. Document compliance in accordance with the LEED v4 requirements.
1. MR114 - Wood certification by the Forest Stewardship Council (FSC) and chain of custody documentation.
2. MR115 - Declare Label for WholeTrees Structural Components.
3. MR115 - Health Product Declaration for WholeTrees Structural Components

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 8 years experience in timber frame construction.

B. Installer Qualifications: Minimum 2 years experience installing similar products and acceptable to the manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in accordance with manufacturer's recommendations. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this Section. Agenda shall include sequence of construction, work of related trades, protection of materials and similar items.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: WholeTrees® Structures, which is located at: 800 Williamson St.; Madison, WI 53703; Tel: 608-310-5282; Email: info@wholetrees.com; Web: www.wholetrees.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

A. Columns: Factory fabricated with engineered connection points using either wood and steel connectors or fasteners.
1. Column diameters within manufacturer's standard limits, typically 4 inches (101 mm) to 24 inches (610 mm).
2. Column lengths within manufacturer's standard limits, typically 7 feet (2 m) to 40 feet (11 m).
3. Columns peeled and seasoned or kiln dried to 19 percent or lower moisture level to a 3” depth.
4. Treated with one coating of Timbor or another approved insecticide/fungicide.
5. Finish: Unfinished.
6. Finish: One coat of Heritage clear finish or approved alternative.
7. Species as selected by Architect and acceptable to manufacturer.
8. Columns milled flat on one or two sides to accept wall assemblies.
9. Source columns from Forest Stewardship Council certified forests.

B. Branched Columns: Factory fabricated with engineered connection points using wood or steel connectors or fasteners.
1. Column diameters within manufacturer's standard limits, typically 4 inches (101 mm) to 24 inches (610 mm).
2. Column lengths within manufacturer's standard limits, typically 7 feet (2 m) to 40 feet (11 m).
3. Columns peeled and seasoned or kiln dried to 19 percent or lower moisture level.
4. Treated with one coating of Timbor or another approved insecticide/fungicide..
5. Finish: Unfinished.
6. Finish: One coat of HempShield clear finish or approved alternative.
7. Species as selected by Architect and acceptable to manufacturer.
8. Columns milled flat on one or two sides to accept wall assemblies.
9. Source columns from Forest Stewardship Council certified forests.

C. Beams: Factory fabricated with engineered connection points using wood or steel connectors or fasteners.
1. Beam diameters within manufacturer's standard limits, typically 4 inches (101 mm) to 24 inches (610 mm).
2. Beam lengths within manufacturer's standard limits, typically 3 feet (1 m) to 50 feet (15 m).
3. Beams peeled and seasoned or kiln dried to 19 percent or lower moisture level.
4. Treated with one coating of Timbor or another approved insecticide/fungicide.
5. Finished with one coating of HempShield clear finish or alternative.
6. Species as selected by Architect and acceptable to manufacturer.
7. Beams milled flat on one or two sides to accept floor deck or roof deck.
8. Columns can be sourced from Forest Stewardship Council certified forests.

D. Trusses: Factory fabricated with engineered connection points using wood or steel connectors or fasteners.

1. Design of truss as indicated on the drawings, including but not limited to parallel chord trusses, king post trusses, queen post trusses, and bowstring trusses.
2. Wood truss member diameters within manufacturer's standard limits, typically 4 inches (101 mm) to 24 inches (610 mm).
3. Wood truss lengths within manufacturer's standard limits, typically 7 feet (2 m) to 42 feet (12 m).
4. Wood truss members peeled and seasoned or kiln dried to 19 percent or lower moisture level.
5. Treated with one coating of Timbor or another approved insecticide/fungicide..
6. Finished with one coating of HempShield clear finish or alternative.
7. Species as selected by Architect and acceptable to manufacturer.
8. Wood truss members milled flat on one side to accept floor deck or roof deck.
9. Source wood truss members from Forest Stewardship Council certified forests.
10. Steel truss members for parallel chord truss with length and diameter to meet engineering specifications. Depth to meet approved shop drawings.

E. Connectors and Fasteners: Interior grade or exterior grade finishes and steel per service and engineering requirements.

2.3 FABRICATION

A. Inspect columns, beams and truss members with regard to ability to select stand, visual, and digital timber grading as applicable, and post peeling inspection process.

B. Mill structural system wood members flat on one side to accept wall, roof, ceiling or deck assemblies in accordance with approved shop drawings.

C. Factory fabricate timbers to the greatest extent practical, including pre-drilling.

D. Fabricate, disassemble, stage and ship structural system connections to job site.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared. If substrate preparation is improper, notify Architect before proceeding.

3.2 INSTALLATION

A. Install materials in accordance with manufacturer's recommendations and with approved shop drawings. Installation shall be performed by the manufacturer or an installer acceptable to the manufacturer.
1. Schedule delivery and installation of timbers to avoid extended on-site storage and to avoid delaying work of other trades that follow.
2. Prepare surfaces using methods recommended by the manufacturer.
3. Erect framing true and plumb and in proper relationship with adjacent construction.
4. Do not cut members without first receiving approval from the manufacturer. Where field fitting is required, consult and comply with manufacturer's recommendations.

3.3 PROTECTION

A. Protect installed products from construction activities until completion of project to ensure no damage occurs in construction.

B. Touch-up, repair minor nicks, dings and gouges to timber members before Substantial Completion. Replace damaged members as directed where damage is beyond satisfactory repair.

END OF SECTION