SECTION 714 - STRUCTURAL TIMBER AND RELATED MATERIALS

714.01 Structural Timber and Lumber.

(A) General. Lumber and timber shall be of Douglas fir (coast or inland) or redwood species.

A certificate of inspection shall be submitted from a lumber inspection agency certified by the American Lumber Standard Committee Board of Review with each shipment of lumber, timber, or timber piling, whether treated or untreated.

Timber and lumber may be subject to inspection after arrival at the work site. Rejected pieces shall be replaced at no increase in contract price or contract time.

Timber used without preservative treatment shall contain more than 85 percent heartwood on the girth or on each face, side, or edge, measured where the greatest quantity of sapwood occurs.

For pressure treated timber, there will be no heartwood requirement.

(B) Grading Rules. Douglas fir shall be graded in conformance with requirements of grading and dressing rules of the West Coast Lumber Inspection Bureau, or standard grading rules of the Western Wood Products Association.

Redwood shall be graded in conformance with standard specifications for structural grades of California redwood approved by the Board of Review, American Lumber Standards Committee and published by the Redwood Inspection Service.

714.02 Timber Preservatives. Preservatives, treatment, and results of treatment shall conform to AWPA Standards U1, “User Specification for Treated Wood” and T1 “Processing and Treatment.” When preservative treatment of timber and lumber is required, treatment shall conform to AWPA Use Category 4B unless otherwise indicated in the contract documents. Type of treatment shall be as indicated in the contract documents.

Handling and care of pressure treated wood products shall conform to requirements of AWPA Standard M4.

Treating plant shall imprint legible symbols in the end of all lumber and timber treated, indicating name of treating company and type and year of treatment in accordance with AWPA Standards M1 and M6.

When kiln drying prior to treatment is indicated in the contract documents, moisture content after drying and immediately prior to treating shall not exceed 25 percent as measured at midpoint of the piece in the outer 1 inch, using an accepted type of moisture meter in accordance with ASTM D 4444. Unless otherwise indicated in the contract documents, lumber and timber treated with waterborne preservatives shall be dried after treatment and shall have moisture content of not more than 25 percent at time of shipment to jobsite.

714.03 Hardware for Timber Structures. Machine bolts, drift bolts, and dowels may be wrought iron or medium steel. Washers may be cast O-gee or malleable castings or may be cut from medium steel or wrought iron plate.

Machine bolts shall have square heads and nuts, conforming to ASTM A 307. Nails shall be cut or round wire of standard form. Spikes shall be cut, wire, or round wire of standard form. Spikes shall be cut, wire, or boat spikes.

Hardware shall be zinc-coated in accordance with Subsection 501.03(G) – Zinc Coating, except malleable iron connectors for treated timber bridges shall not be zinc-coated.

Metal connectors conforming to one of the following, shall be provided in accordance with the contract documents:

(A) Split Ring Connectors. Split rings shall have inside diameters of 2-1/2 inches and 4 inches. Split rings shall be made from hot rolled, low carbon steel conforming to ASTM A 711, Grade 1010. Each ring shall form a closed true circle, with an outside cylindrical surface parallel to the axis of the ring. Split rings shall be cut through, at one place in its circumference, to form a tongue and slot.

(B) Toothed Ring Connectors. Toothed ring timber connectors shall be stamped cold from U.S. Standard No. 16 gage hot rolled sheet steel conforming to ASTM A 711, Grade 1015. Connectors shall be bent cold to form a circular, corrugated, sharp-toothed band and circle. Connectors shall be parallel to the ring axis. Central band shall be welded fully to develop strength of the band. Connectors with diameters of 2 inches, 2-5/8 inches, 3-3/8 inches, and 4 inches shall each have a total depth of 15/16-inch and fillet depth of 1/4-inch.

(C) Shear Plate Connectors. Pressed-steel-type shear plates shall be made of 2-5/8-inch-diameter malleable iron conforming to ASTM A 47, Grade 32510. Each plate shall form a true circle with a flange around the edge, extending from one face only, at right angles to the face of the plate. Plate portion shall have a central bolt hole and small perforations on opposite sides of the hole, located midway from the center circumference.

Four-inch-diameter shear plates shall be made of malleable iron conforming to ASTM A 47, Grade 32510. Each casting shall include a

perforated round plate with a flange around the edge, extending from one face only, at right angles to the face of the plate. Plate portion shall have a central bolt hole reamed to size, with an integral hub that is concentric to the bolt hole and that extends from same face as flange.

(D) Spike Grid Connectors. Spike grid connectors shall be made of malleable iron conforming to ASTM A 47 Grade 32510. Connectors shall include four rows of opposing spikes forming a 4-1/8-inch square grid with 16 teeth held in place by fillets. For flat grids, fillets that are diamond-shaped in cross section shall be used. Increased fillet depths for single and double curve grids shall be used.

Three-and-one-quarter-inch-diameter circular grids shall include eight opposing spikes equally spaced around outer circumference. Circular grids shall be held in place by connecting fillets around outer diameter and by radial fillets that project to a central circular fillet that forms a bolt hole opening of 1-1/4 inches. Fillets that are diamond-shaped in cross section shall be used. The inner circular fillet on one side may be flattened to provide for manufacturer identification.

714.04 Timber Piles. Timber piles shall conform to ASTM D 25 except as modified herein.

Untreated timber piles shall be of Douglas fir or redwood species. Treated timber piles shall be of Douglas fir species.

Redwood piles shall conform to the circumferences and diameters established for piles in Tables 1a and 2a of ASTM D 25.

Preservative treatment, if required, and storage and handling of timber piles shall conform to Subsection 714.02 - Timber Preservatives and Section 502 - Timber Structure.

END OF SECTION 714