

Construction Specification 783 – Timber Fabrication and Installation

1. Scope

The work shall consist of the construction of timber structures and timber parts of composite structures.

2. Material

Structural timber and lumber shall be graded in accordance with the grading rules and standards, applicable to the specified species adopted by a lumber grading or inspection bureau or agency recognized as being competent.

All material shall be sound wood free from decay and disease damage. Boxed heart pieces of Douglas fir or redwood shall not be used in stringers, floor beams, caps, posts, sills, or other principal structural members.

All timber and lumber specified for use without preservative treatment shall contain a minimum of 75% heartwood on any diameter or on any side or edge, measured at the point where the greatest amount of sapwood occurs. The sizes specified are nominal sizes. Unless otherwise specified, the material shall be furnished in American Standard dressed sizes.

Each piece of timber and lumber shall be legibly stamped or branded with an official grade identification. Plywood shall be legibly stamped with an official mark designating the grade, type and surface finish as described in the cited Product Standard.

Treated timber and lumber shall be impregnated with the specified type and quantity of preservative and in the manner specified in this specification. Treatment processes may use any combination of atmospheric air, initial air pressure or vacuum and pressure that will achieve the desired results without damaging the wood. The wood shall be treated with the specified type of preservative.

Treated lumber, timber, piles, poles or posts shall be free from heat checks, water bursts, excessive checking, chafing damage or from any other damage or defects that would impair their usefulness or durability for the purpose intended. The use of s-irons is not permitted. Holes bored for tests shall be filled with tight fitting, treated wood plugs.

Each treated wood item delivered to the job site shall be identified with a label, brand or stamp that lists: the product name or logo; treatment company name and location; names of the preservative components; treatment end use category; minimum retention; and the applicable AWP treatment standard or the number of the evaluation report from an evaluation service recognized by the International Code Council at <http://www.iccsafe.org>.

All fasteners, connectors and any other metal contacting preservative treated wood shall be hot-dip galvanized or stainless steel. Unless otherwise specified, all fasteners, connectors and any other metal contacting ammonical copper zinc arsenate (AVZA), alkali copper quaternary (ACQ), micronized copper quaternary (MCQ), copper azole (CA) or micronized copper azole (MCA) treated wood shall be stainless steel. Galvanizing for connectors made from steel sheet shall conform to ASTM A653, Class G185. Galvanizing for all other metal in contact with preservative treated wood shall conform to ASTM A123. Stainless steel shall be AISI Type 304 or 316.

Hardware, except cast iron, shall be galvanized as specified for iron and steel above. Unless otherwise specified, structural steel shapes, plates, and rods shall not be galvanized. Nuts, driftbolts, dowels, and screws shall be either wrought iron or steel.

Steel bolts shall conform to the requirements of ASTM A307. When galvanized or zinc-coated bolts are specified, the zinc coating shall conform to the requirements above.

Washers shall be ogee gray iron castings or malleable iron castings unless washers cut from medium steel or wrought iron plate are specified on the drawings or in section 7 of this specification. Cast washers shall have a thickness equal to the diameter of the bolt and a diameter equal to four times the thickness. The thickness for plate washers shall be equal to half the diameter of the bolt, and the sides of the square shall be equal to four times the diameter of the bolt. Holes in washers shall have a maximum diameter of 1/8 inch larger than the diameter of the bolt. Split ring connectors, tooth ring connectors, and pressed steel shear plate connectors shall be manufactured from hot-rolled, low carbon steel conforming to the requirements of ASTM A 711, Grade 1015. Malleable iron shear plate connectors and spike grid connectors shall be manufactured in conformance with the requirements of ASTM A 47, Grade No. 35018. All connectors shall be of approved design and the type and size specified.

Structural shapes, rods, and plates shall be structural steel conforming to the requirements of ASTM A36. No welds are permitted in truss rods or other main members of trusses or girders.

3. Workmanship

All framing shall be true and exact. Timber and lumber shall be accurately cut and assembled to a close fit and shall have even bearing over the entire contact surface. No open or shimmed joints will be accepted. Nails and spikes shall be driven with just sufficient force to set the heads flush with the surface of the wood. Deep hammer marks in wood surfaces shall be considered evidence of poor workmanship and may be sufficient cause for rejection of the work.

Holes for round driftpins and dowels shall be bored with a bit 1/16 inch smaller in diameter than that of the driftpin or dowel to be installed. The diameter of holes for square driftpins or dowels shall be equal to one side of the driftpin or dowel. Holes for lag screws shall be bored with a bit not larger than the body of the screw at the base of the thread.

Washers shall be used in contact with all bolt heads and nuts that would otherwise be in contact with wood. Cast iron washers shall be used when the bolt will be in contact with earth. All nuts shall be checked or burred effectively with a pointed tool after finally tightened.

Unless otherwise specified, surfacing, cutting, and boring of timber and lumber shall be completed before treatment. If field cutting or field repair of treated timber and lumber is approved, all cuts and abrasions shall be carefully trimmed and coated with copper naphthenate preservative containing a minimum of 2.0 percent copper metal. The treatment preservative shall be applied according to the product label. Any excess preservative not absorbed by the wood member shall be cleaned from the surface prior to the use of the member. Bored holes for connectors or bolts may be treated by pumping coal-tar roofing cement meeting ASTM D5643 into the holes using a caulking gun or similar device. After timber assembly, any unfilled holes shall be plugged with tightly fitting wooden plugs that have been treated with preservative as specified.

4. Handling and storing material

All timber and lumber stored at the site of the work shall be neatly stacked on supports a minimum of 12 inches above the ground surface and protected from the weather by suitable covering(s). Untreated material shall be staked and stripped to permit free circulation of air between the tiers and courses. Treated timber may be close-staked. The ground surface for the stockpile of timber and lumber shall be free of weeds and rubbish. The use of pointed tools except end hooks is not permitted in the handling of structural timber and/or lumber. Treated timber shall be handled with rope slings or by other methods that prevent the breaking or bruising of outer fibers or penetration of the surface in any manner.