

## Timber Fabrication and Installation

### 1. SCOPE

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

### 2. MATERIALS

#### Timber and Lumber Grading

Structural timber and lumber shall be graded in accordance with the grading rules, applicable to the specified species, adopted by a lumber grading or inspection bureau or agency recognized as being competent and that conform to the basic principles of ASTM Standard D-245. The material supplied according to the commercial grading rules shall be of equal or greater stress value than the specified stress grade.

Plywood shall conform to the requirements of Product Standard PS 1-74 for the grade, species or group, and type specified.

#### Quality

All materials shall be sound wood, free from all rot and defects. No boxed heart pieces of Douglas fir or Redwood shall be used in stringers, floor beams, caps, posts, sills, or other principal structural members. Boxed heart pieces are defined as timber so sawed that at any section in the length of a sawed piece the pith lies entirely inside the four faces.

#### Heartwood Requirements

All timber and lumber specified for use without preservative treatment shall contain not less than 75 percent heartwood on any diameter or on any side or edge, measured at the point where the greatest amount of sapwood occurs. This requirement shall not apply to timber and lumber for which

pressure treatment with wood preservative is specified.

#### Sizes

The sizes specified are nominal sizes (*milled to full size dimension*). Unless otherwise specified the material shall be furnished in American Standard dressed sizes.

#### Marking

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

#### Preservative Treatment

The preservative treatment in this specification applies only to structures for *Agricultural use* and only to portions of the structure shown on the drawings or described in the Special Provisions needing to be treated.

*To minimize impacts on species of concern, federally listed species, and/or designated critical habitat, the project shall be installed during times when salmonids are less likely to be spawning.*

*Unless otherwise stated in the Special Provisions, "Treated wood used in this project shall be produced in compliance with the "Best Management Practices for the Use of Treated Wood in Aquatic and other Sensitive Environments" (BMP Manual) published by the Western Wood Preservers Institute.*

*Allowable water-borne preservatives include Chromated Copper Arsenate (CCA), Ammoniacal Copper Zinc Arsenate (Chemonite) (ACZA), Carbonate formulation and Copper Azole (CA).*

## CONSTRUCTION SPECIFICATION

*The wood species shall be as shown on the drawings or the Special Provisions. Douglas fir, (interior) treated with CCA, shall be treated with a minimum 2.1% solution strength and to a 4-hour pressure cycle, or to refusal. All other species shall be treated in accordance with the American Wood Protection Association, AWPAs Use Category UC4B. A Mill Certification is required from the Supplier if required in the Special Provisions.*

### Hardware

Hardware, except cast iron, shall be galvanized. Unless otherwise specified, structural steel shapes, plates and rods shall not be galvanized. Nuts, drift-bolts, dowels, and screws shall be either wrought iron or medium steel. Steel bolts shall conform to the requirements of ASTM Specification A-307.

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. Cast washers shall have a thickness equal to the diameter of the bolt and a diameter equal to four times the thickness. For plate washers the thickness shall be equal to one-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 not be more than one-eighth inch greater in diameter than 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 Designation A-711, Grade 1015. Malleable iron shear plate connectors and spike grid connectors shall be manufactured in conformance with the requirements of ASTM Designation A-47, Grade 35018. All connectors shall be of approved design and the type and size specified.

## Timber Fabrication and Installation MT-114-2

Structural shapes, rods, and plates shall be structural steel conforming to the requirements of Construction Specification MT-113. No welds will be 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 surfaces. 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 sufficient cause for rejection of the work.

Holes for round drift-pins and dowels shall be bored with a bit 1/16-inch smaller in diameter than that of the drift-pin or dowel to be used. The diameter of holes for square drift-pins or dowels shall be equal to one side of the drift-pin or dowel. Holes for machine bolts and rods 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 the final tightening.

Unless otherwise specified, surfacing, cutting and boring of timber and lumber shall be done before treatment. If cutting of treated timber and lumber is authorized, all cuts and abrasions shall be carefully trimmed and coated with two brush coats of copper naphthenate preservative containing a minimum of 2.0% copper metal. The treatment preservative shall be applied according to the product label. Any excess

## CONSTRUCTION SPECIFICATION

## Timber Fabrication and Installation MT-114-3

preservative not absorbed by the wood member shall be cleaned off prior to use.

All recesses and holes cut or bored in treated timber and lumber shall be swabbed with not less than three coats of wood preservative or filled by pumping coal-tar roofing cement meeting ASTM D-5643 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 MATERIALS

All timber and lumber stored at the site of the work shall be neatly stacked on supports at least 12 inches above the ground surface and protected from the weather by suitable covering. Untreated material shall be so stacked and stripped as to permit free circulation of air between the tiers and courses. Treated timber shall be close-stacked. The ground underneath and in the vicinity of all stacks shall be cleared of weeds and rubbish. The use of cant hooks, peavies, or other pointed tools, except end hooks will not be permitted in the handling of structural timber or lumber. Treated timber shall be handled with rope slings or other methods that will prevent the breaking or bruising of outer fibers, or penetration of the surface in any manner.

### 5. PAINTING

Except as otherwise specified, surfaces designated for painting shall be primed with one coat of alkyd based exterior pigmented primer and then finished with two coats of alkyd based exterior brown paint.

### 6. MEASUREMENT AND PAYMENT (Used only if applicable)

For items of work for which specific unit prices are established, each item will be

measured to the nearest unit applicable. Payment for each item will be made at the agreed-to unit price for that item. For items of work for which specific lump sum prices are established, payment will be made at the lump sum price.

Such payment will constitute full compensation for all materials, labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Compensation for any item of work shown on the drawings or described in the special provisions but not listed on the bid schedule will be considered incidental to and included in the pay items listed on the bid schedule.