

1. GENERAL

Procedures and Quality Control Manual for:

[Company Name]

[Address 1]

[Address 2]

[Phone]

2. PERSONNEL

Personnel are trained on-the-job for each of the positions below: [Put all named personnel and their experience in an appendix.]

2.1. Fabrication Manager

Fabrication Manager shall be directly responsible to management for the direction of fabrication. The Fabrication Manager shall have a minimum of [5 years] experience in the safe operation of equipment and handling of materials. This individual shall be familiar with all aspects of the fabrication procedures. [See Appendix A.]

2.1.1. Fabrication Personnel

Fabrication personnel shall have on-the-job training of the quality control and fabrication processes employed at the facility for a minimum of [5 years]. List of personnel is maintained in Appendix A.

2.2. Quality Control Manager

Quality Control Manager shall be directly responsible to the management for the direction and maintenance of the quality control system. It shall be the responsibility of this person to ensure that the fabrication procedures and the finished product conform to the job specifications and requirements herein. This person shall also maintain records in accordance with the requirements herein. The Quality Control Manager shall have a minimum of [5 years] experience in the procedures and quality control system employed at the fabrication facility.

2.3. Organizational Chart

[Insert organization chart that shows that QC and Fabrication Managers answer directly to Management, not production.]

3. FACILITIES AND EQUIPMENT

3.1. Overview of Plant

[Drawing? Map? Diagram?]

3.2. Facilities

Timbers and structural glued laminate timbers are stored in the area marked "Timbers Storage" shown in the diagram in section 3.1. Space and shelter for storage of timber materials will ensure [how?] that the moisture content and temperature are maintained within acceptable limits, protecting the timber from checking, decay, insect attack, and other deterioration or damage.

Metal components are stored in the area marked “Metal Components Storage” shown in the diagram in section 3.1. Space and shelter for storage of metal components will ensure [how?] that degradation and damage do not occur.

Fabricating facilities as shown in the diagram in section 3.1, are such that moisture content and temperature of timbers is maintained within acceptable limits during the fabrication process [how?].

3.3. Fabrication Equipment [Ref: 8.3(a)]

Insert list of major fabrication equipment, along with general specifications (make and model, as applicable). Reference location of each on the plant diagram. List shall include at a minimum:

- (a) Saws, drills, and/or other machinery capable of producing clean-cut holes and surfaces without crushing or tearing of wood fibers and within the tolerances of this standard.
- (b) Measuring devices capable of ensuring the placement of holes, cuts, and other fabrication within the tolerances of this standard.
- (c) All tools required for the proper installation of split rings and shear plates and any other specialty fasteners if they are used.
- (d) Equipment suitable for marking individual fabricated members for identification.

3.4. Quality Control Equipment [Ref: 8.3(b)]

Insert list of major QC equipment, along with general specifications (make and model where applicable). Reference location of each on the plant diagram. Calibration of equipment shall be maintained and verified regularly. List shall include at a minimum:

- (a) The necessary gauges, calipers, tapes, and instruments to assure conformance with the fabrication tolerances of this standard.
- (b) Moisture meter; and oven test equipment or other approved equipment for checking moisture meters.
- (c) Identification marking equipment.

4. SHOP DRAWINGS

When required, shop drawings shall have the approval of the customer and/or the engineer responsible for the performance of the component or assembly. Questions pertaining to type, grade, quality or dimensions of shall be documented [where? What form?].

5. MATERIALS

All materials shall be of grade, quality, and dimensions specified in the approved shop drawings and specifications. Deviations from the following whether approved by the buyer or not shall be thoroughly documented.

5.1. Structural Glued Laminated Timber

All structural glued laminated timber shall be manufactured in accordance with ANSI/AITC A190.1. The following shall be documented by Quality Control:

- (a) For material manufactured outside the premises of the fabricating facility, quality marks and/or certificates of conformance as required by ANSI/AITC A190.1 shall be verified by upon receipt of the material.
- (b) The combination symbol or stress class of the fabricated timber shall correspond to that specified on the approved shop drawings or specifications.
- (c) The moisture content of structural glued laminated timber during storage and fabrication shall be monitored and maintained at a level of 16% or below unless the fabricated timbers will be used in a wet environment and have been properly treated with pressure preservatives according to AWWA Standards U1-06 and T1-06. Documentation evidencing final use environments and treatment certifications shall be kept and made available for review by the accredited inspection agency.
- (d) The size of structural glued laminated timber components shall be as specified on the approved shop drawings and specifications.
- (e) Ripping of structural glued laminated timber across its depth or width to make smaller size members shall not be permitted, except by laminated timber manufacturers and as permitted by ANSI/AITC A190.1.
- (f) Tapered members shall be obtained from a certified structural glued laminated timber manufacturer with taper cuts fabricated during the manufacturing process, unless field tapering is permitted by the specifications. Tapering will not occur on the tension side of the beam.

5.2. Solid Wood Components

Solid sawn timber components shall be of size, grade, species, and type specified on the approved shop drawings or specifications, and at the time it is brought into the facility, shall bear the appropriate mark of an ALSC accredited lumber grading agency.

5.3. Other Wood Components

Other timber components such as structural composite lumber composites shall be of size, grade, species, and type specified on shop drawings or specifications.

5.4. Hardware

Hardware shall be of the grade, size, and type specified on the approved shop drawings or specifications. Metal components shall be protected from weather and other degrading effects during storage and fabrication by [how is this done?].

- (a) Steel plates, hangers, etc. shall be of A36 grade steel unless specified otherwise.
- (b) ASTM A307 bolts and lag screws meeting the tolerances of ANSI/ASME B18.2.1 shall be used unless specified.
- (c) Shear plates shall meet the requirements of ASTM D5933.
- (d) Split rings shall be of SAE 1010 hot rolled carbon steel.
- (e) Timber rivets shall meet the requirements of ASTM F1667.
- (f) Other fasteners, including nails, spikes, wood screws, and drift pins, shall be of the size, type, and quality specified.

6. FABRICATION

The product shall exhibit a high quality of workmanship which meets all of the requirements of AITC 115. Holes and cut surfaces shall be well machined without crushing or tearing or wood fibers. Deviations from the following whether approved by the buyer or not shall be thoroughly documented.

6.1. Patterns

Jigs, patterns, templates, or other suitable means shall be used for all complicated and multiple assemblies to ensure accuracy, uniformity, and control of all dimensions. Connection hardware shall be permitted to be used as a template for locating holes and fasteners.

6.2. Connectors

Machining for timber connectors including split rings and shear plates shall be performed with tools designed or recommended by the connector manufacturer specifically for that purpose. See section 3.3.

6.3. Welds

All welding shall be performed by a welder certified for the specific techniques, and positions being used in conformance to applicable standards of the American Welding Society or approved by a Certified Weld Inspector. When welding or cutting of metal by torch is required, suitable precautions are taken to avoid damage to timber components. **[Insert example precautions here.]** Welds shall not be located where they will interfere with the assembly of the connection.

6.4. Holes and Cuts

All cutting, drilling, and framing shall comply with good practice in the industry and applicable specifications. Placement and sizes of holes and cuts shall be randomly verified by Quality Control a minimum of **[4 times]** daily in order to ensure consistent cutting and drilling practices.

- (a) Spacing and location of all holes for fastenings within a joint shall be in accordance with the shop drawings and specifications with tolerances as agreed upon by the designer and fabricator. The fabrication of members to be assembled at any joint shall permit assembly.
- (b) Bolt holes for structural connections shall be 1/16 in. larger than the bolt diameters for bolts 1/2 in. or larger in diameter, and shall be 1/32 in. larger than the bolt diameter for bolts smaller than 1/2 in. diameter, unless specified otherwise.
- (c) Holes for bolts shall be true within tolerances agreed upon by the designer and the fabricator. Holes in connecting parts shall line up as required to permit assembly.
- (d) Lengths of members or assemblies shall be within plus or minus 1/16 in. for members up to 20 ft in length and shall be within plus or minus 1/16 in. per 20 ft of length or fraction thereof for members or assemblies over 20 ft long, unless otherwise specified or agreed upon by the designer and fabricator.
- (e) Trimmed ends shall be square within 1/16 in. per foot of depth and width, unless otherwise specified or agreed upon by the designer and fabricator.
- (f) Bearing surfaces shall be cut to provide contact over the entire surface, unless otherwise specified or agreed upon by the designer and fabricator.
- (g) Sufficient clearance shall be provided between the sides of steel connection hardware and wood members to permit installation. The side clearances between nonbearing surfaces of

steel assemblies and timber members shall not exceed 1/8 in. per side, unless otherwise specified or agreed upon by the designer and fabricator.

- (h) Variations in tolerances shall be permitted when approved by the engineer responsible for the performance of the component or assembly. The engineer's approval shall be available for review by the accredited inspection agency.

6.5. Piece Mark Identification

If more than one size or type of a fabricated member is to be shipped, members shall be marked [how] to reference or keyed [how] to the assembly and/or erection diagrams.

7. ASSEMBLY

When required, shop assembly of components shall ensure that parts lie in the proper plane (or planes) and are properly fitted.

8. REFABRICATION

Members which have been misfabricated shall be permitted to be subsequently refabricated with approval from the engineer responsible for the performance of the component or assembly.

9. QUALITY CONTROL SYSTEM

9.1. Records

Records of quality control procedures shall be maintained for a minimum of five years.

9.2. Inspection and Test Procedures

The quality control system shall ensure that materials meet job specifications and that fabrication conforms to the tolerances of this standard. Records of inspections and tests shall be maintained.

9.2.1. Material Quality

The quality control supervisor or his agent will verify and document that all materials are of the grade and quality required by the shop drawings, specifications, and AITC 117 by [how? Where?]. For this purpose, quality marks, certificates, or other identification from the material manufacturer shall be satisfactory.

9.2.2. Moisture Content

The moisture content of wood components shall be determined by moisture meter, calibrated [monthly] in accordance with ASTM D4444, oven drying based on ASTM D4442. The moisture content shall be measured on a sufficient number of pieces and documented [where?], before fabrication to assure conformance.

9.2.3. Fabrication Controls

The quality control supervisor shall determine that the jigs, patterns, templates, stops, or other means used to mark or hold members during fabrication are set up and maintained so that the finished pieces will meet the requirements of this standard and the job specifications. Fabricated pieces and assemblies shall be randomly checked a minimum of [4 times] daily to ascertain that the requirements of AITC 115 and this manual are being consistently met.

9.2.4. Product Inspection

All finished products shall be inspected by the quality control supervisor or his agent for conformance with the requirements of AITC 115, this manual, and the applicable job specification as to dimensions; shape; type, quality, and location of fastenings and connectors; material quality; and moisture content.

Documentation of each inspection will be recorded [where? On what form?].

10. MARKING

All fabricated structural timber components and assemblies which conform to the requirements of AITC 115 and this manual shall be marked by the quality control supervisor or his agent with the “Certified Fabricator” mark supplied by AITC.

Each piece or assembly shall bear at least one mark containing the required identification.

[Insert Annexes: Personnel and their experience; forms used for documentation; etc.]