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## AMERICAN INSTITUTE OF TIMBER CONSTRUCTION

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### AITC 113-2010 STANDARD FOR DIMENSIONS OF STRUCTURAL GLUED LAMINATED TIMBER

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#### 1. PREFACE

**1.1** 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 prescribed bending radius limits. 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 to 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 member requires nonstandard laminations.

When textured surfaces are used, the net finished sizes given herein, 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

**2.1** Proper gluing procedures require surfaces planed uniformly smooth to precise thickness. Standard practice is to surface nominal 2 in. laminations to a 1-3/8 in. net thickness for Southern Pine or 1-1/2 in. net thickness for other softwood species. Nominal 1 in. thick laminations are typically surfaced to a 3/4 in. net thickness. Standard 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	
		Southern Pine	Other Softwoods
4	3	5-1/2	6
5	3-3/4	6-7/8	7-1/2
6	4-1/2	8-1/4	9
7	5-1/4	9-5/8	10-1/2
8	6	11	12
.	.	.	.
.	.	.	.
.	.	.	.
<i>n</i>	$0.75n$	$1.375n$	$1.5n$

**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.

**2.3** Structural glued laminated timber members are also commonly manufactured to match standard I-joist depths.

**2.4** Other depths may be specified to meet the size requirements of a design or to meet other special requirements

### 3. STANDARD WIDTHS

- 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. Standard widths for premium, architectural and industrial grade members are as follows.

Standard Widths for Premium, Architectural, and Industrial Appearance Grade Members								
Southern Pine	2-1/8	3 or 3-1/8	5 or 5-1/8	6-3/4	8-1/2	10-1/2	12*	14*
Other Softwood Species	2-1/8	3-1/8	5-1/8	6-3/4	8-3/4	10-3/4	12-1/4*	14-1/4*

\* Laminations wider than 11.25 in. are not generally available. Wider beams are typically manufactured using multiple-piece laminations across the width.

- 3.2 Framing appearance grade members are surfaced "hit-or-miss," generally to match conventional framing lumber widths, and are not suitable for applications where appearance is important. Standard widths for framing grade members are as follows.

Standard Widths for Framing Appearance Grade Members								
All Species	2-1/2	3-1/2	5-1/2	7-1/4	--	--	--	--

- 3.3 Other finished widths may be specified to meet the size requirements of a design or to meet other special requirements.

### 4. STANDARD DIMENSIONS FOR HEAVY TIMBER CONSTRUCTION (TYPE IV CONSTRUCTION)

- 4.1 Excellent fire resistance is achieved with "heavy timber" construction. 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 glued laminated members, the equivalent net finished widths and depths corresponding to the minimum nominal widths and depths of sawn lumber members shall be as specified in the following table.

Minimum Nominal Size			Minimum Glued Laminated Net Size		
Width, in.		Depth, in.	Width, in.		Depth, in.
8	x	8	6-3/4	x	8-1/4
6	x	10	5	x	10-1/2
6	x	8	5	x	8-1/4
6	x	6	5	x	6
4	x	6	3	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 or fraction thereof.

- 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, the tolerance shall increase 1/8 in. per each additional 20 ft or fraction thereof, but not to exceed 3/4 in.

These 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 by placing one leg of a square across a top and/or bottom face and measuring the offset from the other leg of the square at the opposite face of the beam.