STRUCTURAL COMPOSITE LUMBER (LVL & PSL)
BEAM CONVERSIONS TO SOUTHERN PINE GLULAM

American Institute of Timber Construction
Structural Composite Lumber Design Values (psi)

Glued Laminated Timber Design Values (psi)

				LVL	**PSL**
F_{bx} =	2400	Simple Span Beam	F_b =	2950	2900
F_{Vx} =	300	Dry Service Conditions	F_V =	290	290
E_x =	1,800,000	Beam Dimensions Are in Inches	E =	2,000,000	2,000,000

Structural Composite Lumber Size[1] width x depth	Glulam Sizes to Substitute for Laminated Veneer Lumber (LVL)			Glulam Sizes to Substitute for Parallel Strand Lumber (PSL)		
3 1/2 x 9 1/2	3 x 12 3/8	5 x 9 5/8	6 3/4 x 8 1/4	3 x 12 3/8	5 x 9 5/8	6 3/4 x 8 1/4
3 1/2 x 11 7/8	3 x 15 1/8	5 x 12 3/8	6 3/4 x 11	3 x 15 1/8	5 x 11	6 3/4 x 11
3 1/2 x 14	3 x 17 7/8	5 x 13 3/4	6 3/4 x 12 3/8	3 x 17 7/8	5 x 13 3/4	6 3/4 x 12 3/8
3 1/2 x 16	3 x 19 1/4	5 x 15 1/8	6 3/4 x 13 3/4	3 x 19 1/4	5 x 15 1/8	6 3/4 x 13 3/4
3 1/2 x 18	3 x 22	5 x 17 7/8	6 3/4 x 15 1/8	3 x 22	5 x 17 7/8	6 3/4 x 15 1/8
5 1/4 x 9 1/2	---	5 x 12 3/8	6 3/4 x 9 5/8	---	5 x 12 3/8	6 3/4 x 9 5/8
5 1/4 x 11 7/8	---	5 x 15 1/8	6 3/4 x 12 3/8	---	5 x 13 3/4	6 3/4 x 12 3/8
5 1/4 x 14	---	5 x 16 1/2	6 3/4 x 15 1/8	---	5 x 16 1/2	6 3/4 x 15 1/8
5 1/4 x 16	---	5 x 19 1/4	6 3/4 x 16 1/2	---	5 x 19 1/4	6 3/4 x 16 1/2
5 1/4 x 18	---	5 x 22	6 3/4 x 19 1/4	---	5 x 22	6 3/4 x 17 7/8
7 x 9 1/2	---	5 x 13 3/4	6 3/4 x 12 3/8	---	5 x 13 3/4	6 3/4 x 12 3/8
7 x 11 7/8	---	5 x 16 1/2	6 3/4 x 15 1/8	---	5 x 16 1/2	6 3/4 x 15 1/8
7 x 14	---	5 x 19 1/4	6 3/4 x 16 1/2	---	5 x 19 1/4	6 3/4 x 16 1/2
7 x 16	---	5 x 22	6 3/4 x 19 1/4	---	5 x 22	6 3/4 x 19 1/4
7 x 18	---	5 x 24 3/4	6 3/4 x 22	---	5 x 24 3/4	6 3/4 x 22

[1] Structural composite lumber may be made up of a single piece or multiple pieces nailed together per manufacturer's guidelines to make wider beams.

Table Specifications:

These sizes are for <u>dry service condition</u> of use.

Reverse use of this table to convert from glued laminated timber sizes to structural composite lumber sizes is non-conservative in all cases and is **NOT PERMITTED**.

PSL F_b is adjusted by a size factor of $C_F = (12/d)^x$ where x = 0.111.

LVL F_b is adjusted by a size factor of $C_F = (12/d)^x$ where x = 0.143 for depths larger than 12 inches and x = 0.133 for depths less than or equal to 12 inches.

LVL design values are based on the highest published values available at the time of printing this table. Glulam sizes in this table will be conservative for LVL with lower values.

Smaller glued laminated timber sizes may be possible with engineering calculations based on actual span and loading conditions.

Glued laminated timber beam sizes are based on a span to depth (L/d) ratio of 21. When the span to depth ratio is larger, sizes should be determined by engineering calculations.

To determine glued laminated timber beam sizes, F_{bx} was adjusted by the volume factor. It is assumed that all beams are adequately braced for lateral stability.

Tabulated beam sizes have been checked for adequacy in flexure, shear, and deflection.

A minimum glued laminated timber depth of 5.5 inches is used in this table. Standard glued laminated timber sizes are used in this table.

While these design conversions have been prepared in accordance with recognized engineering principles and are based on accurate technical data, conversions should not be used without competent examination and verification of the accuracy, suitablity, and applicability by a qualified design professional.

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