



AMERICAN INSTITUTE OF TIMBER CONSTRUCTION

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AITC 113-2001

STANDARD FOR DIMENSIONS OF STRUCTURAL GLUED LAMINATED TIMBER

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1. PREFACE

1.1 The most efficient and economical production of glued laminated structural members results when standard lumber sizes are used for the laminations. Industry recommended practice uses nominal 2 in. thick lumber of standard nominal width to produce straight members and curved members where the radius of curvature is within the bending radius limits for that thickness of the species. Nominal 1 in. thick boards are normally used when the bending radius is too sharp to permit use of nominal 2 in. thick laminations. These are standard practices subject to deviation to conform with specific job requirements and plant procedures. The use of nominal 1 in. and 2 in. thick laminations will generally be the most economical, therefore, conformance with this standard is recommended for all normal uses. Exceptions should be made only when the shape of the structure requires nonstandard laminations.

Textured surfaces for glued laminated timber are permitted in "Standard Appearance Grades for Structural Glued Laminated Timber", AITC 110, in lieu of the surfaces specified in the AITC appearance grades. When textured surfaces are used, the net finished sizes and tolerances given herein and in AITC 117 — DESIGN and ANSI/AITC A190.1-1992, "Structural Glued Laminated Timber", may not be applicable. Depending upon the degree of texturing, it may be necessary for the designer to compensate for the resulting loss of cross section.

2. STANDARD DEPTHS OF MEMBERS

2.1 Proper gluing procedures require surfaces planed uniformly smooth to exact thickness. Normal standard practice is to surface nominal 2 in. laminations to a net 1-3/8 in. or 1-1/2 in. thickness, and nominal 1 in. laminations to a net 3/4 in. thickness. Finished depths of members are thus increments of these net thicknesses.

No. of Laminations	Net Depth of Member, in.		
	Nominal 1 in. Laminations	Nominal 2 in. Laminations	
		1-1/2 in. ¹	1-3/8 in. ¹
4	3	6	5-1/2
5	3-3/4	7-1/2	6-7/8
6	4-1/2	9	8-1/4
7	5-1/4	10-1/2	9-5/8
8	6	12	11
Etc.	Etc.	Etc.	Etc.

¹ 1-1/2 in. thick laminations are normal for Western softwoods; 1-3/8 in. thick laminations are normal for Southern Pine.

- 2.2 The use of laminations of special thicknesses because of bending radius or the mixing of thicknesses for special purposes results in net finished depths other than those shown in the table.

3. STANDARD WIDTHS OF MEMBERS

- 3.1 For premium, architectural, and industrial appearance grades, it is necessary to surface the wide faces of members to remove the glue squeeze-out and provide a uniformly smooth surface. Therefore, the net finished width of the glued laminated member is less than the net finished width of industry standard boards and dimension lumber.
- 3.2 The normal standard net finished widths for glued laminated structural members meeting premium, architectural, and industrial appearance requirements are as follows. Other finished widths may be used to meet the size requirements of a design or to meet other special requirements.

Nominal Width, in.	3	4	6	8	10	12	14	16
Western Species	2-1/8 or 2-1/2	3-1/8	5-1/8	6-3/4	8-3/4	10-3/4	12-1/4	14-1/4
Southern Pine	2-1/8 or 2-1/2	3 or 3-1/8	5 or 5-1/8	6-3/4	8-1/2	10-1/2	12	14

Note: 2-1/2 in. width may not be available in architectural or premium appearance grades. Consult manufacturer for availability.

- 3.3 For framing appearance grade, members are surfaced "hit or miss" to match 2x4 and 2x6 conventional framing sizes. Standard widths for glued laminated structural members meeting framing grade requirements are 3-1/2 in. for nominal 4 in. width members and 5-1/2 in. for nominal 6 in. width members.

4. STANDARD DIMENSIONS FOR HEAVY TIMBER

- 4.1 Excellent fire resistance is achieved with "heavy timber" construction (see "Standard for Heavy Timber Construction", AITC 108). Minimum sawn lumber sizes have been long established and are expressed in nominal dimensions and assume surfacing to "American Lumber Standard" net sizes.
- 4.2 For "heavy timber" construction, the net width of glued laminated structural members shall be the standard glued laminated net width for the nominal sawn width specified, and the net depth of glued laminated structural members shall be equal to or greater than the net finished depth specified in the following table.

Minimum Nominal Size			Minimum Glued Laminated Net Size					
			1-1/2 in. thick laminations			1-3/8 in. thick laminations		
Width, in.		Depth, in.	Width, in.		Depth, in.	Width, in.		Depth, in.
8	x	8	6-3/4	x	9	6-3/4	x	8-1/4
6	x	10	5-1/8	x	10-1/2	5 or 5-1/8	x	11
6	x	8	5-1/8	x	9	5 or 5-1/8	x	8-1/4
6	x	6	5-1/8	x	6	5 or 5-1/8	x	6-7/8
4	x	6	3-1/8	x	7-1/2	3 or 3-1/8	x	6-7/8

5. TOLERANCES

- 5.1 **Dimensions** - The tolerances permitted at the time of manufacture shall be as follows:
Width - Plus or minus 1/16 in.
Depth - Plus 1/8 in. per ft of depth. Minus 3/16 in., or 1/16 in. per ft of depth, whichever is larger.
Length - Up to 20 ft, plus or minus 1/16 in. Over 20 ft, plus or minus 1/16 in. per 20 ft of length.
- 5.2 **Camber or Straightness** - The tolerances are applicable to the time of manufacture without allowance for dead load deflection. Up to 20 ft, the tolerance is plus or minus 1/4 in. Over 20 ft, increase tolerance 1/8 in. per each additional 20 ft or fraction thereof, but not to exceed 3/4 in.
- The tolerances are intended for use with straight or slightly cambered members and are not applicable to curved members such as arches.
- 5.3 **Squareness of Cross Section** - The tolerance shall be within plus or minus 1/8 in. per ft of specified depth unless a specially shaped section is specified. Squareness shall be measured with respect to both top and bottom faces.