Section 4162. Untreated Timber and Lumber

4162.01 GENERAL REQUIREMENTS.

A. Use structural class timber for timber parts supporting definite traffic loads, namely posts of framed bents and stringers.

B. Use common class timber and lumber for all other timber parts, including caps, backing plank, floor plank, wing plank, nailers, fillers, sway bracing, rail posts, post blocks, bridging curbs, scupper blocks, rails, and laminated floor, unless otherwise designated.

C. Arrange inspection according to Materials I.M. 462. Include the cost of inspection in the unit price bid for the material specified.

4162.02 DEFINITION OF TERMS.

Terms used in these specifications are to be interpreted according to ASTM D 9 and rules approved by the Board of Review of the American Lumber Standards Committee.

4162.03 MINIMUM ACCEPTABLE SIZES.

A. Furnish material that complies with the dimensions specified for rough or surfaced stock. Unless specified otherwise in the contract documents, furnish rough material. Materials are classified in Table 4162.02-1, according to use:

Table 4162.02-1: Material Classification

Light Framing	
Nominal thickness Nominal widths Dressed thickness Dressed widths	2" to 4" (50 mm to 100 mm) 2" to 4" (50 mm to 100 mm) S1S or S2S S1E or S2E
Joist and Plank	
Nominal thickness Nominal widths Dressed thickness Dressed widths Rough	2", 3", and 4" (50 mm, 75 mm, and 100 mm) 6" (150 mm) and wider in multiples of 2" (50 mm) S1S or S2S S1E or S2E
Beams and Stringers	
Nominal thickness Nominal widths Dressed sizes Rough	5" (125 mm) and thicker, rectangular Widths more than 2" (50 mm) greater than thickness S1S, S1E, S2S, or S4S

B. Manufacture.
Ensure pieces are fully milled and processed. Unless specified otherwise, ensure all ends are neatly cut at right angles to the specified length. Reject miscut, tapered, wedge cut, or bull end pieces.

C. Dimensions.
Ensure material for tongue and groove bridge floors has either the dimensions specified or the Engineer's approval. Unless specified otherwise, ensure that the dimensions of all other material comply with the industry standards approved by the Board of Review of the American Lumber Standards Committee for rough or surfaced stock for the species furnished.

4162.04 SPECIES OF WOOD.

A. Use Douglas Fir (coast region) or Southern Pine in all structural class timber parts and in all common class timber parts with a nominal thickness of 2 inches (50 mm) or more.

B. Construction parts less than a nominal thickness of 2 inches (50 mm) including all boards, strips, and sheathing may be Douglas Fir (coast region), Southern Pine, West Coast Hemlock, Ponderosa Pine, Idaho White Pine, Sugar Pine, or White Fir.

4162.05 STRESS GRADE TIMBER AND LUMBER.

A. Furnish either Douglas Fir (coast region) or Southern Pine. Ensure the material is graded as provided in ASTM D 245 and by rules of associations as approved by the American Lumber Standards Committee.

B. Use material of the grade specified for each species. Ensure Douglas Fir (Coastal Region) is graded according to the grading rules published by the Western Wood Products Association or the West Coast Lumber Inspection Bureau. Ensure Southern Pine is graded according to the grading rules published by the Southern Pine Inspection Bureau. When a stress grade is identified as structural, apply Table 4162.05-1. When a stress grade is identified as common class, apply Table 4162.05-2. Unless specified otherwise, the material may be either Douglas Fir or Southern Pine.

Table 4162.05-1: Material Grades (Structural Class)

Structural Class[(a)]	Grade
Light Framing:	
Douglas Fir	Dense No. 2
Southern Pine	No. 2 Dense
Joists and Plank:	
Douglas Fir	Select Structural or Dense No. 1
Southern Pine	Dense Structural 72
Beams and Stringers:	
Douglas Fir	Dense Select Structural
Southern Pine	Dense Structural 86
Posts and Timbers:	
Douglas Fir	Dense Select Structural
Southern Pine	Dense Structural 72

(a) Structural class is based on a nominal extreme fiber stress in bending of 1,900 psi (13 MPa) (minimum 1,850 psi (12.8 MPa)) for light framing, joists, and plank in a repetitive member use; and for beams and stringers in a single member use. Structural class for posts and timbers is based on a compression stress parallel to the grain of 1,100 psi (7.6 MPa) when used as a column. When used as a beam in a single member use, the minimum extreme fiber stress in bending is 1,750 psi (12 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability (Section 4161) is also assumed, where specified.

Table 4162.05-2: Material Grades (Common Class)

Common Class[(a)]	Grade
Light Framing:	
Douglas Fir	No. 2
Southern Pine	No. 2 Dense
Joists and Plank:	
Douglas Fir	No. 1
Southern Pine	Dense Structural 65
Posts and Timbers:	
Douglas Fir	Select Structural
Southern Pine	Dense Structural 65

(a) Common class is based on a nominal extreme fiber stress in bending of 1,500 psi (10.3 MPa) (minimum 1,450 psi (10 MPa)) for light framing, joists, and plank in a repetitive member use. Common class for posts and timbers is based on a compression stress parallel to grain of 1,000 psi (7 MPa) when used as a column. When used as a beam in single member use, the minimum extreme fiber stress in bending is 1,450 psi (10 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability (Section 4161) is also assumed, where specified.

C. Ensure that untreated wood material that requires a grade, with the exception of 45 inch (1145 mm) Terminal Posts, is stamped with the identifying quality grade mark of an accredited grade monitoring and inspection agency approved by the American Lumber Standards Committee (ALSC) under the Untreated Wood Program. If, due to sizing of material, 45 inch (1145 mm) Terminal Posts to be used for guardrail can not be stamped with a quality grade mark, ensure they are stamped "MFG No. 1" to indicate that the posts were cut from an original piece graded as a No. 1. Wane requirements will be waived.

D. Material less than 3 feet (1 m) in length does not require a grade mark; however, the grade of the material is required to be certified by the certification statement from the mill/processor according to Materials I.M. 462. Round wood posts, round wood piles, and round wood poles do not require a grade, since the grading rules apply only to sawn material.

4162.06 COMMON BOARD AND SHEATHING.

Ensure common lumber less than a nominal 2 inches (50 mm) in thickness complies with the requirements of the American Lumber Standards for the species and grade specified.